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The determinants of pet owners' feed choice

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The determinants of pet owners' feed choice

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Summary

Many studies from different disciplines already investigated selected aspects of food choice. The food choice of humans is influenced by many different factors, such as attitude about a certain food, health claims and price. Up to now research has been done about consumers' food choice and more rational choices, including feed choices, made by professional companies or farmers. What is missing is research about consumers making feed choices for their pets. These feed choices are expected to lie between consumers' food choices and professionals' feed choice. It is essential for feed manufacturers to know by which factors consumers are influenced in their feed choices in order to develop effective marketing plans and finally generate higher profits. By means of conjoint analysis the factors influencing feed preference for a horse muesli of 250 respondents were investigated. For the total sample the factors 'color', 'price' and 'quality' in terms of animal health showed the highest average utility scores and importance values meaning that these were the main factors influencing consumers' feed preferences. In conclusion the feed choice of the present sample was more similar to consumers making food choices instead of professionals making feed choices. Through cluster analysis four different consumer segments were identified. The first cluster represented 43,6 % of the respondents. This group of consumers preferred high qualities in terms of animal performance and health. The second cluster contained 15,2 % of the respondents who preferred a price of 11 euro and an excellent quality in terms of animal health. The third cluster represented 11,6 % of the respondents who regarded a greenish color as the most important factor, followed by a simple quality in terms of animal performance. The last cluster accounted for 29,6 % of the respondents, preferring a simple quality in terms of animal performance as well as friends and family who also feed this muesli. Based on the found results feed manufacturers should implement divers marketing strategies for the different consumer segments. By doing so it should be possible to satisfy the needs of consumers and thereby achieving higher profits.

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1. Introduction

Nowadays many studies from different disciplines already investigated selected aspects of food choice (Booth, 1994; Furst et al., 1996; Glanz et al., 1992; Shepherd, 1990). The food choice of humans is influenced by many different factors, such as attitude about a certain food, health claims and price, which can be viewed as non-sensory factors (Fotopoulos, 2009). Also sensory characteristics as odour or texture can play a role in choosing a certain food (Prescott et al., 2001). Research showed that not only rational factors are part of food choice but that food choice is also influenced by emotional aspects (Köster, 2009; Bechara, 2004). Research has been done with different consumers in different settings or with different backgrounds. Not only the food choice for the consumer himself but also his choice of food for others like his family, was taken into account (Connors et al., 2001; Shepherd, 1999).

Making choices for others can be related to people keeping animals. Pet owners not only need to decide about food for themselves but they also have to make choices for their animal concerning feeding. According to this, consumers feeding their animals also need to make food or feed choices in a certain way. Feed for animals and food for consumers are similar in a few ways. In both, characteristics like quality, taste and price can play an important role. This feed choice is made more difficult by the huge amount of different animal feeds on the market offered by different feed manufactures. The pet food market in Germany can be seen as a great sector with considerable sales. In 2011 about 22 million pets including mainly cats (8.2 million) and dogs (5.4 million) but also other small animals (5.1 million) and birds (3.3 million) were living in Germany. The total sales of the pet food sector reached more than 2.8 million euros in 2011. This implies an increase of 0.5 % compared with the sales in 2010 and makes clear that the pet food sector is still growing annually (IVH, 2011).

Another animal sector, which is not directly part of the pet food sector, is the horse feed sector. Horses developed since the 70's from farm animals used in agriculture to animals mainly used in sports and recreation (Haller, 2003). By this new function of the horse, the horse keeping and sport sector turned into a relevant commercial sector/ branch of the economy. Nowadays more than one million horses are kept in Germany and about 11 million people are interested in equestrian sports. The annual sales of the whole horse branch in Germany amounts to circa five billion euros (Gille and Spiller, 2008).

Next to pet and private horse owners, also professionals like farmers and horse breeders have to deal with the feed of their animals. Professional animal keepers are running their own companies. This suggests that their feed choice differs from private consumers by e.g. attaching more importance to aspects as feeding value and feed price. People running companies are supposed to base their choices on more rational factors (Eisenhardt and Zbaracki, 2007). In order to explain and predict decisions made within companies, different models for strategic decisions within organizations are developed (Schoemaker, 1993). Kool (1994) states that farmers intend to behave in a rational way, but that also emotional and social factors next to functional ones can play a role in their buying behavior. In general farmers often show a high repeat buying behavior.

An explanation for this is that a farmer usually aims a maximum result spending a minimum amount of time (Kool, 1994).

The earlier mentioned numbers illustrate that the pet food and horse feed sector contribute significantly to the German economy and sales. Therefore it is essential for feed manufacturers to know by which factors consumers are influenced in their choices to buy a certain feed for their pet. When knowing this, effective marketing plans can be developed in order to reach potential customers and deal with their product preferences to be able to make more profit. Up to now research has been done about consumers' food choice and more rational choices, including feed choices, made by professional companies or farmers. What is missing is research about consumers making feed choices for their pets. These feed choices are expected to lie between consumers' food choices and professionals' feed choice. In order to investigate the feed choice of pet owners, it is important to find out if pet owners behave similar to consumers supplying their families or to farmers making more rational choices concerning the feed choice for their animals.

According to this, the aim of this study is to investigate whether the feed choice of pet owners can be compared to the choices of consumers supplying their families or to professionals when dealing with the choice of feed for their animal. This aim leads to the following main research question:

Which determinants of consumers' food choice and/or professionals' feed choice determine pet owners' feed choice?

To be able to answer the main question, several sub questions will be taken into account:

1. What are the different determinants playing a role in consumer food choice?
2. What are the different determinants playing a role in professional feed choice?
3. What is the influence of the determinants of consumer food choice on pet owners' feed choice?
4. What is the influence of the determinants of professional feed choice on pet owners' feed choice?

The report starts with a literature review, showing the already existing literature relevant to this topic. Further on the different determinants of consumers' food choice and professionals' feed choice influencing pet owners' feed choice are discussed. Hypotheses are built up leading to a conceptual model. In Chapter 4 the methods used in this study are described. Amongst others a description of the research design, used materials and data analysis is given. Next, the results of the study are presented, followed by a discussion of these results. The report ends with a conclusion, drawn from this study.

2. Conscious and unconscious ways in making choices

Decisions and choices can be made in different ways. When making decisions, people can either make new choices between different options, estimating their values, or they can make their decision based on prior choices. Decisions based on prior choices, can be seen as repetitive and non-deliberate choices, also described as habits (Lindbladh and Lyttkens, 2002). Such choices can be preferred because they help saving decision costs (Stigler and Becker, 1977) compared to the process of searching for alternatives (Lindbladh and Lyttkens, 2002). Habits can be described in terms of lack of awareness and little mental effort to execute which can make habits efficient. A habit is a kind of automatic behavior in which also routine choices can play a role. In the case of habits, rational choice processes are less likely to take place (Verplanken and Aarts, 1999). Habits develop when the same behavior under same circumstances is repeated again and again. Routines are also repeated actions which include habitual behavior. A routine behavior is performed without conscious thinking so that they are seen as unconscious behavior (Klöckner and Matthies, 2004).

Thus in consumer research choices can be made in a conscious or an unconscious way. Unconscious choices are seen as automatic whereas conscious ones involve deliberating and effortful scrutiny by the consumer (Bargh, 2002). The theory of unconscious thought presented by Dijksterhuis and Nordgren (2006), deals with the two different ways of thinking, the conscious and the unconscious one. According to Dijksterhuis and Nordgren (2006), this theory can be applied to various psychological phenomena concerning thought like choice, decision making, attitude formation and problem solving. The two ways of thought can be distinguished by diverse characteristics which allow them to be used in different situations. Conscious thought can be defined as “object-relevant or task-relevant cognitive or affective thought processes that occur while the object or task is the focus of one's conscious attention” (Dijksterhuis and Nordgren, 2006, p. 96). People can e.g. think consciously about two products by simply comparing their prices and making a choice for the cheapest one, when price is seen as the most important dimension for a choice.

Unconscious thought can be seen as “object-relevant or task-relevant cognitive or affective thought processes that occur while conscious attention is directed elsewhere” (Dijksterhuis and Nordgren, 2006, p. 96). This kind of thought can appear when stopping thinking consciously to make a choice and the next day a decision is made. The thought for this decision itself is conscious but the way to come to the decision is due to unconscious thought. So the main difference between conscious and unconscious thought is that the first one occurs with attention and the second one without or with attention directed elsewhere. Because the conscious thought is precise, it can be used for simple decisions with little involved information, resulting in better choices than the unconscious thought. Also for information acquisition, a process before making choices, mainly conscious processes are involved (Dijksterhuis and Nordgren, 2006). According to Dijksterhuis and Nordgren (2006), unconscious thought should mainly be used for complex decisions like buying a house, assumed that the earlier information acquisition occurred conscious.

However the theory of unconscious thought has also been criticized. Simonson (2005) states that consciously considered inputs have a great importance in (consumer) choice. A consumer can be triggered unconsciously e.g. by the presence of another person to buy a product from a certain product category. The choice for one product out of the product category however is assumed to be made on a set of conscious processes. These conscious processes can be related to attention for product attributes like brand, price or ingredients. Normal consumer-choice environments contain different purchase options which can have a great impact on purchase decisions by being perceived as relevant for making a decision. Thereby consciously considered product characteristics and the consumers' beliefs about own preferences are expected to have a major effect on consumer choice. Also unconscious inputs in the consumer environment can play a role in choice making. Their advantage is that they are not noticed by the consumer and thus consumers cannot resist their influence. On the other hand unconscious inputs can easily get lost in the noise of choice environments like stores. This is also a reason why it is difficult to measure impacts of unconscious inputs on choice making (Simonson, 2005).

In conclusion conscious behavior includes effort for evaluations and decisions and occurs more slowly. In contrast unconscious or automatic processes are not intended, effortless and very fast. Automatic processes can arise out of repeated and consistent experience. They can take over the tasks from conscious choice, so that goals and motives can work unconsciously in certain situations (Bargh and Chartrand, 1999). The conscious and unconscious ways of making choices are also beard in mind when describing the different factors influencing the food choice of consumers. In accordance with the literature, the factors color, quality and price are assumed to be considered consciously by the consumer. The remaining factors reference groups and supplier advice cannot be assigned either to conscious or unconscious decision making that clearly. It can be supposed that consumers can be influenced by these factors when keeping them unconsciously at the back of their mind during decision making.

3. Food choice and its connotations

Food choice is a very large topic, ranging from food choice concerning private consumers to choices made in professional organizations or within the agriculture. A lot of research has been done about the different factors that influence the food choice of people. The next chapter provides an overview about the existing determinants known for consumer food choices and choices made by professionals.

In this research the term 'feed choice' concerns pet owners that make feed choices for their pets. For investigating this feed choice, two branches of choice research are taken into account. One deals with private consumers making food choices for themselves or family members. There are several factors influencing the food choice of private consumers which can also play a role in the feed choice of pet owners. The following chapter summarizes a certain number of these factors mentioned later on. The other branch of choice research concerns professionals, making choices for their companies. When looking at professionals' choices, in particular farmers making feed choices for farm animals will be concerned. Because farmers also act like professionals, their choices can be compared to organizational buying behavior (Kool, 1994).

There are two different views concerning the factors influencing industrial buying behavior. The first assumes that decisions are based on rational economic factors. Buying a product at the lowest price, with shortest delivery time (Bharadwaj, 2004) and reliability and reputation of a known vendor belong to the rational factors. According to the other view, also emotional factors play a role in organizational buying decisions (Kool, 1994). Emotional factors concern personal needs and emotions of purchasers. Trying to receive personal rewards through interpersonal interactions with vendors is also one of the emotional factors (Kelly and Coaker, 1976; Webster and Wind, 1972). Which choice criteria play the most important role, can depend on the product type (Bharadwaj, 2004; Kauffman, 1996), the country of origin of the purchaser and the individual person like purchasers or engineers making a decision within an organization (Kelly and Coaker, 1976).

The determinants which can influence the food choice of a consumer and the determinants which may affect the choice of professionals are described in the following. In general the determinants of food choice can be categorized in sociodemographic and social factors (Axelson 1986; Dickens, 1965; Drewnowski, 1997; Furst *et al.*, 1996), here considered as social influence concerning influence of reference groups for consumers and supplier advice for professionals. Another category with product characteristics will also be taken into account. These categories contain different determinants of food choice. The determinants mentioned in this chapter, are expected to have an influence on the feed choice of pet owners and are thereby relevant to this research. Each description of a determinant results in a hypothesis. The hypotheses lead to a conceptual model, which will be tested in this research.

3.1 Product characteristics

Product characteristics affecting food choice considered in this study are product quality and price. Food quality can be one of the most influencing factors on food choice (Kearney *et al.*, 2000; Lennernas *et al.*, 1997; Pollard *et al.*, 2002), even more than price (Furst *et al.*, 1996). According to Grunert (2005), food quality can be divided into an objective and subjective dimension. The objective dimension of quality contains the physical characteristics of the product, whereas the subjective one deals with the quality perceived by consumers. People asked about the attributes of quality considered sensory characteristics, health and convenience as important ones (Grunert, 2005).

When looking at the existing literature, the most often mentioned determinants influencing food choice are sensory appeal, health and price (French, 2003; Lau et al., 1984; Rappaport et al., 1992; Scheibehenne *et al.*, 2007; Steptoe and Pollard 1995). These determinants often are described as the most important ones concerning food choice and therefore considered in this research (Scheibehenne *et al.*, 2007; Steptoe and Pollard 1995).

Also in organizational buying, price and quality are frequently mentioned choice criteria (Bharadwaj, 2004; Evans, 1981; Lehmann and O'Shaughnessy, 1974; Lehmann and O'Shaughnessy, 1982; Wilson, 1994) and have shown to play a major role in this branch (Banville and Dornoff, 1973; Johnston and Lewin, 1996; Kelly and Coaker, 1976; White and Cundiff, 1978). Therefore price and quality will be combined determinants resulting from consumer choice and organizational buying. There will be different definitions of quality resulting from the consumer and farmer background of choice making to distinguish between these two branches.

Color as a sensory attribute

Certain factors can have a strong impact on consumer's food choice. Among these factors are food preferences, food likes and sensory attributes of the product (Asp, 1999; Nestle et al., 1998). When buying a product for their pet, sensory attributes like smell, texture and color can help pet owners in making a decision (Asp, 1999, Eertmans *et al.*, 2001). They can decide upon these attributes whether they like the feed and want to give it to their animal or not. Some owners e.g. prefer feed that is rich in color whereas others like a more natural color of the feed (Thompson, 2008). Thus the general attractiveness of a feed determined by its color can influence the consumers' preference for that feed. Color is an attribute that can also be judged by pictures without holding the feed in hands. This can make it an important attribute for judgement when consumers e.g. buy their feed online. Often pet owners see their pets as a kind of human, sharing the same preferences for food resp. feed (Lastovicka and Joachimsthaler, 1988). The sensory attributes or perceptions of a food have shown to be a dominant factor in making food choices (Eertmans *et al.*, 2001, Furst *et al.*, 1996; Pollard *et al.*, 2002). Are these attributes not perceived as positive, the consumer probably will not choose a certain food (Hetherington and Rolls, 1996). In line with these findings the following hypothesis is proposed:

Hypothesis 1: The color of feed influences consumers' preference for that feed.

Quality

In this research two different definitions of feed quality will be taken into account. The first one concerns quality in terms of animal health and considers feed quality regarded by the private consumer. This definition of feed quality differs from the one taken into account by professionals like organizations or farmers. Therefore also feed quality in terms of animal performance will be another factor in this study. The two definitions of feed quality will be described in the following.

Quality in terms of animal health

In the petfood sector the different quality feeds economy, premium and super premium products are distinguished (Denniss, 2004). Premium and super premium cat foods e.g. claim to contain high contents of raw fish which would also be suitable for human consumption (De Silva and Turchini, 2008). Whereas economy products can be associated with a reduced palatability (Donoghue and Scarlett, 1998). For the food quality also the healthiness of a food can play a role (Grunert, 2005). This can be expressed in nutritional food components like fat, fiber and minerals content (Bravo *et al.*, 2012). Other factors which can determine the perception of food healthiness include type of processing of raw materials, origin, packaging and use of additives (Bech-Larsen and Grunert, 2003). Considering pet owners, they also want to feed good quality feed to keep their animals healthy. When buying feed for their pets one condition can be, next to meeting the pets' nutritional needs, that the feed also supports the health of the pet and reduces the risk of illnesses (Zentek, 2004). Thus pet owners can also prefer high quality feeds containing extra ingredients like pre- and probiotics for supporting better health of their animal (Bontempo, 2005). The following hypothesis results from the considered literature, representing the quality defined in terms of consumers.

Hypothesis 2: The quality of feed in terms of animal health has a positive influence on consumers' preference for that feed.

Quality in terms of animal performance

The quality of a product is one of the most often identified factors playing a role in organizational buying behavior (Banville and Dornoff, 1973; Johnston and Lewin, 1996; White and Cundiff, 1978). The aim of buying a product is that its quality can satisfy certain requirements of the buyer. It is expected that organizational buyers make their decisions primarily based on the product quality (Lamar and Donald, 1971; White and Cundiff, 1978). Is the quality accepted, the product with the lowest price is likely to be chosen (White and Cundiff, 1978). Bharadwaj (2004) states that nowadays products need to be highly competitive to be able to achieve consumer acceptance. Therefore organizations need to pay attention to the quality of the products bought from suppliers as inputs for the organizations end product. Because these inputs can affect the end product, it is essential that they meet the quality requirements as a choice criterion (Bharadwaj, 2004). An inferior product quality bought from a supplier can also lead to additional costs and warranty-related problems (Suri, 1998).

Relating product quality to farmers, the quality of the feed, fed to the animals can be considered. The feed quality has shown to be one of the most important factors in farmers' feed choices. It can be related to the satisfaction of the nutritional requirements of the animal in his different life stages (Apantaku *et al.*, 2006). Further on it is also possible to refer to feed quality by taking the quality of the different feed ingredients into account. Feed quality traits of barley used in beef cattle e.g. can be described as certain barley characteristics like high starch content and low acid-detergent fiber (Bowman *et al.*, 2001). Important for the quality of soy used in broiler diets is the quantity and quality of crude protein (Dale, 1996). Other aspects which can play a role when considering feed quality are digestibility and efficiency of digested nutrients utilization for e.g. tissue accretion and milk production (Coleman and Moore, 2003). This is in accordance with Coleman and Moore (2003), stating that feed quality for production animals can be defined in terms of animal performance like daily gain. The following hypothesis results from the found literature, representing the quality defined in terms of farmers.

Hypothesis 3: The quality of feed in terms of animal performance has a positive influence on consumers' preference for that feed.

Price

Another important characteristic is the product price. The price showed a great influence on the food choices of consumers (Furst *et al.*, 1996; Pollard *et al.*, 2002; Steptoe and Pollard, 1995), sometimes even more important than taste (Glanz *et al.*, 1998; Popkin *et al.*, 2005; Shannon *et al.*, 2002). Some consumers want to buy their food as cheap as possible, others relate especially the product worth to the price (Furst *et al.*, 1996). The importance of price can be dependent on the situation of the consumer. The price of food plays a major role in food choices of people with low incomes (Steptoe and Pollard, 1995). Also for young people like students price has shown to be one of the most important factors affecting their food choice (Glanz *et al.*, 1998; Lennernas *et al.* 1997; Pollard *et al.*, 2002; Reicks *et al.* 1994).

Also in organizational or industrial buying behavior, product price appeared to have a major influence (Banville and Dornoff, 1973; Johnston and Lewin, 1996; Kelly and Coaker, 1976). Organizations need to obtain the right economic good at a right price and with a correct quality (Nicosia and Wind, 1977; Webster and Wind, 1972). According to Webster and Wind (1972), economic views of organizational buying mention obtaining a minimum price as an objective of purchasing. Price will also play an important role when more sellers offer similar satisfying product and service criteria. Then price can be used to make a purchase decision (Johnston and Lewin, 1996). Also Kelly and Coaker (1976) found that the most important issue for the buyer is that the purchased product meets the required specifications. When it does so, the second major choice criterion was a low price (Kelly and Coaker, 1976).

Also for farmers, the costs of feed play an important role for making feed choices (Apantaku *et al.*, 2006; Funk and Tarte, 1978). For farmers feed costs form a great part of the total livestock and production costs. By lowering these costs, farmers can generate a higher profit margin. Furthermore a reduction of the prices for animal products for the consumer can result from lower feed costs (Apantaku *et al.*, 2006; Herd *et al.*, 2003). Based on the findings in literature, the following hypothesis is proposed:

Hypothesis 4: The price of feed has a negative influence on consumers' preference for that feed.

3.2 Income as a sociodemographic variable

According to Axelson (1986), sociodemographic variables represent the ability of persons to take part in the social life. In this research income is taken into account. Income and thereby available money is the precondition to be able to buy products. A study by Welsch and Kühling (2009) showed e.g. that income had a great influence on the consumption of organic food. Also other studies found that income as an economic factor was one of the major determinants of organic food (De Magistris and Gracia, 2008; Gracia and de Magistris, 2008). It was found that people with a higher income are more likely to consume organic food, whereas people with lower income are less supposed to buy organic food (Kuhar and Juvancic, 2005; Millock *et al.*, 2004; Torjusen *et al.*, 2001).

So income is an important sociodemographic variable concerning food choice. Axelson (1986) mentions the Engel's law, which shows the relation between income and food consumption by means of the Engel demand curve. According to Engel, the relative importance of money spent on food decreases compared to other expenses when the personal income increases (Swagler, 1975). So for people with a higher income the amount of money spent on food has shown to be less important (Steptoe and Pollard, 1995), whereas people with a lower budget are more restricted in making food choices (Furst *et al.*, 1996).

A study of Furst *et al.* (1996) showed that income was an important issue, influencing the scope and nature of food choices. People with a higher income do not need to watch their food expenses very carefully, so they are more free in deciding what to eat, resulting in a diet with more divers food (Drewnowski, 1997). The importance of other food choice determinants as the sensory attribute color, quality and price has also been shown to be related to people's income. People with less income tend to value the price of foods more important than its sensory appeal, which might be because of their limitations concerning their available money. Whereas people with a higher income preferred the sensory appeal above the food price in making their food choice (Steptoe and Pollard 1995). Furthermore some people with low incomes cannot afford the more expensive high quality products. High quality and healthy food like lean meat, fresh fruits and vegetables are more expensive than foods with added sugar or fats. People with little money also are forced to focus more on quantity instead of quality (Wiig Dammann and Smith, 2009). Thus because of financial constraints, low income people cannot consider high quality products in their food choice as people with more available money can (Devine *et al.*, 2003). In this research income will serve as a moderator of the effects of color, quality and price on feed preference. The following hypotheses result from the considered literature:

Hypothesis 5a: Income strengthens the effect of color on consumers' preference for a feed.

Hypothesis 5b: Income strengthens the effect of quality in terms of animal health on consumers' preference for a feed.

Hypothesis 5c: Income strengthens the effect of quality in terms of animal performance on consumers' preference for a feed.

Hypothesis 5d: Income weakens the effect of price on consumers' preference for a feed.

3.3 Social influence

People can be influenced by others when making choices. In this research different social influences for consumers and organizations will be investigated. For consumers the influence of reference groups like friends and family will be taken into account, whereas for organizations the influence of a supplier is considered. Supplier advice as a social influence on buying behavior will be investigated because farmers have a great need for supplier's advice and expertise (Kool, 1994).

Influence of reference groups

Social influence has shown to play an important role in consumers' decision-making process (Mourali *et al.*, 2005). The consumption of certain foods by consumers can be influenced by reference persons like friends, neighbors and relatives (Welsch and Kühling, 2009). The influence of other people can be an important determinant of consumer choice behavior (Bearden *et al.*, 1989; Mourali *et al.*, 2005). Welsch and Kühling (2009) state that the reference groups can have a significant influence on consumers' consumption and purchase intensity of organic food. They suggest that the influence through reference groups may be mainly due to personal communication, affecting people's behavior. Consumers can decide to imitate their reference group by social comparison. Therefore they evaluate the consumption patterns of the reference group in order to obtain more satisfaction about purchasing outcomes (Janssen and Jager, 2002; Welsch and Kühling, 2009). Pet owners e.g. can choose a certain feed because their friends also feed this feed. Further on reference groups can also serve as a source of information (Bass, 1969). So reference groups can also be considered only as information source, when the consumer does not intend to be social compatible with the reference group in the first place (Welsch and Kühling, 2009). In conclusion reference groups can be considered as an informative and evaluative source (Moschis, 1976). Informational influence is also mentioned as a factor affecting consumer decision processes concerning product choice (Bearden and Etzel, 1982; Park and Lessig, 1977). According to Park and Lessig (1977), informational influence can be related to consumers including competent others in their information search or consumers drawing conclusions from observed behavior of others. So by informational influence as a form of interpersonal influence, consumers tend to accept information provided by others as credible evidence about reality (Bearden *et al.*, 1989; Deutsch and Gerard, 1955; Mourali *et al.*, 2005). Based on the found literature, the following hypothesis is formulated:

Hypothesis 6: Reference groups have an influence on consumers' preference for a feed.

Influence of supplier advice

In organizational buying, supplier advice can be seen as influence of the supplier on the buying behavior in organizations. Advice can be described as a special service including task-interactive and personal-interactive aspects, that requires close relationships between client and supplier (Bennett and Robson, 2004). External business advice provided by suppliers and aimed at meeting business objectives can play an important role as external inputs for firms (Bennett *et al.*, 2001). Suppliers can e.g. support their buyers with information about new technology, products or services and alternative materials at lower costs (Robson and Bennett, 2000). Robson and Bennett (2000) found that partnership with suppliers is positively related with firm performance like turnover growth. Furthermore manufacturing and innovating firms tend to use the firm's supplier as external advisor rather than service and non innovating firms (Robson and Bennett, 1999). Suppliers can be seen as an extension of the social network of friends and relations. The difference is that used advices from friends and relatives rely on social trust whereas considered advices from suppliers depend more on their high levels of technical and tacit knowledge as well as market power. Although also the presence of personal trust has shown to be a strong force for the use of advice from suppliers (Bennett and Robson, 1999). In this case friendships with suppliers can be important because it may increase the buyers trust in the quality of the sold products (Banville and Dornoff 1973). According to Bennett and Robson (1999), suppliers are one of the most important origins for external sources of business advice. When having a long term relationship with the supplier, he may assist with possible problems or help to maintain standards (Bubb and van Rest, 1973). Primo and Amundson (2002) state that suppliers can also be involved in new product development resulting in reduced project times, better product quality and lower costs.

According to Kool (1994), farmers have a great need for supplier's advice and expertise. They are often loyal to vendors, using these contacts for advice and expertise e.g. concerning new technical developments and improvements of available inputs. Because purchasing is not the farmer's only management task, he does not have the time to evaluate all the developments and improvements himself. By simplifying the purchase process and saving time, the farmers can achieve a maximum result in as little time as possible because time spent on purchasing cannot be used for other tasks. Thus the farmer is not specialized in buying tasks, compared to a purchaser of a company who mainly deals with purchasing (Kool, 1994). Farmers with personal relationships with their supplier consider fewer alternatives in their purchase decision (Kool *et al.*, 1997). Further on they can make their buying decision more quickly when they are familiar with the purchased products or the buying situation. The relationship with vendors can be particularly important when purchasing innovative products or products with highly perceived risk. Also less knowledgeable farmers are more likely to trust in the advice of a salesman or supplier (Kool, 1994). Consistent with the suggestions from existing literature, the following hypothesis is proposed:

Hypothesis 7: Supplier advice has an influence on consumers' preference for a feed.

All hypotheses are combined in one conceptual framework (Figure 1) to visualize the relation between the different factors.

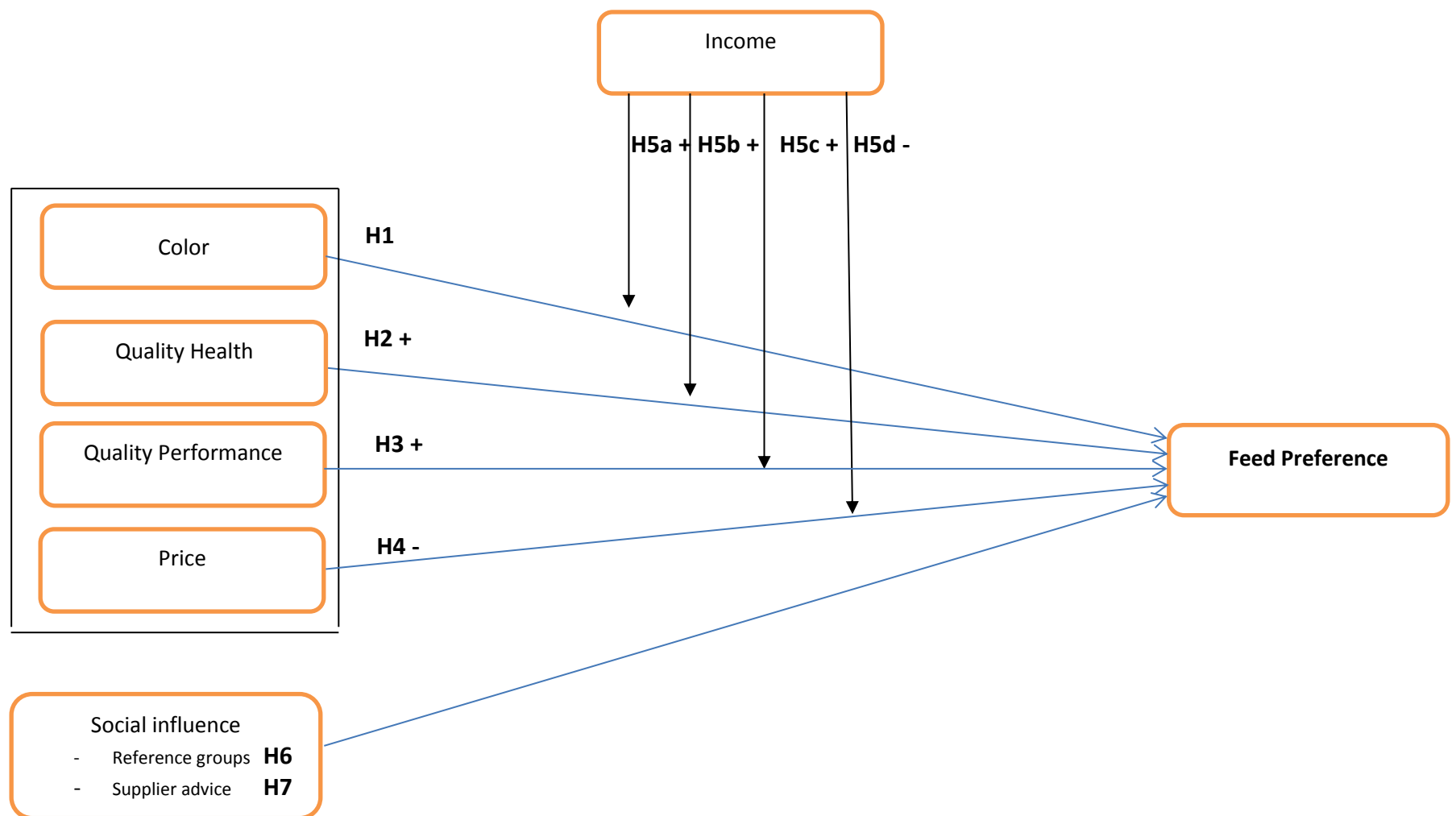


Figure 1: Conceptual framework of factors influencing the feed preference of consumers

In summary the sensory factor 'color', the factor 'quality' in terms of animal health and the social influence factor 'reference groups' are based on choice determinants found in the consumer research about food choice. The factor 'quality' in terms of animal performance and the social influence factor 'supplier advice' was found in research about choices made within organizations or by farmers. The product characteristic 'price' is joined together because it plays a role in consumer as well as in organizational choice research.

4. Methods

In this research a conjoint analysis (CA) was conducted. CA is used to determine the preference of consumers for a certain product made up of different product attributes. In this case the preference of consumers for certain horse muesli was tested. Therefore the utility that consumers attach to individual product characteristics was assessed. The product attributes were defined as a set of specific levels (De Souza Monteiro and Lucas, 2001). The total utility of an individual consumer can be calculated from the 'part-worth' from each of these levels (Ness and Gerhardy, 1994). This can be described as a linear-additive part-worth model (Reinboth, 2006). Thus this utility shows the overall preference or total worth of a certain product (Hair *et al.*, 1992). The total preference can be represented as following (Ness and Gerhardy, 1994):

$$\text{Pref}_{ijklmn} = a_i + b_j + c_k + d_l + e_m + f_n$$

where:

Pref_{ijklmn} = respondents' total preference for a product with combined attribute levels $ijklmn$ from the attributes a, b, c, d, e, f

- a_i = the part-worth or utility of attribute level i from attribute a
- b_j = the part-worth or utility of attribute level j from attribute b
- c_k = the part-worth or utility of attribute level k from attribute c
- d_l = the part-worth or utility of attribute level l from attribute d
- e_m = the part-worth or utility of attribute level m from attribute e
- f_n = the part-worth or utility of attribute level n from attribute f

With this analysis, the preferences of consumers for each level of each attribute can be computed (De Souza Monteiro and Lucas, 2001). Preference can be defined as the result of the utility comparison made by a person, concerning a certain amount of judgment objects (Klein, 2002). The product attributes were the independent variables whereas the respondent's preference for a certain product was the dependent variable.

4.1 Research design

CA is a measurement using survey research. In this research an online survey was implemented. The use of surveys is typical for conjoint analysis and it allows obtaining data for different factors that are tested. Different stages can be distinguished for the design of a CA study (Van der Pol and Ryan, 1996). In the following the different stages will be described.

A CA starts with the establishing of attributes. These attributes result from the literature review in chapter 3 (see Table 1). To base the attributes on evidence found in the literature is an usual method for conjoint analysis (Klein, 2002; Ryan and Farrar, 2000; Ryan and Hughes, 1997). In this research six attributes were considered. This is in accordance with the literature, where Cattin and Wittink (1982) found that the number of attributes varies between 3 and 15, whereas most often 6 or 7 attributes were taken into account.

Next, the different levels of the attributes needed to be identified. Each product concept consisted of one level of each product attribute at a time. The definition of the product attributes and suitable levels belong to the most important aspects of the research design (Hair *et al.*, 1992). The established levels should be logic, realistic and capable of being traded-off (Ryan and Hughes, 1997; Van der Pol and Ryan, 1996). According to Hair *et al.* (1995), it is important to establish attribute levels that are feasible and have a practical relevance to prevent levels that are favorably for the respondent but are not likely to occur in real life. In this research the different price levels were based on findings in the marketplace (De Souza Monteiro and Lucas, 2001), representing a low, medium and high price for a 15 kg horse muesli bag.

The chosen levels for the remaining attributes were assumed to be realistic (Van der Pol and Ryan, 1996) and shown in Table 1. To make the difference in color more clear for the respondents, pictures of different colored mueslis were shown during the questionnaire (Figure 1). Greenish muesli is assumed to contain roughage ingredients like lucerne which stimulates the chewing activity of horses (Deukavallo, 2011). Multicolored muesli often includes carrot or apple pieces making it more colorful which can be attractive to consumers (Masterhorse, 2012). More yellowish muesli can be associated with a feed rich in grains (Epona Horsefeed, 2010). Because quality is a qualitative attribute, the levels could not be chosen as clear as for quantitative variables like price (Van der Pol and Ryan, 1996). The quality levels in this research were based on Van der Pol and Ryan (1996), who used three levels including average and excellent. The meaning of the different quality levels average, excellent, simple and production was discussed with a product manager and was explained in the questionnaire. All attributes and their levels are shown in Table 1. All attribute levels in this research could be specified as 'discrete', meaning that these levels are categorical (Koo *et al.*, 1999).

Table 1. Attributes of horse muesli and the related levels

Attributes	Levels
Color*	Greenish, multicolored, yellowish
Quality health**	average, excellent
Quality performance***	simple, production
Price	11,00 €, 16,00 €, 21,00 €
Reference groups	Friends and family feed it, they do not feed it
Supplier advice	Specific recommended by supplier, not specific recommended

* For the clarification, pictures were shown during the questionnaire (see Figure 1)

** Average: average muesli with good levels vitamin, minerals and trace elements

Excellent: excellent muesli with high levels vitamin, minerals, trace elements and additives for health support

*** Simple: average muesli with a moderate energy and protein content for horse maintenance or light performance

Production: muesli rich in energy (starch, oil) and protein to achieve maximum horse performance (growth, breed or sport)



(Deukavallo, 2011)



(Masterhorse, 2012)



(Epona Horsefeed, 2010)

Figure 1. Greenish, multicolored and yellowish muesli

The next step formed the establishing of scenarios which were presented to the respondents. When taking into account all possible combinations of attributes and levels, 144 ($3 \times 2 \times 2 \times 3 \times 2 \times 2 = 144$) different product concepts would be possible. To reduce this number to a realistic number for the questionnaire, a fractional factorial design was generated within SPSS (Table 2). This design gave a set of a suitable fraction of all possible combinations of the factor or attribute levels. In this case 18 product concepts were developed. This set was an orthogonal array and investigated the main effects for each attribute level (Ness and Gerhardy, 1994). It was also assumed that there were no interactions between levels of one attribute with levels of another attribute (Ryan and Hughes, 1997; Van der Pol and Ryan, 1996). Table 2 also shows four 'Holdouts'. These are concepts that were rated by the respondents but were not included in the conjoint analysis to estimate utilities. With holdouts the validity of the estimated utilities could be checked (Orme, 1998).

Table 2. Fractional factorial design with combinations of the attribute levels forming different product concepts

Card List							
	Card ID	Color muesli	Quality health	Quality performance	Price muesli	Reference groups	Supplier advice
1	1	yellowish	average	simple	21 €	friends and family do not feed it	specific recommended by supplier
2	2	yellowish	average	production	21 €	friends and family feed it	specific recommended by supplier
3	3	greenish	average	production	11 €	friends and family do not feed it	specific recommended by supplier
4	4	greenish	average	production	16 €	friends and family feed it	specific recommended by supplier
5	5	yellowish	average	simple	16 €	friends and family feed it	specific recommended by supplier
6	6	yellowish	average	simple	16 €	friends and family feed it	not specific recommended by supplier
7	7	multicolored	average	production	21 €	friends and family feed it	not specific recommended by supplier
8	8	multicolored	average	simple	11 €	friends and family feed it	specific recommended by supplier
9	9	multicolored	excellent	simple	16 €	friends and family do not feed it	specific recommended by supplier
10	10	greenish	excellent	simple	21 €	friends and family feed it	not specific recommended by supplier
11	11	greenish	average	simple	16 €	friends and family do not feed it	not specific recommended by supplier
12	12	multicolored	average	simple	11 €	friends and family feed it	not specific recommended by supplier
13	13	yellowish	excellent	production	11 €	friends and family do not feed it	not specific recommended by supplier
14	14	greenish	excellent	simple	21 €	friends and family feed it	specific recommended by supplier
15	15	multicolored	excellent	production	16 €	friends and family feed it	specific recommended by supplier
16	16	greenish	average	simple	11 €	friends and family feed it	specific recommended by supplier
17	17	multicolored	average	simple	21 €	friends and family do not feed it	specific recommended by supplier
18	18	yellowish	excellent	simple	11 €	friends and family feed it	specific recommended by supplier
19 ^a	19	yellowish	average	simple	16 €	friends and family do not feed it	specific recommended by supplier
20 ^a	20	multicolored	average	production	11 €	friends and family feed it	specific recommended by supplier
21 ^a	21	greenish	excellent	production	21 €	friends and family feed it	specific recommended by supplier
22 ^a	22	yellowish	average	production	11 €	friends and family do not feed it	not specific recommended by supplier

a. Holdout

4.2 Sample description

The sample used in this research consisted of horse owners from Germany. The survey was published online, so that everybody with access to the internet was able to participate in the study. The only criteria were that the respondents hold at least one horse. Further on the link with the online survey was sent by e-mail to a group of horse owners, who also took part in a previous study. Between 100 and 300 respondents were expected to take part in the survey. This sample size was based on different studies done before (Orme, 2010; Ryan and Hughes, 1997).

4.3 Data collection

The data was collected using an online survey. In the introduction of the survey the respondents were given some information about some attributes and their levels where necessary. Further on the use of the rating scale was explained (Ness and Gerhardy, 1994). The established product concepts that were used in the questionnaire were presented to the respondents by verbal description (Cattin and Wittink, 1982). Also the pictures for the three levels of color and the definitions of the different qualities were shown at every product concept. For the data collection a full profile method was used (Cattin and Wittink, 1982; Ness and Gerhardy, 1994). This method is seen as more realistic because it represents choices consumers also have to make in real life (Cattin and Wittink, 1982). Within this method a rating exercise method was applied, in which the respondents had to rate each fully described product concept on a scale (Van der Pol and Ryan, 1996). Therefore the Single Concept Presentation was conducted, showing one product concept at a time (Orme, 1998; Sawtooth Software, 2002). The rating procedure is a metric technique, commonly used for the measurement of preferences (Klein, 2002). The scale used in this research ranged from one to ten, with one representing the lowest and ten the highest preference for a certain horse muesli (Qualtrics, 2011). Next to obtaining information about the consumers' preferences for a certain horse muesli, also some demographic information about age, sex, German state and income was collected. Further on questions about the number of own horses, their stabling and the feeding of a horse muesli were asked.

4.4 Data analysis

For the analysis of the data, the statistical program IBM® SPSS®Statistics 20 was used. Because a rating scale was implemented, the obtained data was interval-scaled (Wittink *et al.*, 1994). After obtaining the data, the utilities of the attribute levels were calculated. By using the Conjoint procedure via command syntax, part-worths or utility scores for each individual were calculated by means of the Ordinary Least Squares (OLS) analysis or regression (Baltes-Götz, 2006; Klein, 2002). With these part-worths the relative importance of each attribute could be estimated (Koo *et al.*, 1999). Further on a Cluster analysis was performed to establish several consumer groups based on their different attribute level utilities. When adding the part-worths together, the total utility or overall preference for any combination of attribute levels could be computed. From these part-worths, models could be estimated based on individual level rating, being able to predict any product concept preference. Furthermore CA could provide group analysis, resulting in average utilities for each attribute level found in the group of respondents (De Souza Monteiro and Lucas, 2001; Qualtrics, 2011).

To investigate the relationship between income and the earlier mentioned product characteristics (color, quality, price), utility scores for certain groups within the population were calculated. E.g. the utility scores of price were calculated apart for different income groups, in which the income variables were divided into groups like low, middle and high income (Van der Pol and Ryan, 1996).

5. Results

In the following chapter the results of the survey will be presented. First some demographic information about the respondents will be given. Next the outcomes of the conjoint analysis and cluster analysis will be described.

5.1 Demographic information about the respondents

A total of 259 respondents took part in the survey. 95,8 % of the respondents are female and 4,2 % are male. As Figure 2 shows, most of the respondents come from the federal state North Rhine-Westphalia (37,1 %). 16,6 % of the respondents come from Bavaria, followed by 10,4 % of the respondents coming from Lower Saxony and 8,5 % from Baden-Württemberg. In each case five or less respondents originate from the federal states Berlin, Brandenburg, Bremen, Hamburg, Mecklenburg-West Pomerania and Saxony-Anhalt (Figure 2).

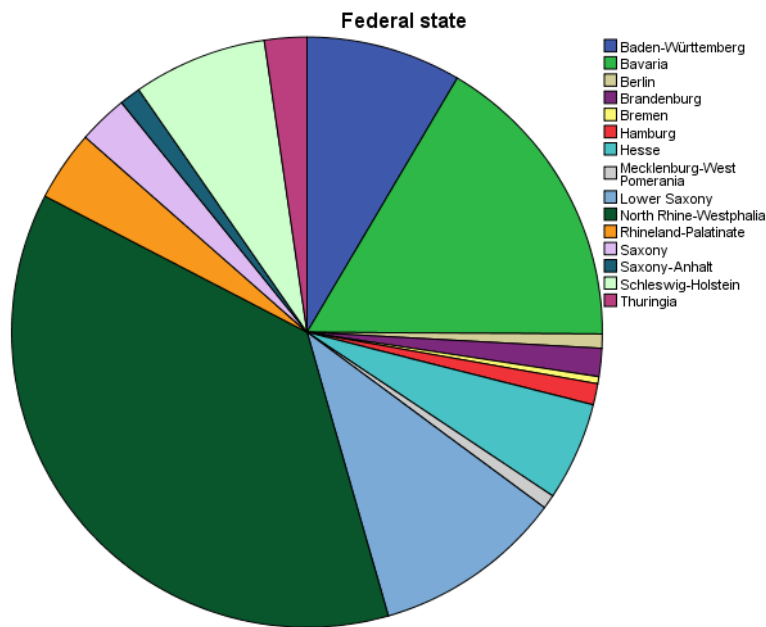


Figure 2. Number of respondents divided into Federal states

Figure 3 illustrates that the majority of the respondents are between 26 and 35 years old (31,7 %). 24,3 % of the respondents are between 18 and 25 years old and 21,6 % of the respondents belong to the age class of 36 to 45 years.

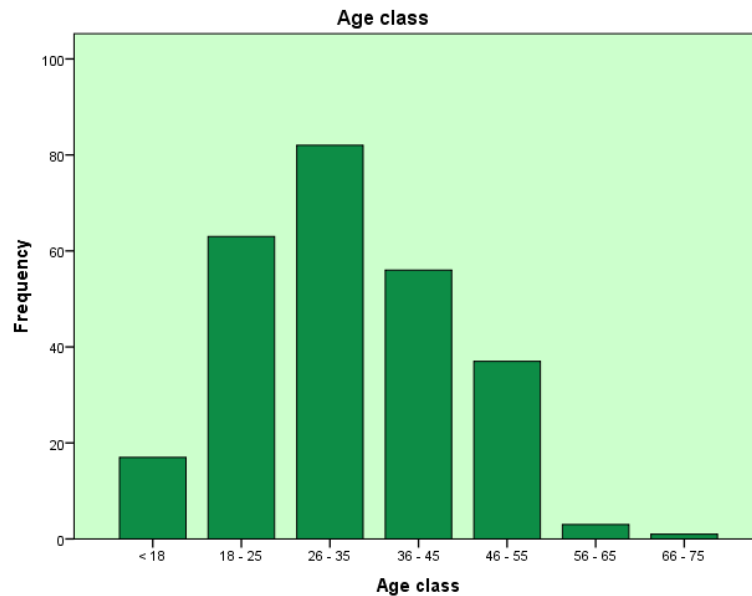


Figure 3. Number of respondents in the different age classes

The monthly gross household income is shown in Figure 4. 37,1 % of the respondents have an income below 1500 euro. The different monthly gross household income groups are joined together to the three income groups low, middle and high, represented in Figure 5. The low income group represents a monthly gross household income of less than 1500 euro. The middle income group is represented by monthly gross household incomes of 1500 to 3000 euro. Finally the high income group consists of monthly gross household incomes of 3001 to more than 3500 euro. Summing up 42,9 % of the respondents belong to the middle income group and 20,1 % to the high income group (Figure 5). These different income groups are used for further analyses later on.

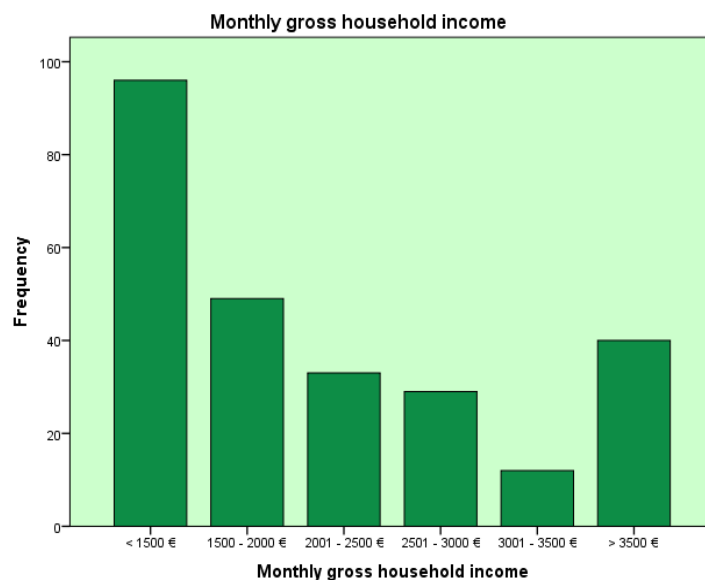


Figure 4. Number of respondents divided into their monthly gross household income

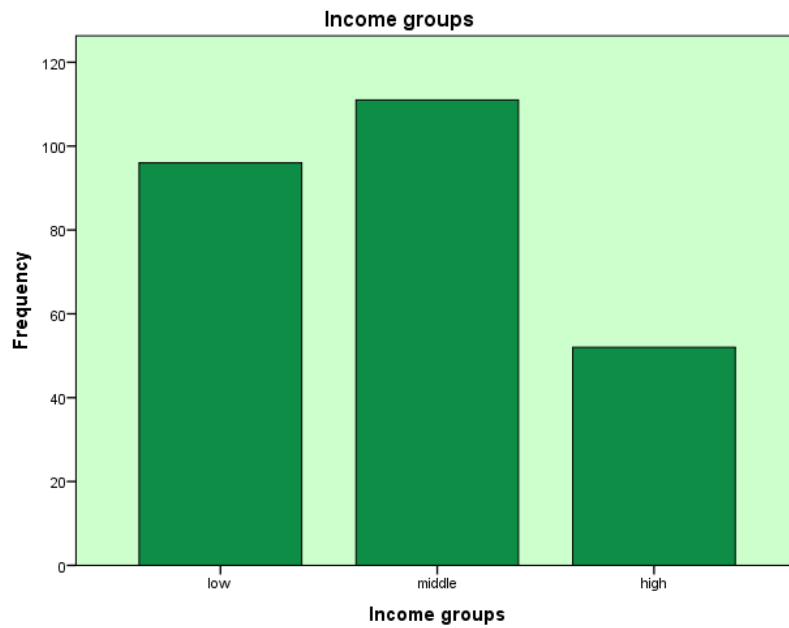


Figure 5. Number of respondents divided into three income groups

Figure 6 indicates the number of horses of the respondents. The major part of the respondents has one own horse (56,4 %). Further on 21,2 % of the respondents own two horses, followed by 10,4 % of the respondents owning three horses. A small number holds more than five horses (Figure 6). As Figure 7 shows, 35,9 % of the respondents stable their horses at a private stable whereas 64,1 % of the respondents stable their horses at pension stables.

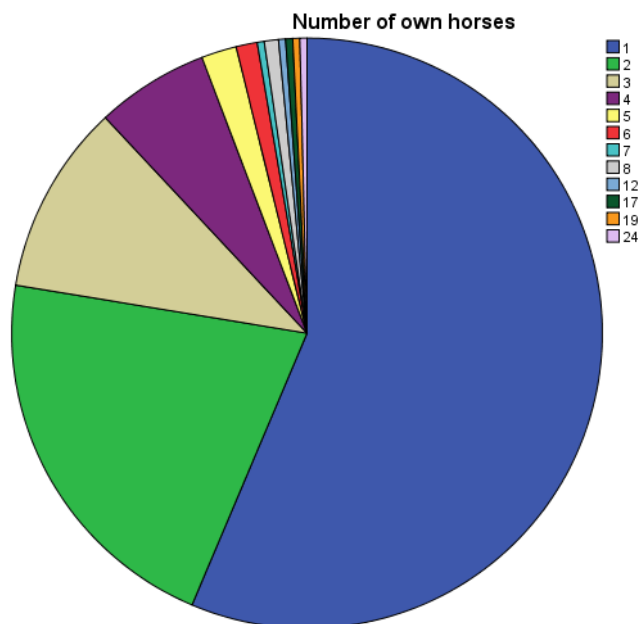


Figure 6. Number of respondents' own horses

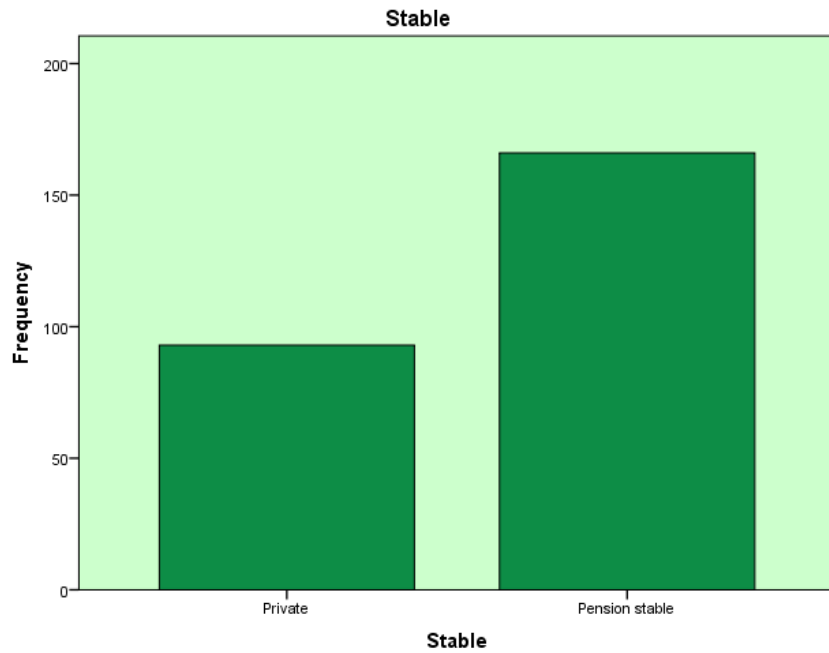


Figure 7. Number of respondents whose horses are stabled at a private or pension stable

The majority of the respondents (49,4 %) always feeds a horse muesli (Figure 8). 5,8 % of the respondents never feed a horse muesli.

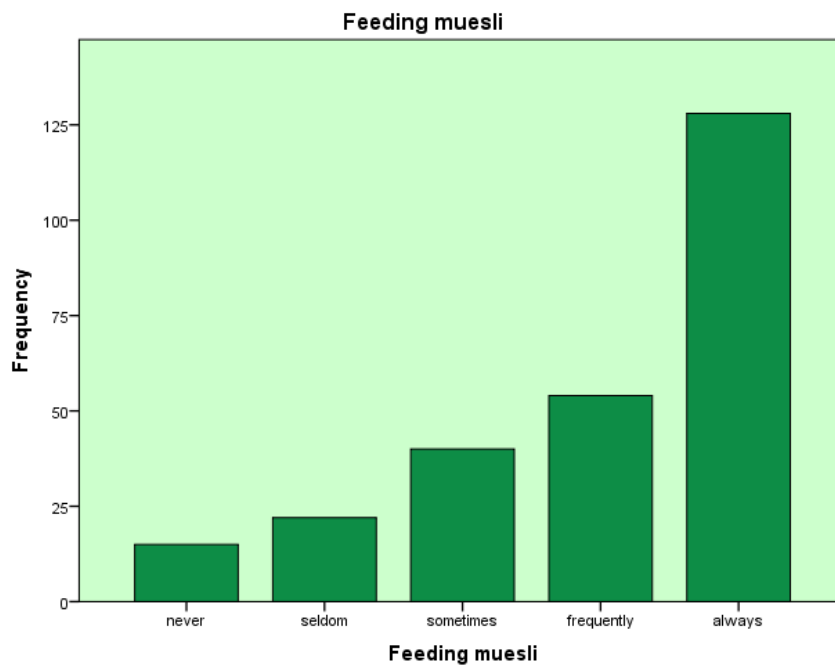


Figure 8. Number of respondents divided into the frequency of feeding a muesli

5.2 Average conjoint analysis results of the different product attributes

For the conjoint analysis the results of nine respondents were not taken into account because they had equal score values for all different product concepts. Table 3 shows the calculated average utility scores for each attribute level found in the group of respondents. A higher utility score indicates a greater preference for that attribute level. A larger negative utility score represents a lower utility. For the attribute 'Price' an inverse relationship between price and utility can be stated meaning that higher prices comply with lower utilities. Furthermore mueslis with a greenish color and an excellent quality in terms of animal health are preferred. The attribute level 'greenish color' has the highest utility (0,486), followed by a price of 11 euro (0,441) and an 'excellent quality' in terms of animal health (0,401). This indicates that these attribute levels are seen as important for the consumers' choice for a certain horse muesli. By adding together the highest utility of each level per attribute, the total utility of the most preferred product concept of a horse muesli can be calculated.

In this case the total utility is calculated as $0,486 + 0,401 + 0,202 + 0,441 + 0,125 + 0,066 = 1,721$. Thus the most preferred concept of a horse muesli consists of a greenish color, an excellent quality in terms of animal health, a simple quality in terms of animal performance, a price of 11 euro, friends and family feeding this muesli and specific recommended by a supplier.

Table 3. Average utility scores and their standard errors for each attribute level found in the group of respondents

Utilities		
	Utility Estimate	Std. Error
Color	greenish	0,486
	multicolored	-0,118
	yellowish	-0,368
QualityH	average	-0,401
	excellent	0,401
QualityP	simple	0,202
	production	-0,202
Price	11 €	0,441
	16 €	0,121
	21 €	-0,562
Reference	friends and family feed it	0,125
	friends and family do not feed it	-0,125
Supplier	specific recommended by supplier	0,066
	not specific recommended by supplier	-0,066
(Constant)		4,685

To investigate the relationship between income and the different product characteristics (color, quality, price), the utility scores for certain groups within the population are calculated using the conjoint analysis with one income level at a time. Table 4 expresses the different average utility scores for the product attribute levels separated by the three income groups low, middle and high income. The middle income group shows the highest preference for a greenish color compared to the other income groups. For the high income group an excellent quality and a price of 11 euro are most important. When comparing the valuation of the price within the different income groups, the high income group values the price as most important, followed by the middle income group.

Table 4. Average utility scores of color, quality and price for the different income groups low, middle and high income

Attribute	Attribute level	Low income	Middle income	High income
Color	greenish	0,521	0,527	0,334
	multicolored	-0,098	-0,185	-0,012
	yellowish	-0,423	-0,342	-0,322
QualityH	average	-0,341	-0,377	-0,563
	excellent	0,341	0,377	0,563
QualityP	simple	0,166	0,296	0,064
	production	-0,166	-0,296	-0,064
Price	11 €	0,369	0,476	0,518
	16 €	0,112	0,107	0,168
	21 €	-0,481	-0,574	-0,686

Further on the relative importance of each attribute, known as importance score, is calculated as an average of all respondents. The outcomes are depicted in Table 5 as well as graphically presented in Figure 9. This is done by dividing the utility range of an attribute by the sum of the utility ranges of all six attributes. The importance scores represent percentages and can be added together to hundred percent. The relative importance of an attribute indicates its importance to overall preference. Attributes with a greater utility range play a greater role than attributes with a small one. Table 5 illustrates that the attribute 'Price' (29,122) has the most influence on overall preference, followed by 'Color' (24,804). Thus there is a big difference in preference between product concepts with the most preferred price and color level and concepts consisting of the least preferred ones. The attribute 'Supplier' (3,824) shows the smallest influence on overall preference.

Table 5. Relative importance of each attribute

Importance Values	
Color	24,804
QualityH	23,274
QualityP	11,724
Price	29,122
Reference	7,251
Supplier	3,824
Averaged Importance Score	

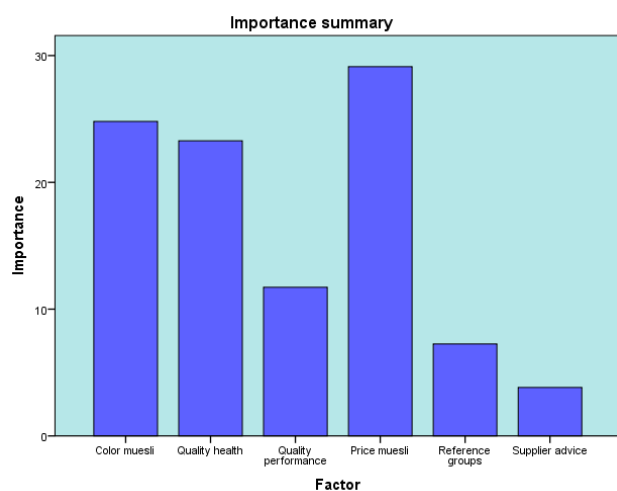


Figure 9. Relative importance of each attribute

With reference to the hypotheses the following can be said about each hypothesis.

Hypothesis 1: The color of feed influences consumers' preference for that feed.

This hypothesis can be seen as corroborated because the attribute 'color' has the second highest importance value contributing to overall preference of a certain horse muesli (Table 5). In detail the color 'greenish' is the most preferred one, shown by the highest positive average utility score of all attribute levels (Table 3).

Hypothesis 2: The quality of feed in terms of animal health has a positive influence on consumers' preference for that feed.

This hypothesis can also be seen as corroborated as the third highest importance value results from the attribute 'quality' in terms of animal health (Table 5). The attribute level 'excellent' appears to be one of the most preferred attribute levels after the levels 'greenish' and '11 €' (Table 3).

Hypothesis 3: The quality of feed in terms of animal performance has a positive influence on consumers' preference for that feed.

The attribute 'quality' in terms of animal performance contributes with about eleven percent to the overall preference for a horse muesli (Table 5). In detail the attribute level 'simple' is moderately preferred shown by its average utility score in Table 3. Therefore the positive influence of this attribute on consumers' preference for a feed is not confirmed because a higher quality does not result in a higher utility score.

Hypothesis 4: The price of feed has a negative influence on consumers' preference for that feed.

The 'price' has the highest importance score of all attributes (Table 5). As Table 3 makes clear, a higher price results in a lower utility score meaning a lower preference for a more expensive product. Thus this hypothesis can be corroborated.

Hypothesis 5a: Income strengthens the effect of color on consumers' preference for a feed.

Hypothesis 5b: Income strengthens the effect of quality in terms of animal health on consumers' preference for a feed.

Hypothesis 5c: Income strengthens the effect of quality in terms of animal performance on consumers' preference for a feed.

Hypothesis 5d: Income weakens the effect of price on consumers' preference for a feed.

That income strengthens the effect of 'color' and 'quality' in terms of animal performance on consumers' preference for a feed cannot be supported by the found results. The average utility scores of a 'greenish' color and a 'simple' quality increase from a low to a middle income but decrease again at a high income (Table 4). For this reason the hypotheses 5a and 5c cannot be corroborated. Hypothesis 5b in contrast can be corroborated because the utility score of the attribute level 'excellent' increases from a low to a high income as seen in Table 4. This means that owners with a high income regard an excellent quality as more important concerning their preference for a feed than owners with a low income do. Hypothesis 5d cannot be corroborated because owners with a high income have the highest positive and negative utility scores for all three price levels (Table 4).

Thus high income people are more concerned about the price of a feed compared to low and middle income groups. In conclusion the results show the opposite of this expected hypothesis.

Hypothesis 6: Reference groups have an influence on consumers' preference for a feed.

Reference groups show a small influence on consumers' preference for a feed illustrated by the second lowest importance value (Table 5). Also the attribute level 'friends and family feed it' results in the lowest positive utility score after the levels 'specific recommended by supplier' and '16 €' (Table 3). Referring to the hypothesis, it still can be corroborated because the reference groups do have an influence on consumers' preference for a feed, even if it is a small one.

Hypothesis 7: Supplier advice has an influence on consumers' preference for a feed.

The attribute 'supplier' has the lowest importance value of all attributes (Table 5). In agreement the attribute levels of 'supplier' show the lowest utility scores for both positive and negative scores. This means that consumers are least influenced by supplier advice concerning their preference for a feed. Despite the very low influence, nonetheless consumers can also be influenced by a supplier advice, meaning that this hypothesis can be supported by the found results.

Table 6 displays the measures of correlations between the observed and estimated preferences. The 'Kendall's tau for Holdouts' shows a significant correlation of 1,0 meaning that the calculated utilities can be considered as valid.

Table 6. Correlations between observed and estimated preferences

Correlations		
	Value	Sig.
Pearson's R	0,987	0,000
Kendall's tau	0,882	0,000
Kendall's tau for Holdouts	1,000	0,021

5.3 Cluster analysis

By using the Conjoint procedure within SPSS, part-worths or utility scores for each individual are calculated. Because it is not useful to present all data of each respondent, a quick-cluster analysis has been done to identify consumer segments from the respondents' utilities. In total four segments or clusters are found, representing the final cluster solution of a total of 250 respondents (Table 7). The first cluster represents most of the respondents (43,6 %). This group of consumers prefers a production (0,63) quality in terms of animal performance. Further also an excellent (0,53) quality in terms of animal health and a greenish (0,24) color is important for the muesli choice of these respondents. For this consumer group a higher product price results in a less preferred product, indicated with the decreasing price utilities (from 0,23 to -0,34). The second cluster contains about 15,2 % of the respondents. These consumers prefer a price of 11 euro (2,11). Further on also an excellent (0,34) quality in terms of animal health and a simple (0,28) quality in terms of animal performance plays a role in their decision. A more expensive product is less preferred (21 euro = -2,41). The third cluster represents 11,6 % of the respondents. These respondents regard a greenish color (2,72) as the most important factor. A simple (0,41) quality in terms of animal performance also plays a role for these consumers. In addition a higher price is preferred by this group of respondents, with a price of 16 euro being the most preferred one (0,13). The last cluster represents 29,6 % of the respondents. The consumers belonging to this cluster prefer a simple (1,31) quality in terms of animal performance. Furthermore an excellent (0,30) quality and friends and family who also feed this muesli (0,24) are seen as important.

Table 7. Final cluster with centered means for each attribute level

Final Cluster Centers				
Attribute levels	Cluster			
	1	2	3	4
greenish	0,24	0,11	2,72	0,17
multicolored	0,02	0,11	-1,06	-0,07
yellowish	-0,26	-0,21	-1,66	-0,10
average	-0,53	-0,34	-0,27	-0,30
excellent	0,53	0,34	0,27	0,30
simple	-0,63	0,28	0,41	1,31
production	0,63	-0,28	-0,41	-1,31
11 €	0,23	2,11	-0,21	0,15
16 €	0,11	0,30	0,13	0,05
21 €	-0,34	-2,41	0,08	-0,20
friends and family feed it	0,03	0,17	0,12	0,24
friends and family do not feed it	-0,03	-0,17	-0,12	-0,24
specific recommended by supplier	0,06	0,24	-0,15	0,07
not specific recommended by supplier	-0,06	-0,24	0,15	-0,07
Number of cases	109	38	29	74

Table 8 shows the general statistics for the four clusters. These results confirm partly the findings obtained by the conjoint analysis. The attribute levels for ‘Color’ and ‘Price’ belong to the most essential ones in cluster formation. Further on in this analysis of variance also the attribute levels for quality in terms of animal performance are found to be important.

Table 8. Results of the analysis of variance

ANOVA						
Attribute levels	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
greenish	54,754	3	0,521	246	105,173	0,000
multicolored	9,873	3	0,472	246	20,911	0,000
yellowish	18,733	3	0,407	246	46,041	0,000
average	1,026	3	0,382	246	2,685	0,047
excellent	1,026	3	0,382	246	2,685	0,047
simple	55,616	3	0,722	246	77,034	0,000
production	55,616	3	0,722	246	77,034	0,000
11 €	43,151	3	0,380	246	113,536	0,000
16 €	0,530	3	0,307	246	1,726	0,162
21 €	52,175	3	0,466	246	112,068	0,000
friends and family feed it	0,640	3	0,191	246	3,356	0,020
friends and family do not feed it	0,640	3	0,191	246	3,356	0,020
specific recommended by supplier	0,855	3	0,195	246	4,377	0,005
not specific recommended by supplier	0,855	3	0,195	246	4,377	0,005

As presented above, information about amongst others the respondents’ age, federal state, income, number of own horses and place of stabling as well as the frequency of feeding a horse muesli was gathered. This information makes it possible to describe the respondents of the different clusters in more detail. The following figures show the distribution of respondents’ characteristics within the four clusters.

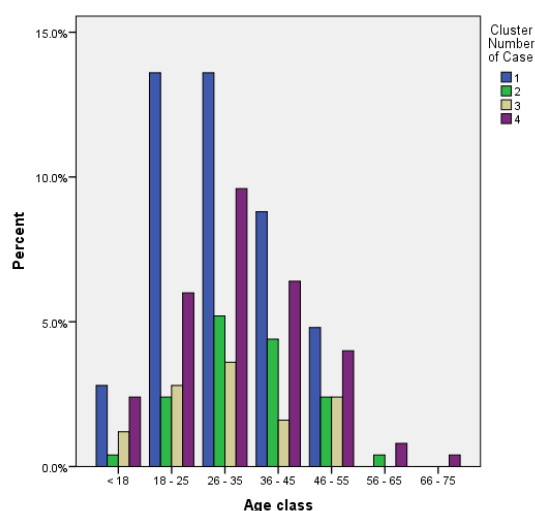


Figure 10. Different age classes within the clusters

As Figure 10 presents, most of the respondents in the first and third cluster are between 18 and 35 years old. In the second and fourth cluster, the respondents are mainly between 26 and 45 years old. The oldest respondents (56 up to 75 years old) can be found in cluster two and four.

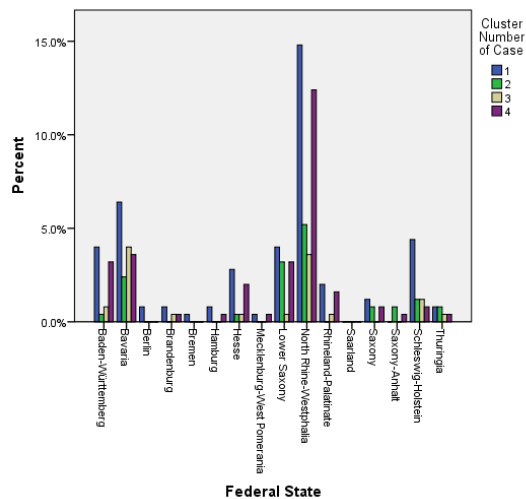


Figure 11. Different federal states within the clusters

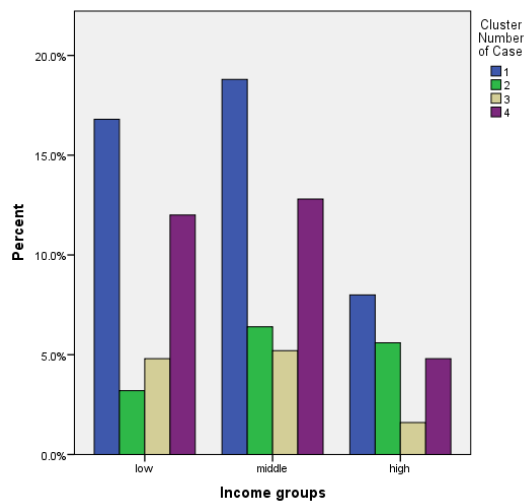


Figure 12. Different income groups within the clusters

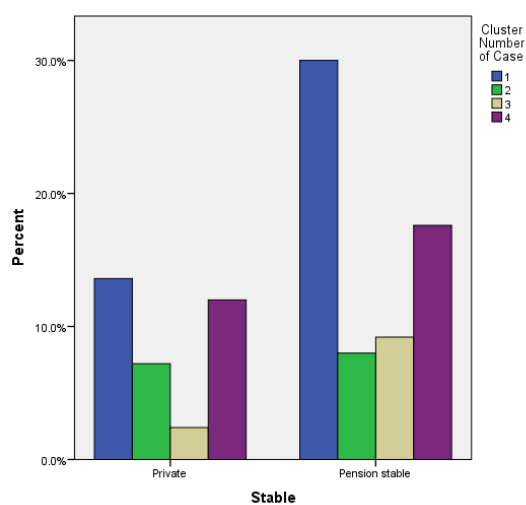
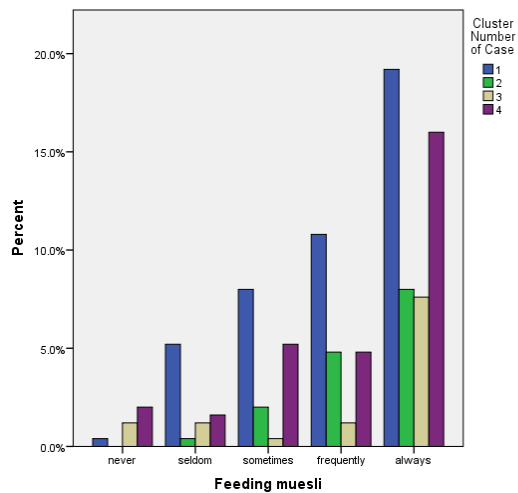


Figure 13. Stabling of horses within the clusters

The majority of the respondents in cluster one and four come from the federal state North Rhine-Westphalia (Figure 11). Respondents from the second cluster also largely come from this federal state, followed by 'Lower Saxony'. The third cluster mainly comprises people from Bavaria and also North Rhine-Westphalia.

Figure 12 shows that the majority of respondents from all four clusters belongs to the middle income group. This group is followed by the low income group except for the second cluster. In this cluster the fewest people have a low income.

In average respondents from the first, third and fourth cluster had two horses. People from the second cluster kept in average three horses. As presented in Figure 13 respondents from all clusters stable their horse(s) mainly in a pension stable. The biggest difference between the number of horses stabled private or at a pension stable can be found in the first and third cluster.



The majority of the respondents from the first and fourth cluster are always feeding a horse muesli (Figure 14). Also respondents from the second and third cluster are mainly always feeding a muesli. All horse owners from the second cluster feed at least seldom a muesli.

Figure 14. Frequency of feeding a muesli within the clusters

Summing up the respondents from the different clusters show similar characteristics. They differ most in their preferences for the separate attribute levels as shown in Table 7.

6. Discussion & Conclusion

The aim of this study, to investigate whether the feed choice of pet owners can be compared to the choices of consumers supplying their families or to professionals when dealing with the choice of feed for their animal, led to the following main research question:

Which determinants of consumers' food choice and/or professionals' feed choice determine pet owners' feed choice?

To be able to answer the main question, several sub questions were established:

1. What are the different determinants playing a role in consumer food choice?
2. What are the different determinants playing a role in professional feed choice?
3. What is the influence of the determinants of consumer food choice on pet owners' feed choice?
4. What is the influence of the determinants of professional feed choice on pet owners' feed choice?

It was possible to answer the first and second question by the literature review in chapter 3. Altogether six determinants that were relevant to this research were found from literature about consumer food choice and professional feed choice. The determinants 'color', 'quality' in terms of animal health and 'reference groups' belong to the determinants found in the literature about consumer food choice. 'Quality' in terms of animal performance and 'supplier advice' are determinants based on the literature about professional feed choice. The determinant 'price' was found in both branches of choice research. On the basis of the results in chapter 5, also question 3 and 4 can be answered. The determinant 'price' had the greatest influence on owners' feed choice. This was shown by the highest importance value of 'price' meaning that this determinant was the most important one contributing to overall preference for a certain feed. Further on the determinants 'color' and 'quality' in terms of animal health showed the second and third highest importance value as well as high average utility scores for a 'greenish' color and an 'excellent' quality. Thus these determinants were also taken into account when making a choice for a certain horse feed. The determinants 'quality' in terms of animal performance and 'reference groups' had less influence on pet owners' feed choice than the already mentioned ones. This was made clear by the lower importance values and utility scores. The least influencing determinant turned out to be the professional feed choice determinant 'supplier advice'. This determinant showed the lowest importance value and utility score of all determinants.

The theoretical contribution to the existing literature was to find out whether pet owners behave similar to consumers supplying their families or to farmers making more rational choices concerning the feed choice for their animals. Up to now the existing literature about this issue had been incomplete but this study combined different determinants of both branches, consumer food choice and professional feed choice, that had a main influence on pet owners' feed choice. Therefore a new conceptual framework has been established, covering the gaps in existing literature.

By testing the conceptual framework, the aim of this study has been achieved. Summing up it can be said that the feed choice of pet owners mainly can be compared to consumers supplying their families. This is based on the fact that the determinants 'color' and 'quality' in terms of animal health with the highest influence on pet owners' feed preference, as the results have shown, are derived from the determinants of consumers food choice. However it should be beard in mind that this study only investigated the feed preferences of leisure horse riders. Because also professionals are concerned about the health of their animals, another study investigating feed preferences of professionals should be done in order to verify conclusions drawn from this study. Further on the determinant 'price' that belongs to both branches is the only one concerning the determinants of professional feed choice, that has one of the greatest influences on pet owners' feed preference. When comparing the social influence determinants 'reference groups' and 'supplier advice', the reference groups that are also part of the consumer food choice determinants, have a higher influence on pet owners' feed preference. In another study of Frank *et al.* (2001) about consumer preferences for color, price and vitamin C content of bell peppers, color was also found to be the most important factor influencing consumer preferences. In their study the color green resulted in the highest utility score and importance value compared to the other attributes 'price' and 'vitamin C content' (Frank *et al.*, 2001). De Souza Monteiro and Lucas (2001) investigated the preferences for traditional cheeses in Lisbon. They also found that the attribute 'price' was one of the most important ones influencing consumer preferences (De Souza Monteiro and Lucas, 2001). In a study about restaurant attributes the food quality emerged as the most important factor influencing consumers in their preference for a certain restaurant. The price of the food also played a role for consumer preference (Koo *et al.*, 1999).

Furthermore the conceptual framework shows a positive influence on feed preference for the determinants 'quality' in terms of animal health and performance and a negative one for the determinant 'price'. As the average utility scores in the results of chapter 5 show, the positive influence of 'quality' in terms of animal health on feed preference was confirmed. In this case the better quality 'excellent' had a higher utility score than the lower quality 'average'. Also the negative influence of 'price' was approved, in which a higher price resulted in a lower utility score representing a lower preference for a more expensive feed. This relationship was also identified in other studies in which the 'price' of cheeses, bell peppers or restaurant food also showed a negative influence on consumer preference (De Souza Monteiro and Lucas, 2001; Frank *et al.*, 2001; Koo *et al.*, 1999). The positive influence of 'quality' in terms of animal performance on feed preference was not confirmed by the results. The higher quality 'production' showed a lower utility score than the quality 'simple' meaning that in this case a lower quality in terms of animal performance is preferred. An explanation for this can be that as previous studies showed, most of the horse owners in Germany are leisure horse riders (Anders, 2012; Kittner, 2012). Therefore their horses do not need feeds as defined in the 'production' quality as they do not have to perform like professional sport horses do.

The outcome of this study can be useful to feed manufacturers in order to handle the factors by which (potential) customers are influenced when making choices for a certain feed for their pet. As mentioned above the results of this study made clear which factors have the greatest influence on pet owners' feed choice. However these results present an overview about the preferences of pet owners altogether. In order to define more specific marketing strategies, additionally four different clusters of respondents were established as presented in chapter 5. Thus each of the different segments can be approached by a different marketing strategy (De Souza Monteiro and Lucas, 2001). These clusters consist of different characteristics that distinguish one cluster from another.

The first cluster does not show an obvious high utility score for a certain attribute level as the other clusters do. The respondents from the first cluster mainly prefer a high quality in terms of animal health as well as performance. This means that feed manufacturers should lay the emphasis of their marketing message for a high quality product especially on this high quality. By convincing these horse owners that this feed is the most appropriate one for the health and performance of their horse, they probably will be willing to buy this feed. The second group of horse owners has a clear preference for a cheap feed. The color of the feed is not that important to these consumers, they are more concerned about a high quality in terms of animal health and also the advice from a supplier is preferred. Thus feed manufacturers could discuss with their dealers that they emphasize a low price in their shops or recommend certain products to customers. Further on the recommendation by a supplier could be mentioned as one of the marketing slogans. Horse owners from the third cluster show an obvious preference for a greenish color. This means that the color of the feed either should be mentioned e.g. on the package or a picture of the greenish color should be shown. In addition some information about the meaning of a greenish color can be given. For example that a greenish feed contains roughage ingredients like lucerne that stimulates the chewing activity of horses (Deukavallo, 2011). By such a slogan this group of horse owners can be convinced to buy a greenish feed. The last group of consumers has a clear preference for a simple quality in terms of animal performance. As mentioned earlier, this group probably consists of leisure horse riders and does not need a feed for a high performing animal. Furthermore also an excellent quality in terms of animal health and a feed that is also fed by friends and family is preferred. For the feed manufacturers this means that they should lay the emphasis on leisure horse riders concerning the marketing strategy. It could also be possible to mention how many horse riders already are feeding this feed and are satisfied with it because consumers from this cluster are also influenced in their feed preference by other people feeding the feed.

In general it can be said that producers who offer their consumers products with a high level of satisfaction can generate an advantage in the market (Frank *et al.*, 2001). This study appointed by means of conjoint analysis several product characteristics resulting in high consumer preferences. When implementing divers marketing strategies for the different consumer segments, it should be possible to satisfy the needs of consumers and thereby achieving higher profits.

In this study a rather simple model with a total of six different factors was tested. In reality there can be many other factors which also can have an influence on consumers' feed preference. From comments of the respondents who took part in the survey some additional factors emerged which they regard as important for their feed decision. Some people prefer information about the different raw materials like oats, corn, carrots etc. used for a feed. Also the quality of the vitamins and minerals as well as their composition like synthetic or not can be interesting. Further on the smell or structure of a feed can also play a role for feed preference. Concerning the social influence, some respondents mentioned their veterinarian or coach as influencing persons. Finally also the circumstances in which horses are kept like their ability of grazing or not could be considered. Thus the present study can be seen as a first approach of the characterization of some factors influencing consumers' feed choice. In further research the current model should be expanded to other and some more factors that can play a role in consumers' feed choice to provide more data concerning the current theories.

Furthermore future research needs to be done in order to test the applicability of the current results to the feed choice for other pets than horses. When e.g. cats or dogs are taken into account, the results probably will be different because these animals are carnivores and not used in sports like horses so that their performance is also different. Therefore it is possible that other attributes like a red color representing a feed containing meat, will have to be investigated, dependent on the type of animal. An attribute like the quality in terms of animal health is likely to be also important for feed choices made for other pets. Because also pet owners want to feed good quality feed to keep their animals healthy and reduce the risk of illnesses (Zentek, 2004). Finally it can be useful, when doing further research about feed preferences, to take some more demographic information and characteristics of the respondents into account in order to create additionally detailed customer profiles based on the different segments or clusters found. Thereby marketeers will be able to handle and reach (potential) customers in a more appropriate and efficient manner.

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