The role of a service in consumer perceived value of a product focused offering

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The role of a service in consumer perceived value of a product focused offering

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Abstract

This Master thesis researches consumer perceived value and in particular the added value of a service. A choice based conjoint experiment is used to assess the preferences towards product focused offerings of potential customers of Vogel's Products B.V. This is done by proposing different profiles to the participants of the study and letting them choose which of these profiles they prefer. Each profile consists of a bundle of attributes that were carefully selected on the bases of an internal research within Vogel's product's B.V. The choices the participants make reveal indirectly in which attributes they perceive the most value. The results of this study show which attributes add the most value to the consumer and show which attributes Vogel's products B.V. should emphasize in their current products and include in their future products. It also shows which types of value play a role in a product focused research setting.

Preface

The thesis that is in front of you is the written result and final step of my graduation project for the study of Innovation Management. The graduation project was done at supervision of the Innovation, Technology, Entrepreneurship and Marketing (ITEM) department of the Industrial Engineering department at Eindhoven University of Technology. And it was executed at the Marketing department of Vogel's products B.V.

During this project, I was able to put the theoretical knowledge I acquired during my master program into practice. It gave me the opportunity to apply several different theories and models in real life and gave me a better understanding about the pitfalls one encounters when doing actual research.

This report is the result of hard work, determination and persistence. However, it was not possible to finish my study without the help of others. Therefore, I would like to take the opportunity to thank some influential persons who have supported me during this project.
First, I would like to thank all colleagues that worked with me at Vogel's, thank you all for providing me a warm and pleasant work environment and helping me acquiring all the data and information I needed to successfully finish my research. In particular, I would like to thank my company supervisor Ronald Boele for giving me helpful insights at several stages of the research and always giving me the opportunity to ask for advice.

In addition, I would like to express my gratitude to my university supervisors Joost Wouters and Jeroen Schepers and professor Chris Snijders. Joost gave me guidance and support and made sure the process went into the right direction, while Jeroen gave me some helpfull critique on the modelling part of this research at several stages. Chris provided me with insights in the conjoint analysis method and provided me with the necessary software.

Finally, I would like to especially thank my family, my girlfriend and my friends for showing interest in, and supporting me with my project. In particular I would like to thank Niek Bilterijst for his help with my conjoint analysis and Jeroen Derks and Twan Haazen for making time to brainstorm about several problems I encountered.

Luuk Verbakel

Executive summary

The purpose of this research is to get a better understanding of the consumer perceived value concept and in particular the added value of a service. Even though the perceived value concept is researched extensively, there is much disagreement in the field about how it should be conceptualized and which factors to include. Vogel's product B.V., the company that this research is executed at has problems that can be traced back to the value consumers perceive in their product offerings. The combination of the problems that Vogel's product's B.V encounters and the gaps in current consumer perceived value literature led to the following research questions:

- How should "consumer perceived value" be conceptualized in a product service setting based on current literature?
- Which attributes add value to Vogel's products and should therefore be taken into consideration in this research?
- Is this literary based conceptualization of consumer perceived value applicable in a low involvement product focused setting?
- Should the segmentation of Vogel's be changed according to the importance of different product attributes and if so, how?

The first step towards solving these research questions was performing a literature review on the topic of consumer perceived value. From this literature review could be concluded that consumer perceived value consists of 6 types of value; functional, hedonic and other oriented value that consider the product and functional, hedonic and other oriented value that consider the service. Also, the purchase situation seemed to have a considerable influence on perceived value and should therefore always be incorporated in the models. The conceptualization is shown figure E1 below:

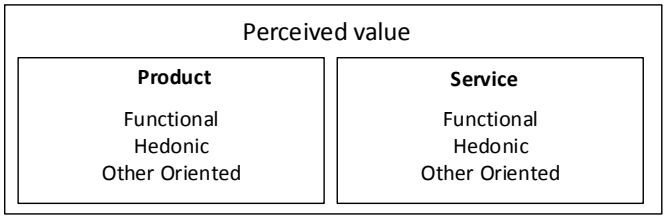

Figure E1: Conceptualization of consumer perceived value

The second step was designing the experimental design, for the experimental design of this research Vogel's products B.V. most profitable products were used.

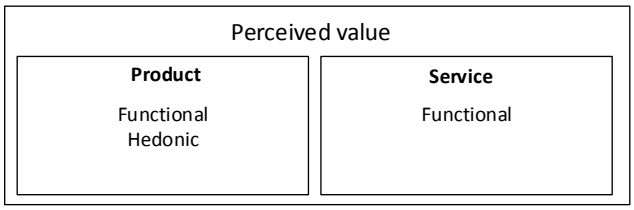

Figure E2: Adapted conceptualization of consumer perceived value

Because Vogel's products B.V. operates in a low involvement product focused setting, the model that is empirically tested is an adapted version of the conceptual model and only consists of 3 types of value: functional, hedonic and service value. The adapted conceptualization is shown in figure E2.

The method used in the experimental design is a conjoint analysis based on the 10 most important attributes of Vogel's products B.V. products. These attributes were determined by an internal research and their place in the model was based on the literature and validated by several Master students. Table E1 below shows these attributes and the type of value the are assigned to:

Table E1: Conceptualization of consumer perceived value

Attribute	Type
Tilt ability	**Functional**
Design	**Hedonic**
Guarantee	**Service**
Closeness to the wall	**Hedonic**
Cable management	**Hedonic**
Levelness	**Functional**
Ease of installation	**Functional**
Turn ability	**Functional**
Installation service	**Service**

The results of the conjoint analysis show that attributes from all three types of value add value for the consumer and therefore shows that the models in current literature are incomplete and should incorporate service value. The results also show that there is a significant influence of the purchase situation on the perception of value.

For Vogel's this research made clear which attributes are important and which attributes they should focus on in their current products and included in future products. Figure E3 below shows the importance of their attributes and the difference between them in pre and post-purchase situation. The results of the conjoint analysis also showed that the segmentation strategy they use now is the best option.

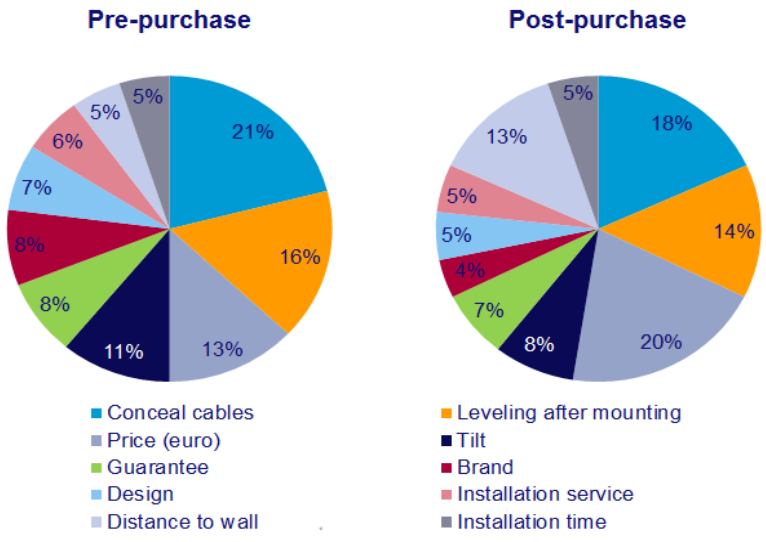

Figure E3: difference between pre and post purchase value perceived by the consumer

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1 Introduction:

1.1 Theoretical background

In today's times of economic recession, competition becomes fiercer and more and more companies struggle to survive. Vogel's products B.V., the company at which this Master thesis project is executed, is also experiencing the negative effects of the economic recession. One of the options to face the economic recession is to analyze the overall process of selling, distributing, and producing, and see where improvements can be made and competitive advantage can be gained. The consumer perceived value construct has been identified as one of the most important measures for gaining a competitive advantage, this because it is being perceived as the basis for all marketing activities (Dumitrela, 2013). Marketing managers are encouraged to adopt strategies related to the consumer perceived value to promote and improve long term success (Gale, 1994; Hamel and Prahalad, 1994; Woodruff, 1997; Flint et al., 2002).

The variety of research on consumer perceived value is very extensive. Because the consumer perceived value construct is complex in nature, researchers tend not to agree with each other over the conceptualization and the factors that influence this concept (Dumitrela, 2013). This difference in definitions leads to a large variety of different conceptual models and frameworks and is responsible for disagreement within the field. This disagreement causes the field to become more and more scattered and the empirical testing of the proposed conceptual models is limited because the variety of models is so large. One of the consequences of this is that a company that wants to adopt strategies related to consumer perceived value, like Vogel's products B.V., it is unable to do so. This because they do not know which conceptualization or model they should use. That is why one of the goals of this thesis is finding similarities in current literature and group and combine different aspects of current models to one univocal model for consumer perceived value.

All models present in current literature are either product oriented and conceptualize the consumer perceived value of a product, or service oriented and conceptualize the consumer perceived value of a service. Models that consider ***both*** the service aspects and the product aspects of an offering are not present in current literature. Because management literature is almost unanimous in suggesting that product manufacturers should integrate services into their core product offerings (e.g. Bowen et al., 1991; Gadiesh and Gilbert, 1998; Quinn et al., 1990; Wise and Baumgartner, 1999), a model that considers both the service and the product aspects of value is needed. Vogel's products B.V. offerings are composed of a physical product with integrated services, therefore determining how to conceptualize such a combined service product offering and the factors that can influence this conceptualization are valuable for Vogel's as well.

To summarize, the theoretical problem addressed in this study is the fact that there does not exist one univocal conceptualization of consumer perceived value that can be applied to product service offerings. This thesis aims at solving this problem by building and empirically testing a literature based conceptual framework for consumer perceived value consisting of several different types of value.

1.2 Business context

As mentioned in the introduction this research is performed as part of a research internship at Vogel's products B.V. hereafter referred to as Vogel's. Vogel's is a company that creates smart ideas in the video/audio mounts and supports business. They provide solutions for mounting flat screen TVs, tablets, sound equipment, video equipment and projectors and strive to improve customer's audio, visual and multimedia experiences. Their offerings consist of both product and service aspects which make them a perfect fit for this research. Since the founding in 1973, Vogel's has grown to become the European market leader in mounts and support systems for audio/video equipment. Their products are distributed by more than 70 distributors in over 80 different countries. Beside their Headquarter in Eindhoven they have offices in Putten, Barcelona, Hong Kong and Nanjing. Vogel's provides both professional and consumer's solutions which are sold by more than 15.000 retailers all over the world. The market Vogel's operates in is a low involvement product focussed market.

1.3 Problem statement

To shed some light on the problems that Vogel's currently deals with, a few meetings were planned with the product marketing manager Ronald Boele. Ronald Boele explained that Vogel's targets different segments of the market; they sell consumer products in different price ranges and also professional solutions. Even though the product line of Vogel's is very broad, approximately 80% of the revenues come from a small section of the product line. This section consists of the WALL series (mid-range consumer products) and the THIN series (premium consumer products). This is also where the problem lies: even though these products create the most revenues, the selling price and product configuration is not yet optimized. (Product configuration is defined as the different attributes of which a product exists**.** Vogel's has several attributes on which they focus, and there are several attributes Vogel's is going to focus on in the future. For Vogel's it would be necessary to find out if the consumer also sees considerable value in the attributes on which they focus and which they are going to focus in the future. So the problem statement can be defined as follows:

Vogel's does not know exactly which attributes add the most value to their products from a consumer perspective.

So what Vogel's needs is a model that can predict which attributes add value to their products from the perspective of the consumer. This will make them able to create more desirable product configurations within the wall mount category and will therefore result in more desirable products, more effective pricing and eventually to higher profits.

1.4 Assignment

This research focuses on creating the above mentioned predictive model so Vogel's knows:

- Which attributes add value from a consumer perspective.
- Which attributes to include in future products

When we look at the Vogel's product lines, their current categorization is mainly done on the basis of the motion attribute and it consists of 3 categories: FLAT, TILT and TURN. These three attributes are

considered the most important attributes of a wall mount. The specific properties of the products and the specific product line (66-107cm) that are used for this research are explained in Appendix 1. Logically not only the different motions (FLAT, TILT, TURN) play a role in the value perceived in a wall mount, there are several other attributes that are of importance as well. Examples could be for instance; color, design, guarantee and weight support. To find out which attributes could add value to a wall mount, preliminary research is needed.

In short, this research should focus on the importance of various attributes of the products in the category 66-107 cm, with the functional attributes FLAT, TILT and TURN. Preliminary research should be done on all possible attributes that could influence the value of the products perceived by the consumer. Based on the problem statement, the gaps in current consumer perceived value literature and the assignment, 4 research questions are proposed.

- **RQ1:** How should "consumer perceived value" be conceptualized in a product service setting based on current literature?
- **RQ2:** Which attributes add value to Vogel's products and should therefore be taken into consideration in this research?
- **RQ3:** Is this literary based conceptualization of consumer perceived value applicable in a low involvement product focused setting?

For Vogel's, another thing that could be important is the segmentation of the market, it is not a main goal but knowing how the market could be segmented could give them valuable insights as well. When researching the influence of the different attributes the segmentation is kept in mind. That's why the fourth research question is stated as follows:

- **RQ4** Should the segmentation of Vogel's be changed according to the importance of different product attributes and if so, how?

1.5 Research design

The first research question is answered by performing a literature review on the topic of "consumer perceived value". Doing this created insights on which different types of value exists and what variables should be taken into account when dealing with consumer perceived value.

The second research question is answered by conducting internal research within Vogel's. This internal research shows which product attributes of the wall mounts are important according to Vogel's. The internal research is done in twofold; the first step is conducting an interview with the head of product management. This interview gives a general idea about the company's view on the importance of different attributes. The second step is using the insights of this interview to create a short survey which is then sent to personnel of several different departments of the company. The survey consists of questions concerning which attributes employees think are important for the consumer and how important they think these attributes are. The results of this interview shows which attributes Vogel's employees consider being important for the consumer. The attributes that are included in the survey are determined on the basis of the results of the interview and the survey.

How these attributes fit into the conceptual model is explained by the literature and validated by several Master students.

The third research question is answered by empirically testing the literature based conceptual model in a low involvement product focused setting. This is done by creating a conjoint analysis based on the attributes determined in the previous section. A conjoint analysis is a suitable method for understanding customer's preferences and it will be able to show which attributes add the value to the products of Vogel's.

The fourth research question is answered by performing several segmentation techniques on the results of the conjoint analysis. The methodology used to answer all the research questions is explained separately for each research question in the according chapters.

1.6 Deliverables

This research has both a practical and theoretical contribution. The practical contribution lies in the fact that Vogel's finds out which product attributes are most important for their customer and this can help them with the configuration and pricing of future and current products. It also shows if, and on what basis segmentation exists amongst their target market and therefore shows if their current segmentation strategy is best suited for their market or not. The theoretical contribution lies in the conceptualization of consumer perceived value and testing of this conceptualization in a low involvement product focused setting. The model combines research of consumer perceived value targeted at products and consumer perceived value targeted at services, and uses and groups aspects of a considerable amount of existing models to create one univocal consumer perceived value model. It also assesses the importance of purchase situation when researching consumer perceived value.

1.7 Thesis outline

This thesis starts with a literature review on consumer perceived value. In this chapter, chapter 2, the first research question is addressed by defining consumer perceived value, showing which different literature streams exist and building a conceptual model based on this. The chapter concludes with the proposition of a conceptual model that is adapted to fit the setting that Vogel's operates in. In chapter 3, the experimental design is addressed; all the choices concerning the conjoint analysis and the design of the survey are elaborated in this chapter and research question 2 is answered. In chapter 4 the data are assessed and the different analyses that are conducted on the data are explained. Chapter 5 explains the results of conjoint analysis and answers research question 3 and 4. The final chapter discusses the answers to all four research questions and discussed the academic en managerial implications and limitations and implications for future research.

2 Literature review

This chapter describes the literature review findings on the concept of consumer perceived value. It starts with a general introduction about the concept and explains how the literature review is executed. The following section provides a definition of consumer perceived value and explains the two major research streams present in current literature. The final section summarizes the findings and answers the first research question by building a concept model. The final section concludes with an adapted conceptual model that is applicable the low involvement product focused setting that Vogel's operates in.

2.1 Introduction

Organizations are increasingly recognizing that Perceived value is a key factor in strategic management (Mizik and Jacobson, 2003; Spiteri and Dion, 2004). The marketing Science Institute (2006-2008) has included the definition of perceived value in its list of research priorities for 2006-2008 (Sánchez-Fernández and Iniesta-Bonillo, 2007). Creating customer value is essential for building and sustaining competitive advantage (Wang et al. 2004), and marketing managers are encouraged to adopt perceived value related strategies because they enhance the long term success (Gale, 1994; Hamal and Prahalad, 1994; Woodruff, 1997; Flint et al., 2002). Khalifa (2004) shows that loyalty and profits are strongly linked to the created value for customers and Parasuraman and Grewal (2000) argue that perceived value is the most important indicator of repurchase intentions. This literature review therefore focuses on the perceived value concept.

2.2 Method

To find as much relevant information as possible, Meta studies and literature reviews on consumer perceived value were considered first. The digital search engine of the Eindhoven University of Technology (Focus) and several other search engines (ABI/inform, Jstor and Google scolar) were used to find Meta studies and literature reviews on the subject of perceived value. Two studies were chosen as a starting point; Sánchez-Fernández & Iniesta-Bonillo (2007) and Dumitrela (2013). The choice of the studies was based on their publishing date and published magazine rating. These Meta studies were studied intensively and the most important models, conceptualizations and remarks considered in these studies were noted. Also the difference in general structure of the Meta studies was researched and was used to determine the general outline of the literature study. The previously noted models and conceptualizations were searched and the articles explaining these models (including their references) were studied as well. This created a general understanding of the chronological order, most important contributions and conceptual differences in the perceived value research stream. When all the relevant models were found, general patterns, differences and similarities between models were assessed and a univocal model was created.

2.3 Defining Perceived value

Even though the importance of perceived value is widely acknowledged, an unequivocal definition is not yet agreed upon. According to Khalifa (2004) the concept of value is actually one of the most overused and misused concepts in the social sciences. The main explanation for this is that the perceived value concept is a complex (Lapierre, 2000), multi-faceted (Babin et al. 1994), dynamic (Parasuraman and Grewal, 2000) and subjective (Zeithaml, 1988) concept that has varying meanings

depending on the context (Dumitrela, 2013). Researchers have defined perceived value in a various ways. And even though the exact definition of perceived value is differently stated by a variety of researchers, (see Appendix 2 for an overview of various different definitions) most researchers do agree that perceived value is a trade-off between what a customer gets (e.g. benefits, utilities) and what a customer needs to give up to (e.g. sacrifices, price).

2.4 The two major research streams

Sánchez-Fernández and Iniesta-Bonillo (2007) did a systematic review of the literature on perceived value. They showed that there are two major research streams; the multi-dimensional stream and the uni-dimensional stream

2.4.1 Multi-dimensional stream

The multi-dimensional research stream considers perceived value to be a complex multi-dimensional construct consisting of various interrelated sub-dimensions (e.g. Babin et al., 1994; Holbrook, 1994, 1999; Huber et al., 2000; Mattsson, 1991; Sheth et al., 1991a; Sweeney and Soutar, 2001; Williams and Soutar, 2000). This multidimensional stream is less extensively researched but, as opposed to the uni-dimensional stream, does capture the complex and multi-dimensional nature of the perceived value construct (Sánchez-Fernández and Iniesta-Bonillo, 2007). The variety of conceptualizations is large and every conceptualization uses different "types of value". Most types of value however can be categorized in a way that they all fit several "more general" types of value. most multidimensional models for instance, are models originated from the distinction between functional and hedonic value (e.g. Mattsson ,1991; de Ruyter et al 1997, 1998; Lemmink et al. (1998); Mathwick et al., 2001; Sweeney and Soutar, 2001).

Functional value is defined as "The ability of a product or service to fulfil its functional, utilitarian or physical purposes" Sheth et al. (1991a, 1991b). Functional value is used in most of the multi-dimensional studies but named differently, utilitarian value (Lee and Overby 2004; Holbrook and Hirschman 1982; Babin et al. 1994), practical value (Hartman, 1967, 1973) and quality (Holbrook 1994, 1996, 1999) are concepts which carry a different name but are in essence the same as functional value.

Hedonic value is reflecting entertainment, pleasure and emotional worth and is of a non-instrumental, experiential and affective nature (Sánchez-Fernández and Iniesta-Bonillo, 2007). Again this concept is used in several different studies but named differently; experiential value (Lee and Overby 2004; Kantamneni and Coulson 1996) and emotional value (Mattsson 1991; Sheth et al. 1991a, 1991b) are two examples.

Aside from the distinction between the hedonic and functional types of value, a third type of value can be identified in various models as well. Holbrook's (1996) definition; "other-oriented value" is used as a definition for this value and is defined as value that looks beyond the value it has for the person using, buying or experiencing it, it looks at the aspects of consumption that affects others, how others react to it, or the effect it has on them (Holbrook 1996). It includes, social value (Sheth et al., 1991a, 1991b; Sweeney and Soutar, 2001), reputation (Petrick, 2002) and esteem, status and ethics (Holbrook 1996).

So a general pattern in most multi-dimensional models exists that can be summarized by three types of value: “functional value”, “hedonic value” and “other oriented value”. These three types of value are considered to be the fundament of almost every consumer perceived value model in the multidimensional stream and therefore functions as the basis of the model proposed in this thesis.

Aside from the three fundamental types of value, another important aspect was learned from the multi-dimensional stream. Parasuraman (1997) made an important distinction between the different purchase situations. He showed that the perceived value in a post-purchase situation could be significantly different from the perceived value in a pre-purchase situation. Finally the Multi-dimensional stream showed that culture can influence the perceived value as well (Overby et al., 2004). Both these aspects are considered in this research.

2.4.2 Uni-dimensional stream

The uni-dimensional research stream is less complex compared to the multi-dimensional stream and is based on the in section 2.2 mentioned definition “perceived value is a trade-off between relevant benefits and sacrifices”. It defines perceived value as a uni-dimensional construct that can be measured by a self-reported set of items that evaluates the perception of value (e.g. Agarwal and Teas, 2002; Brady and Robertson, 1999; Chang and Wildt, 1994; Dodds, 1991; Hartline and Jones, 1996; Kerin et al., 1992; Sweeney et al., 1999). This stream represents mainly the earlier studies about the perceived value concept and is based on the understanding that value might be produced by the effect of multiple antecedents but cannot be an aggregate concept formed of several components. In this uni-dimensional stream, perceived value is considered a utilitarian concept where the consumer weighs benefits, e.g. economic, social and relational, against sacrifices, like time, price, effort, risks and opportunities (Grewal et al., 1998a; Cronin et al., 2000). Cognitive and economic reasoning are used to assess these benefits and sacrifices and the concept is therefore very subjective and personal (Parasuraman et al., 1985).

The uni-dimensional stream made clear that several variables can influence the perceived value. Examples are; culture, brand image, store image and purchase situation. For this research the last one is most important. This because this variable was also found to be important in the multi-dimensional stream. The uni-dimensional stream therefore confirms the suggestion of the importance of pre- and post-purchase distinction (Spreng et al., 1993). It is therefore strongly suggested that this variable is taken into account in the conceptualization of consumer perceived value.

2.5 Consumer perceived value of services vs. products

Research of both streams is either done in a service context (Danaher and Mattsson, 1994; Andreassen and Lindestad, de Ruyter et al, 1997; Blackwell et al., 1999; Lemmink et al., 1998; Cronin et al., 2000; Caruana et al., 2000; Williams and Soutar, 2000; Petrick, 2002; Scridon, 2013) or in a product context (Dodds and Monroe, 1985; Rao and Monroe, 1988; Dodds, 1991; Spreng et al., 1993; Li et al., 1994; Wood and Scheer, 1996; Kantamneni and Coulsen; 1996; Woodruff and Gardial, 1996; Woodruff, 1997; Parasuraman, 1997; Haar et al., 2001; Agarwal and Teas, 2001; Sweeney and Soutar, 2001; Chen and Dubinsky, 2002; Oh, 2003; Wang et al. 2004; Overby et al., 2004). The research in both separate contexts is extensive and a wide variety of models and conceptualizations are proposed. However, research in a setting where added value is created by integrating a service into a product offering does not yet exist. This is peculiar giving the fact that this is a very important area of research, management literature is almost unanimous in suggesting that product manufacturers should integrate services into their core product offerings (e.g. Bowen et al., 1991; Gadiesh and Gilbert, 1998; Quinn et al., 1990; Wise and Baumgartner, 1999). So a conceptualization of the value of a service integrated into a product offering would fit perfect in this train of thought. From this observation can be concluded that another type of value should be included for an offering that consists of both a product and a service(s), namely: service value. As mentioned before the value of a solely service offering is researched quite extensively. And that research was part of the fundament on which the three types of value were based. Research therefore shows that the value of a service offering can be divided into the same three types of value mentioned in the previous section: functional value, hedonic value and other oriented value. This gives the conceptualization of consumer perceived value shown in figure 2.1 below. The definitions of “functional”, “hedonic” and “other oriented” value were already applicable to both a service and a product context so their definition will be the same when they are used for a service. Services are defined in this research, In line with Solomon et al. (1985), as activities and processes rather than objects.

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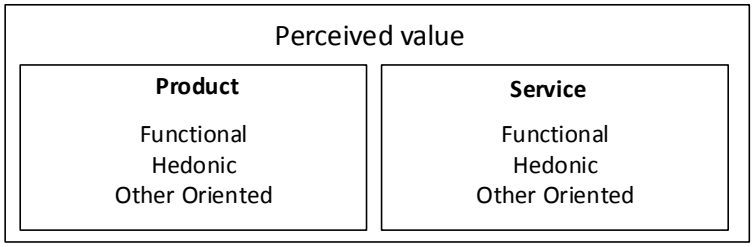

Figure 2.1: Conceptualization of consumer perceived value

Functional value is defined as “The ability of a product or service to fulfil its functional, utilitarian or physical purposes” (Sheth et al., 1991a, 1991b). As mentioned before this concept is used in most of the multi-dimensional studies but named differently, utilitarian value (Lee and Overby 2004; Holbrook and Hirschman 1982; Babin et al. 1994), practical value (Hartman, 1967, 1973) and quality (Holbrook 1996, 1999) are concepts which carry a different name but are in essence the same as functional value.

Hedonic value is reflecting entertainment, pleasure and emotional worth and is of a non-instrumental, experiential and affective nature (Sánchez-Fernández and Iniesta-Bonillo, 2007). Again

as mentioned before this concept is used in several different studies but named differently; experiential value (Lee and Overby 2004; Kantamneni and Coulson 1996) and emotional value (Mattsson 1991; Sheth et al. 1991a, 1991b) are two examples.

Other-oriented value is defined as value that looks beyond the value it has for the person using, buying or experiencing it, it looks at the aspects of consumption that affects others, how others react to it, or the effect it has on them (Holbrook 1996).

2.6 Conclusions from the literature

From the literature a few things can be concluded, first, even though the exact definition of perceived value is differently stated by a variety of researchers, most researchers do agree that perceived value is a trade-off between what a customer gets (e.g. benefits, utilities) and what a customer needs to give up to (e.g. sacrifices, price). Second, it shows that research can be divided into two major research streams, the simpler uni-dimensional stream and the more complex multi-dimensional stream which captures the complex and multi-dimensional nature of consumer perceived value better.

Research in the multi-dimensional stream teaches us that hedonic, functional and other oriented value are the three most prominent types of value returning in almost all consumer perceived value models. It also shows that cultural difference can influence this value and it shows the importance of the distinction between pre-and post-purchase situations. Research in the uni-dimensional stream confirms that the value someone sees in a product can drastically change once the product has been used. The literature study also shows that both research streams operate in either a service or a product setting. And the author of this thesis suggests that when a product-service setting is researched, both product and service value should considered.

This section answered the first research question: *How should "consumer perceived value" be conceptualized in a product service setting?* It shows that consumer perceived value can be conceptualized as a combination of 6 different types of value: "Functional value", "Hedonic value" and "Other oriented value" of the product, and "Functional value", "Hedonic value" and "Other oriented value" of the service.

2.7 Conceptual model

As mentioned before Vogel's operates in a low involvement product focused market. Offerings in a market such as this one are bought as an add-on to other higher involvement products and therefore typically characterize as self-oriented products. This is the reason why this research does not address the other oriented value aspect of consumer perceived value. Vogel's considers themselves a premium brand and cares extra about their consumer's needs, this is why they offer a variety of services to their end users such as instructional videos, lifetime guarantee, and in the future, installation service. This makes their offerings fall in the category of product-service offerings. The services are however merely add-ons and the product is the core offering.

The services that they offer are rather general and only have a functional character; this is why service value only consists of functional service value and is referred to as just service value hereafter.

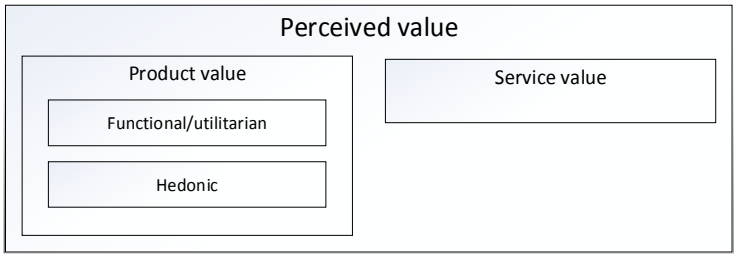

Figure 2.2: Conceptualization of consumer perceived value applicable in a low involvement product focused market

The conceptualization of consumer perceived value tested in this research therefore consist of three different types of value: functional value, hedonic value and service value. To make it clearer, the conceptualization is pictured in figure 2.2.

Also, because several authors argue that there is a considerable difference in perceived value between pre- and post-purchase situation, the purchase situation is taken into account as well.

3 Experimental Design

3.1 Introduction

In this chapter is explained how the consumer perceived value model proposed in chapter two is empirically tested and it forms the basis for the answers to research questions two, three and four. For this research a conjoint analysis is used, the first section of this chapter explains the basic principle of this method and shows why it is suited for this research. The following chapters explain all the choices that are made concerning the design of the conjoint analysis. The final section of this chapter shows the choices that are made concerning the actual survey design and shows how the conjoint analysis questions fit into this design.

3.1.1 The conjoint analysis

Conjoint analysis is, by far, the most used marketing research method for analysing consumer trade-offs. Surveys conducted by Wittink and Cattin (1989) and Wittink, Vriens, and Burhenne (1994) attest to its worldwide popularity (Green et al. 1994). One of the reasons for this is that conjoint analysis deals with a central management question; why do people choose a brand, product or supplier over another. It approaches the answer to this question in terms of the specific options or levels of the attributes that affect preferences among alternative products. As a result, it can tell us how important each product attribute is to the consumer, and what the perceived value is for the consumer when particular product attributes are added or improvements are made. The extent to which consumers are willing to trade off among different attributes is quantified (Wyner 1992).

Basic principle:

Conjoint analysis is one of many techniques for handling situations in which a decision maker has to deal with options that simultaneously vary across two or more attributes. The problem the decision maker faces is how to trade off the possibility that option X is better than option Y on attribute A while Y is better than X on attribute B, and various extensions of these conflicts. A simplified version of a conjoint question is shown in figure 3.1 below

If you were shopping for a credit card, and these were your only options, which would you choose?			
VISA $40 annual fee 10% interest rate $2,000 credit limit	Mastercard $20 annual fee 18% interest rate $5,000 credit limit	Discover No annual fee 14% interest rate $1,000 credit limit	NONE: I would defer my purchase

Figure 3.1: Example conjoint analysis question (Orme, 2009).

3.1.2 Why a Conjoint analysis?

Since its introduction, conjoint methods have been applied in a large number of marketing research projects. Based on a customer survey conducted in 2004 by Sawtooth Software, the leading company in conjoint Software, between 5,000 and 8,000 conjoint analysis projects were conducted by their customers during 2003 (Gustafsson et al., 2007). The validation of the conjoint analysis method can be measured not only by the companies that use conjoint methods for decision-making, but also by the 989,000 hits on *www.google.com* (Gustafsson et al., 2007). The method has been applied

successfully for tackling several marketing decisions such as optimal design of new products, target market selection and pricing a new product. (Vithala R. Rao 2014). And According to Hair et al. (2006), the conjoint analysis is a proper multivariate technique for understanding a customer's preferences and for examining how to segment a market. Because understanding consumer's preferences in terms of the attributes they value in products is one of the main aspects of this research and market segmentation is also one of the points of interest, the conjoint analysis method seems appropriate for this research. Both points of interest are being explained in a little more detail in the next paragraph.

Understanding consumers' preferences

In a conjoint analysis, attributes can be isolated and the change in value of the overall product/service can be monitored as the levels of the attribute change. For instance; the analysis of a functional attribute could show to what extended small changes in this attribute result in a higher perceived value for the consumer. Because all attribute levels are translated into a common value scale, differences between levels or options on one attribute can be equated with differences on another. This comparative analysis illuminates the trade-offs consumers are willing to make (Wyner 1992). It would illuminate the fact that an option with one certain positive attribute that has a high perceived value could "make up" for other lower valued unattractive attributes that are also part of this option. Consumers for instance, might perceive more value in a product that has a nice design but is functionally not that great compared to a product that is functionally perfect but looks unattractive. This would then indicate that the perceived value of the hedonic aspect "design" would be higher than that of the functional attribute.

Segmenting the market

A variety of segmenting options become available when results of a conjoint analysis are being analyzed. Consumers can be segmented on the basis of their utility values or attribute importance scores. This "benefit segmentation" method relies on measures of appeal for discretely defined product attributes (Wyner 1992). Segmentation analyses that group people according to their most preferred product among the ones available can be conducted. Repeated simulations in which the product configuration is modified can be thought of as redefining the segments.

Finally, the interaction effect of a brand on the other attributes is also one of the key points of this research (RQ2). And a conjoint analysis is a suitable method for analyzing these interaction effects (Haaijer 1999).

3.2 Designing the Conjoint analysis:

There are various different decisions one must make when designing a conjoint analysis. The rest of this chapter is devoted to explaining how to design a conjoint analysis suitable for this setting. To explain this, a simplified version of the stepwise model of Hair et al. (2006) is used. The model is depicted in figure 3.2.

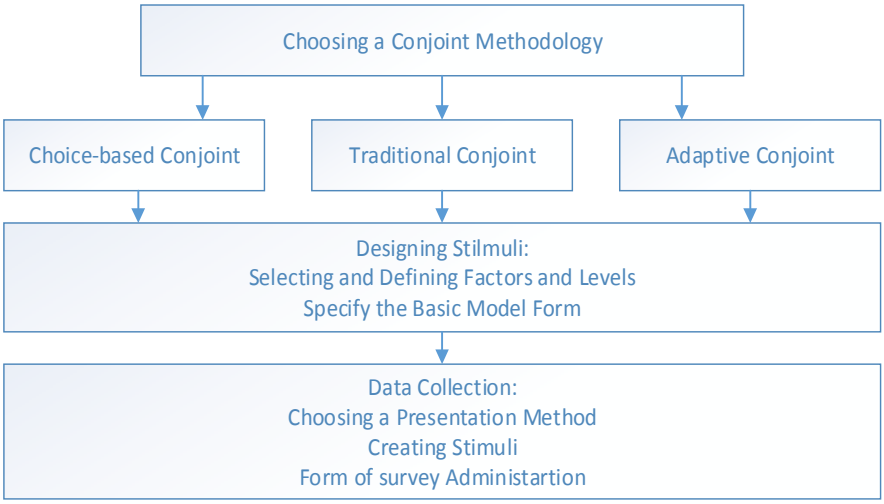

Figure 3.2: simplified model for designing a conjoint analysis (Hair et al., 2006).

3.2.1 Choosing the methodology

There are three basic choices in methodology; traditional conjoint analysis (TCA), choice-based conjoint analysis (CBC) and adaptive choice conjoint analysis (ACA). Appendix 3 explains these three types in more detail. Because price is one of the aspects Vogel's is interested in, and the ACA method cannot accurately estimate price, the ACA is not appropriate for this research. Aside from the pricing aspect, mimicking a real world competitive setting is a key aspect of this study. The CBC method mimics a real world competitive setting best and is therefore the most suitable choice.

3.2.2 Individual or aggregate

The second choice is choosing an individual level analysis or an aggregate level analysis. If an individual level analysis is chosen, a separate model for predicting the preference structure of each respondent is generated. Predictive accuracy is calculated for each person rather than only for the total sample, but the results can be aggregated to create an overall model as well (Hair et al. 2007). At an individual level each respondent must rate enough profiles to be able to perform the analysis for each person separately. And even a simple evaluation this requires a substantial amount of choices.

If the aggregate level analysis is chosen, an estimate of a group of individuals representing a market segment or an entire market is made. Aggregate level analysis provides some advantages compared to the individual level. First, it is a means of substantially reducing the data collection needed and therefore the number of choice tasks the respondent has to make is considerably lower. Second, interactions between attributes can easily be estimated. And third, greater statistical efficiency is gained by using more observations in the estimation process (Hair et al. 2007). For this research the

aggregate level is chosen. There are two reasons why this choice is made. First, there is no interest in the specific preference structure of each respondent. This because Vogel's is interested in the perceived value of their complete target market and previous research of Vogel's has determined that no separate segments exist in this target market. Second, because the number of attributes is quite extensive, the number of choice tasks would be too much for a respondent to fill in properly.

3.2.3 Designing profiles: defining the attributes

The basis of each conjoint analysis is formed by the attributes that are included. The attributes are the building blocks of the profiles a respondent has to choose from. The attributes that are included in this study are determined by conducting an internal research. This section explains how this internal research was conducted and which attributes were eventually chosen. This section consists of three sub-sections; the first section elaborates the results of an exploratory interview that was done with the head of product management. The second section explains how the results of the interview are used to do a survey amongst Vogel's employees. And the last part explains the attributes that are chosen to be included in the eventual conjoint analysis and how they fit in the theoretical model.

Exploratory interview with Vogel's head of product management

To get insights in the attributes that are important to the consumer according to Vogel's, several actions were taken. First, to get a general idea of the company's view, an interview with Ronald Boele, head of product management of Vogel's was conducted. The head of product management was chosen because he is more distant from the individual products and therefore has a better overview of what generally is perceived to be important over the whole product line. Also he has more knowledge about the company's strategy's and why they would focus more on certain attributes compared to others. Because Vogel's is a company with a horizontal organization structure that has relatively few levels of middle management, the head product manager was easy to reach which make communication much more fluent and effective.

Ronald Boele explained that there are several product aspects on which Vogel's spends special attention in general, these product aspects are considered to be more important to the consumer and considerable more time effort and resources are spend on these aspects. Table 3.1 shows these important product aspects. In Appendix 4, a more detailed description of the interview is presented.

Table 3.1: Important attributes according to Vogel's

Attribute	Focus
Levelness	Always has been a focus on this aspect
Sturdiness and stability	Always has been a focus on this aspect
Closeness to the wall	Always has been a focus on this aspect
Vogel's brand name	Focus always been on this aspect but is recently strengthened.
Design of the wall mount	Focus on this aspect is recent
The color of the design mount	Focus on this aspect is recent
Lifetime guarantee	Focus on this aspect is recent

Survey amongst Vogel's employees

The attributes showed in table 3.1 were used to design a short survey that could assess how employees of various departments think about the importance of different attributes. This would give a more reliable picture of Vogel's view than only the interview with the head of product management. In Appendix 5, the method, target group and design of this survey are shown, table 3.2 shows the results.

Table 3.2: Average rating of the 9 most important attributes by Vogel's personnel

Attribute	Average Importance
Levelness	4,5
Sturdiness and stability	4,5
Cable management	3,9
Ease of installation	3,8
Closeness to the wall	3,6
Lifetime guarantee	3,5
Design	3,3
Color	2,9
Brand name	2,5

Chosen attributes

The preliminary research shows that 9 different aspects are deemed to be important. When the two main functional attributes tilt and turn are included, the total becomes 11 attributes. Aside from these 11 attributes, Vogel's wanted to include two more variables in the conjoint analysis; price and installation service. Price, because this would give them the ability to quantify the outcomes in terms of monetary value and installation service because this in one of the services they are considering to offer in the future. With these two the total number of attributes would go up to 13.

Unfortunately, the University licence of the software that was used for this research only allowed 10 different attributes to be researched. This is why some choices had to be made regarding the attributes. Hair et al. (2006) suggest that attributes such as quality or convenience should be avoided because they are hard to specify or quantify, therefore the quality attribute (sturdiness and stability) is dropped. When the results of the survey are considered, it shows that brand and colour are thought to have the least value for the customer. Because brand is a key point of focus in Vogel's future strategy, it needs to be in the conjoint analysis. For this reason, colour, as the second least important attribute is being dropped as well.

The 11 attributes that are left each have different reasons to be of importance for this research, either from an academic point of view or from a practical point of view. To keep all 11 attributes in this research but still satisfy the 10 attribute maximum, the conjoint analysis is split in two separate parts. One conjoint analysis is created for wall mounts that have the ability to turn, and a second conjoint analysis is created for wall mount that don't have the ability to turn. The first one is here after referred to as the FLAT conjoint analysis, and the second is referred to as the TURN conjoint analysis. The maximum number of attributes is one of several reasons for this separation; the other reasons are explained in method section. Table 3.3 shows the attributes of both the FLAT and TURN conjoint analysis.

Table 3.3: Attributes that are included in both surveys

TURN	FLAT
Tilt ability	Tilt ability
Design	Design
Guarantee	Guarantee
Closeness to the wall	Closeness to the wall
Cable management	Cable management
Levelness	Levelness
Brand name	Brand name
Ease of installation	Ease of installation
Price	Price
Installation service	Installation service

With this, the second research question: *Which attributes add value to Vogel's products and should therefore be taken into consideration in this research?* is answered.

Assigning of the attributes

To be able to connect the attributes deemed important by Vogel's to the conceptual model proposed in section 2.7, all attributes should be assigning to one of the three types of value (hedonic, functional or service). Assigning which attribute belongs to which type of value is done by the author of this paper on the bases of the definitions of the three types of value according to the literature. This approach is then validated by several Innovation management students of the Eindhoven University of Technology with an average agreement of 89%. For a detailed description about the way the attributes are assigning, see Appendix 6.

3.2.4 Designing profiles: attributes and their levels

Communicable & actionable

An important issue when designing the experimental profiles is making sure the attributes and levels can easily be communicated for a realistic evaluation. Traditional methods like pencil and paper limit the type of attributes that can be included and can result in respondent's uncertainty about the nature of the attributes being used and thus result in a wrong indication of their preference structure (Hair et al. 2006). Because Vogel's products are all relatively simple and almost all attributes that are being researched are already present in existing products, graphical representations are used as much as possible. Images are used to make the attributes clear to the respondents.
The second important issue when designing the profiles is making sure the attributess and levels are actionable. Conjoint analysis is based on respondents' trade-off between attributes, therefore respondents should be clear on how one attribute compares to another. As mentioned before, hard to specify or quantify attributes such as "overall quality" should be avoided. Likewise, levels should not be specified in imprecise terms, such as low, moderate, or high (Hair et al. 2006).

Most of the attributes in this study can easily be communicated; however ***design*** and ***ease of installation*** are more difficult. There is no measurable scale for either and a asking it as contradiction causes problems. For design for instance the contradiction "attractive/beautiful design" and

“unattractive design” is not accurate because the standard wall mounts are not necessarily unattractive. This contradiction would therefore give a false bias toward an attractive/beautiful design. Hair et al, (2006) suggests solving problems like these by showing a picture of the design, however, because beauty is subjective, one respondent might find the product attractive, while the other would find it unattractive. Therefore, this would give insight in which specific design people generally think is attractive but not if they perceive design in general as an important attribute. This problem was solved by using the following levels: level 1: “A design that fits the interior” and level 2 “a standard neutral design”. With these levels, both above mentioned problems are solved. The “ease of installation” attribute cannot properly be defined in terms of “easiness” but can be quantified using instalment or installation time. The levels “15 minute installation time” and “45 minutes installation time” are used for this attribute. Both values are determined on the bases of the current installation times of Vogel’s products.

Attribute Levels

When determining the number of levels, the most important thing to keep in mind is that the more levels are used, the more profiles are needed. Hair et al. (2006) uses equation 1.1 to determine the minimal number of profiles in a conjoint analysis.

Eq 1.1: Minimum nr. of profiles = Total nr. of levels across all attributes - Number of attributes + 1

Because the number of attributes is already fixed (10) the number of levels is the most important variable determinant of the size for the conjoint analysis. The number of levels per attribute is also an important parameter; the estimated relative importance of a attribute tends to increase with the number of levels, even if the end points stay the same. This phenomenon is known as the “"number of levels effect”; '' the refined categorization calls attention to the attribute and causes consumers to focus on that attribute more than on others (Hair et al. 2006). For this reason all attributes besides price have an equal number of levels. The reason “price” has more levels than the other attributes is explained more in section 4.2.5.

Price levels

As mentioned before, this research is split in two separate conjoint analyses (FLAT and TURN). One of the reasons was because the number of attributes was limited to 10 by the software licence. The second reason is that the levels of the price attribute had a range that was too wide. The retail prices for a turn able wall mount lie between approximately 150 and 200 euros depending on the additional attributes. The retail prices for a non-turn able wall mount lie between approximately 20-60 euros. If both product categories were to be captured in one conjoint analysis the difference in price range would severely distort the results. This is why it was chosen to create two separate conjoint analyses with each their own price levels. The exact levels of price where chosen around the retail prices of the current products. Hair et al. (2006) suggests using prices both below and above the price that is expected one would pay. Also the difference between each level should be carefully designed. Weber’s law states that a ***uniform price*** increase of less than 10% will not be noticed by customers. Naturally, when consumers ***compare*** two prices which differ less than 10% they will notice. However this “10%” can be used as an indication for the difference between levels. Both Conjoint analyses and all their attributes with their associated levels are shown in Appendix 7.

3.2.5 Data-collection

Presentation method

The most widely used presentation methods are full-profile, trade-off and pairwise comparison (Hair et al. 2006). The full profile method is most realistic because it addresses each attribute and gives a more explicit portrayal of the trade-offs among all attributes and the existing environmental correlations among the attributes. A downside of this method is the complexity, as the number of attributes increase so does the complexity of the task and the probability of information overload. This could lead to a focus on only some attributes. A second downside of the full profile method is that the order of the attributes could impact the evaluation. This however is solvable by rotating the attributes across respondents (Hair et al. 2006). The Pairwise presentation method compares two profiles with a lower number of attributes, this makes the task simpler, however the number of attributes should not be too low, because this would jeopardise the sense of reality of the objects. The trade-off approach compares two attributes by ranking all combinations of levels. This approach is easy for the respondents but the number of judgements increases fast with the number of attributes, also the sense of realism is very low because only two attributes are presented each time.

The full-profile would fit this research best because mimicking a realistic setting is important. However the full profile can only be used if the number of attributes is 6 or fewer because more than six attributes increases the chance of information overload (Green and Srinivasan 1990). To solve the problem of information overload, one can use partial profiles, partial profiles keep the choice tasks more simple and avoid information overload (Chrzan and Elrod, 1995; Chrzan, 1999). When using partial-profile designs, each choice task includes a subset of the attributes. Frazier and Jones, (2003) and Johnson et al. (2003) argue that partial profiles studies lead to lower price importance (Respondents are less sensitive to price and willing to pay more for products). This study addresses this issue by including price in each choice set, price is the only attribute that is fixed, the other attributes rotate randomly. The total number of attributes in each partial profile is 5, this number is in line with Patterson and Chrzan (2003) who suggest that this number should be between 3 and 5 at a time.

When using partial-profile designs, it is assumed that respondents can evaluate the product concepts holding all attributes not represented as constant. To highlight this, the sentence "Please assume that all features of the product that are not shown, are identical for each product" is included to ***each*** question.

According to Hair et al. (2006) the number of choice tasks that can be completed successfully is 30, more than 30 could lead to lesser quality data. Johnson and Orme (1996) argue that this number in CBC studies is lower and that one can ask usually 20 choice tasks without degradation in data. According to prof. dr. C.C.P. Snijders, an conjoint analysis expert of the Eindhoven University of Technology, This number is strongly depended of a variety of factors, the complexity of the tasks, the number of attributes, and the number of choices per question. So in short, the optimum number of questions is hard to define. To get an indication however, the survey was tested first internally and also externally by several students. The limit of 20 choice tasks proposed by Johnson and Orme (1996) was used as an upper limit. After a few test surveys the optimal amount of choice tasks was

set to 13. To make sure the data would not get contaminated because respondents lose focus at the final choice tasks the time that is spend on each choice task is monitored.
Each question consists of the choice between two concepts. Often in conjoint analyses, a “none” option is used as well. This “none” option gives the respondent the opportunity to choose neither of the concepts. Even though a “none” option helps mimicking a real world setting (Orme, 2008) it is not included in this conjoint analysis. This because using the "none" option in partial-profile CBC studies is problematic according to Patterson and Chrzan (2003).This because the weight of the none option can vary significantly depending on how many attributes are displayed in the partial-profile task.

Sample size

According to Hair et al. (2006) the sample size for a conjoint analysis is different for each type of conjoint analysis, an appropriate sample size for typical conjoint analyses is about 200, however this is a sample size for an entire population, if the population is segmented one should strive to get a sample size of around 200 per group. Because earlier research of Vogel’s determined that there was no visible segmentation in their market, this research uses a sample size of about 200-220 respondents per conjoint analysis.

Data collection

The data is collected through an online survey created with Sawtooth software, An academic licence for this software is acquired through Eindhoven University of Technology. Sawtooth software is chosen because it is the only software that can handle a conjoint analysis with this level of complexity. Markt Effect, an external market research company is used to gather the respondents for both conjoint analyses and provides the server that is used to host the surveys. Markt Effect has a pool of respondents that they can send survey too. The advantages of using a company such as Markt Effect, is that they give incentives to respondents, this leads to a much higher response rate (Church 1993; Heberlein and Baumgartner 1978; Yu and Cooper 1983). Also the database that is use can be specified. This drastically increases the number of relevant respondents and is therefore considerably more efficient.

Database characteristics

Markt Effect has its own database of respondents; they know several characteristics of their respondents which makes it easier to address the respondents that were needed for this study. First, because cultural differences can influence the perceived value (Overby et al., 2004), respondents from the Netherlands are chosen. Respondents from the Netherlands are chosen because they account for the biggest customer base of Vogel’s. Second because Vogel’s targets people between the age of 20 and 65 years, this age group is chosen. The panel that is used consists of 190.000 respondents from across the Netherlands. All age groups are represented (from 18 years and older that is), and the male female percentage are respectively 42.3 and 57.7 percent. On average respondents in the database fill in a survey about once a month.

3.3 Survey design

As mentioned in the previous section, Sawtooth Software was used to create the surveys. The surveys consist of two parts, in the first part, a number of general questions are asked to get an idea

of the general characteristics of the sample, and to embed factors for possible segmentation options. The second part consists of the choice based conjoint analysis questions. Because there are two different surveys, and both apply to a different group of respondents, an introduction question is asked. The answer to this introduction question determines which of the two surveys (FLAT or TURN) is given to the respondent. The more detailed description of the survey can be found in appendix 8.

Testing the survey

Several aspects of the survey where tested internally and externally to get an optimal design for this situation. The number of questions, the number of concepts to choose from, the amount of text and explanation are some of these aspects. The final version of the survey was also tested on people with the same characteristics as the general targeted respondent. The main goal of these test were finding out if all aspects treated in the survey were clear for the respondents and no difficulties appear when filling in the survey.

4 Results

As mentioned before, two different conjoint analyses where created, the first one was called FLAT and was created for respondents with a living room situation in which the seating arrangements faced the TV. The second was called TURN and was created for respondents with a living room situation in which the seating arrangements where positioned around the TV at several different angles. Because both surveys are in essence the same and there are limitations for the maximal size of this thesis, The FLAT analysis is discussed in detail and forms the basis for answering the research questions. The TURN analysis is only used to verify the results and is therefore discussed in less detail. However, the full analysis of the TURN survey is presented in Appendix 11. The FLAT analysis was chosen to be discussed in more detail because the distribution of owners and non-owners in this sample was closer to the average number determined by the GFK. This sample is therefore a better representation of the real world. This chapter first discusses how the data are cleaned. After that the descriptive statistics and the 3 different analyses that are conducted to answer the research questions are discussed. Then each of these analyses is discussed separately and the research questions are answered.

4.1 Data cleaning

Sawtooth Sofware optimizes the design of the conjoint analysis and makes sure each respondent gets a unique list of questions that is optimized to get the highest possible overall efficiency. To make sure the design stays optimal, incompletes should not be considered because Sawtooth Software re-uses the specific design of the incompletes for new respondents. For this reason the incompletes are removed from the dataset. To prevent the data from being contaminated by outliers a standard outlier analysis is performed on the data as well. Finally, data are removed on the basis of the time it took them to fill in the survey. This process is described in more detail in Appendix 9.

4.2 Descriptive statistics

Just as for the outlier analysis, SPSS was used for acquiring the descriptive statistics of both surveys. The cleaned sample of the FLAT survey consists of 189 respondents and the turn of 201. Table 5.1 gives an indication about the diversity of both the samples. It was strived to get an equal male/female distribution. The table shows that this 50/50 ratio was not reached. But because the sample size is sufficiently great the current values (58/42 and 51.7/48.3) are deemed to be sufficient. The percentages per income group are distributed more evenly for the FLAT survey. The number of respondents that own a wall mount is about 21% for the FLAT survey and 18,9% for the TURN survey, this is slightly lower than the average value of 24% determined by the Dutch branch of the Gesellschaft für Konsumforschung. Age is distributed relatively good for the TURN survey but is not close to distributed evenly in the FLAT survey; the group of respondents between 45-60 years is represented with more than half of the respondents and the remaining is also unevenly distributed over the other 3 groups. When analyzing the results, this should be kept in mind.

Table 4.1: Descriptive statistics of the surveys

Variable	Percentage				
Gender	*Male*	*Female*			
FLAT	58,2	41,8			
TURN	*51,7*	48,3			
Income	*Below average*	*Average*	*Above average*	*>2x above average*	*Rather not say*
FLAT	30,2	21,2	25,4	10,6	12,7
TURN	34.3	23,4	14,9	8,0	19,4
Own wall mount	*Yes*	*No*			
FLAT	21,7	78,3			
TURN	18,9	81,1			
Age (years)	*<30*	*30-45*	*45-60*	*>60*	
FLAT	22,8	18,5	54,0	4,8	
TURN	22,4	20,4	31,8	25,4	
Total respondents	**FLAT: 189**	**TURN: 201**			

4.3 The analyses

In this section the 3 different analyses are discussed that are performed on the data. First a CBC count analysis is done to get an overview of the general importance and to check whether there are differences amongst groups. Secondly, Latent Class estimation is performed to check whether there are segmentation possibilities within the data set. And finally HB estimation is executed to get the part worth's of the different attributes and to create the final model. All three methods are explained briefly in this section, for a more detailed description see Appendix 10.

The CBC Count analysis:

The CBC count analysis provides quick and automatic calculation of the main effects and interaction effects for collected CBC data. It calculates a proportion of "wins" for each level, based on how many times a concept including that level is chosen, divided by the number of times a concept including that level appeared in the choice task (Orme, 2008). This CBC Counts analysis is performed for the sample as a whole to get an indication which attributes are most important. It also is executed for groups separated on the basis of the general questions in the survey. This shows if there are differences in preferences between for instance, males and females and sheds light on possible segmentation options.

Latent class analysis

Latent Class is a utility estimation method to use with Choice-Based Conjoint data. Latent class segmentation divides respondents into segments having similar preferences based on their choices in CBC questionnaires. The latent class analysis detects subgroups with differing preferences and estimates part worths for each segment. The subgroups have the characteristic that the respondents within each group are relatively similar but the preferences are quite different from group to group (Orme, 2004). Latent class's role is to both assess the quality of the experimental design and to

estimate the average preferences of the sample, but rather than finding average part worth utilities for all respondents together, it detects subgroups with differing preferences and estimates part worths for each segment.

The latent class analysis's main purpose in this research is segmentation. Even though a segmentation analysis on the basis of several characteristics is executed in the CBC Counts analysis, Latent class analysis can segment on the bases of preferences and can therefore find possible segments that can't be found in the CBC analysis.

Hierarchical Bayes analysis

HB has been described favorably in many journal articles for finding part worth utilities (Orme, 2009). Its strongest point of differentiation is its ability to provide estimates of individual part worths given only a few choices by each individual. It does this by "borrowing" information from population information (means and covariances) describing the preferences of other respondents in the same dataset. Although Individual choice estimation (ICE) also made use of information from other individuals, HB did so more effectively and required fewer choices from each individual.

The HB Analysis is used to find the part worth utilities and average importance of all attributes. The average importance of each attribute combined with the categorization of each attribute gives insight in the correctness of the conceptual model.

The three methods described in the previous chapter (CBC Counts, Latent Class and Hierarchical Bayes) are used to answer the remaining research questions; three, and four. The CBC Counts analysis is mainly used to get a more general idea of the answers to research questions and is therefore discussed first. The Latent Class and HB analysis are discussed later in the chapter and are used to give definite answers to research questions.

4.4 CBC Counts analysis for FLAT

Main effects

To get a general overview of the importance of different attributes a general count analysis was conducted for the main effects. The results are show in Table 4.2.

Table 4.2: main effects of the CBC Counts analysis for the FLAT survey

Attribute	Percentages				
Price (euro)	*€30*	*€40*	*€50*	*€60*	*€70*
Sig. p<.01	0,2244	0,2276	0,198	0,1816	0,1688
Tilt	*Able*	*Not able*			
Sig. p<0.1	**0,588**	**0,412**			
Design	*Fits interior*	*Neutral*			
Sig. p<0.1	0,544	0,456			
Brand	*A-brand*	*B-brand*			
Sig. p<0.1	0,551	0,449			
Guarantee	*Lifetime*	*2-year*			
Sig. p<0.1	**0,592**	**0,408**			
Distance to wall	*2 cm*	*6 cm*			
Sig. p<0.1	0,576	0,424			
conceal cables	*Possible*	*Not possible*			
Sig. p<0.1	**0,777**	**0,223**			
Installation time	*15 min*	*45 min*			
Sig. p<.01	0.555	0.445			
Leveling after mounting	*Possible*	*Not possible*			
Sig. p<0.1	**0,700**	**0,300**			
Installation service	*Available*	*Not available*			
Sig. p<0.1	0,569	0,431			
Total respondents	**189**				

The table shows that all main effects are significant ($p < 0.1$) and that there are two attributes of which one level is much more often chosen then the other (colored red). "Possibility to conceal cables" (0.78) and "possibility to level after mounting" (0.70) are the two levels that are most chosen. "Lifetime guarantee" and "Tilt possibility" (displayed in orange) are also chosen considerably more often with percentages of 0.59 and 0.59. So this general CBC Counts analysis indicates that the attributes "Possibility to conceal cables" and "possibility to level after mounting" add the most value for the consumer and "lifetime guarantee" and "tilt possibility" also adds value but in a lesser amount.

Differences between groups

Aside from testing the main effects and interaction effects, the CBC Counts method can be used to determine if there are significant differences between certain groups of the population. As mention before, several general questions were asked in the surveys. Comparisons between groups on the basis of these questions is made. Gender, Income and Purchase situation are assessed for the FLAT survey. Age is not considered because the number of respondents in each group is not close to evenly distributed.

Table 4.3: Gender differences FLAT survey

Attribute	Gender	Male ratio	Female ratio
Price (euro)	Not Sig.		
Tilt	Sig. p< .05.	0.62/0.38	0,55/0,45
Design	Not Sig.		
Brand	Not Sig.		
Guarantee	Not Sig.		
Distance to wall	Not Sig.		
Conceal cables	Sig. p< .05.	0.75/0.25	0.81/0.19
Installation time	Not Sig.		
Leveling after mounting	Not Sig.		
Installation service	Not Sig.		
Total respondents: 189			

Table 4.3 shows for which attributes a significant difference was found between male and females. The table shows that only "conceal cables" and the "tilt ability" is significantly (p<.05) different for men and women. Men include ability to tilt in 62% of their choices while woman include it only in 55% percent of their choices. "Conceal cables" is chosen in 75% of Men's choices while woman include it in 81% of their choices.

The results for income are shown in table 4.4. To get evenly distributed groups, income was divided into three groups, lower than average, average and higher than average. For this comparison, only the "conceal cables" showed a significant difference (p<.01) between groups. Low incomes included it in about 75% of their choices, medium incomes in about 72% of their choices and high incomes in about 83% of their choices.

Table 4.4: Income differences FLAT survey

Attribute	Income	Low income ratio	Average income ratio	High income ratio
Price (euro)	Not Sig.			
Tilt	Not Sig.			
Design	Not Sig.			
Brand	Not Sig.			
Guarantee	Not Sig.			
Distance to wall	Not Sig.			
Conceal cables	Sig. p< .05.	0.75/0.25	0.72/0.28	0.83/0.17
Installation time	Not Sig.			
Leveling after mounting	Not Sig.			
Installation service	Not Sig.			
Total respondents: 189				

Finally, the effect of pre and post purchase situation was checked for significance. Table 4.5 shows the results. The "tilt able" option is chosen more often by respondents that do not already own a wall mount (61% vs. 53%), and this difference is significant (p<.05). For brand roughly the same difference applies, owners think a brand is relatively more important pre purchase (57% of the times

the A-brand is chosen) compared to post purchase (51% of the times the A-brand is chosen). Finally the distance to the wall is also influenced by the purchase situation. Here the effects are reversed, when the consumer has their TV mounted to the wall, the perceived importance of closeness to the wall becomes much greater (56% pre-purchase vs. 65% post purchase).

Table 4.5: pre-purchase vs. post-purchase situation FLAT survey

Attribute	Purchase situation	Pre-purchase	Post-purchase
Price (euro)	Not Sig.		
Tilt	Sig. p< .05.	0.61/0.39	0,53/0,47
Design	Not Sig.		
Brand	Sig. p< .05.	0.57/0.43	0.49/0.51
Guarantee	Not Sig.		
Distance to wall	Sig. p< .05.	0.56/0.44	0.65/0.35
Conceal cables	Not Sig.		
Installation time	Not Sig.		
Leveling after mounting	Not Sig.		
Installation service	Not Sig.		
Total respondents: 189			

Conclusion for the CBC Counts analysis

The CBC Counts analysis indicates that the four most important attributes for a non-turnable wall mount are:

1. Possibility to conceal cables
2. Possibility to level after mounting
3. Lifetime guarantee
4. Tilt possibility

As mentioned before, the CBC Counts analysis is a quick way to summarize the results, but it reflects some known biases that can be problematic in some situations (Orme, 2013). Therefore the above mentioned results are not suitable to validate the conceptual model or draw conclusion regarding the most important attributes.

Finally, this analysis shows that there are small differences between respondents of a different gender, income group or purchase situation. The difference between pre- and post-purchase situation is the most prominent of the three. These differences are reflected in 3 attributes:

1. Tilt ability
2. Brand
3. Distance to wall

These results indicate that the difference between pre-and post-purchase situation described in the literature is present in a low involvement product focused setting as well. However, when interpreting these results, it should be kept in mind that the sample sizes are not close to equally distributed and that the sample size of the post-purchase situation is relatively small.

The results of the CBC Counts analysis of the TURN sample are in line with these results, all main effects are significant and the top 4 of most important are the same and differences exist between pre- and post-purchase situation. Again, this can be checked in more detail in Appendix 10.

4.5 Latent Class analysis for FLAT

The CBC analysis showed that there are small differences between male/female, pre-purchase/post-purchase and different income groups. These variables are however only a small sample of all the different variables that ***could*** influence the perceived value. This is why a Latent class analysis is performed to find other possible segmentations that are not necessarily based on the included variables. The results of the comparison between 1 to 5 groups are given in table 4.6 below.

Table 4.6: Latent class analysis

Groups	Pct. Certainty	CAIC	Relative Chi-Square	Iterations
1	24.65	2680.87	64.60	4
2	26.87	2728.80	33.89	63
3	29.15	2774.27	24.21	48
4	30.98	2835.24	19.18	59
5	32.55	2909.04	16.06	96
Total respondents: 189				

As explained in the analysis chapter, the CAIC is among the most widely used measures for deciding how many segments to accept, and smaller values of CAIC are preferred. Table 4.6 shows that when the number of segments increases the CAIC increases as well. So according to this statistic, no segmentation should be applied.

The Relative Chi Square (also explained in the analysis chapter) is also useful for choosing the number of segments, a bigger Relative Chi Square is considered to be better. Table 4.6 shows that the Relative Chi Square decreases when the number of segments increases, and thus no segmentation should be applied according to this statistic either.

The last column shows the number of iterations, the maximum was set at 100 iterations. The table shows that none of the solutions needed 100 iterations. This means that each solution converged as much as possible within the number of iteration boundary.

Conclusion

From the latent class analysis can be concluded that no segmentation should be applied. This is in line with earlier research of Vogel's but it slightly contradicts the indication of the CBC Counts analysis and the literature that there are differences between pre and post purchase situations. After the HB analysis is done, the segmentation aspect is discussed in more detail.

For the TURN survey the results of the Latent class analysis also indicated that no segmentation should be applied. Again, this can be checked in more detail in Appendix 10.

4.6 HB analysis for FLAT

To create the final model and find which attributes add the most value from the perspective of the consumer, 3 HB analyses are done. The first analysis is conducted for the whole sample, after that, because the CBC Counts analysis hinted at purchase situation segmentation, models are estimated for the pre-and post-purchase situations separately.

Total sample

The results of the HB analysis are based on a converging process; this is why the number of iterations is an important parameter. To make sure that the maximum convergence is reached before the software starts to optimize, a large number of iterations is chosen. Figure 4.1 below shows the iteration progress for an analysis with 5000 and 1500 iterations before assuming convergence. The left graph shows that the convergence is reached at about 2000 iterations. The right graph shows that for a considerably larger number of iterations no more convergence can be identified. This means that a number of 5000 iterations before assuming convergence is sufficient. To acquire the utilities and relative importance of the different attributes the number of iterations is therefore kept at 5000

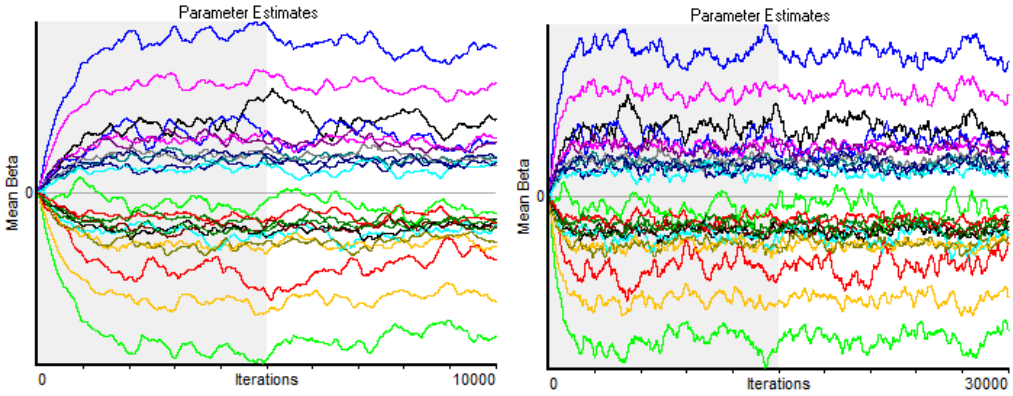

Figure 4.1: convergence process 5000 iterations (left), and 15000 iterations (right)

As mentioned in the method chapter, there are two different indicators of goodness of fit; "Percent certainty" and "RLH". The Percent certainty for this model is 0.777. A value of 0 indicates that the model fits the data equally good then a chance model and a value of 1 means a perfect fit.

It seems that the model has a decent fit, since three concepts are shown at the choice tasks (n=3), the model is 0.660/0.333 ≈ 2 times better in estimating utilities than basic chance. Thus, the resulting part-worth estimates that are used in the model can be considered as quite robust estimates.

The value of 0.777 therefore indicates that this model has a decent fit. Since two concepts are shown in each choice task and the RLH value is 0.857, the model is 0.857/0.5 = 1.7 times better in estimating utilities and importance than a basic chance model. This agrees with the above statement that the model has a decent fit.

Table 4.7 shows the average importance of the attributes ranked from highest to lowest. The table shows that "conceal cables" is by far the most important attribute perceived by the consumer,

followed by “leveling after mounting”. These results are in line with the Count analysis. Third most important is “price”, price consists of more than two levels and was therefore more difficult to interpret from the CBC Counts analysis. This HB analysis gives a clearer perspective of the importance of this attribute. Price is followed by “tilt function” and “guarantee” and these are also in line with the count analysis. “Distance to the wall”, “design”, ”brand”, “installation service” and especially installation time are all of lesser importance.

Table 4.7: HB importance estimations total sample

	Average importance
Conceal cables	*21.35*
Leveling after mounting	*15.52*
Price (euro)	*14.68*
Tilt	*10.46*
Guarantee	*7.94*
Distance to wall	*7.04*
Design	*6.59*
Brand	*6.36*
Installation service	*5.66*
Installation time	*4.38*
Total:	*100*
Total respondents: 189	

Pre- and post- purchase sample

The same analysis was conducted for the pre and post purchase sample. For the pre-purchase sample the percent certainty and RLH were respectively 0.80 and 0.87. From this can be concluded that the data fit the model slightly better than the fit between the model and data of the total sample. The post purchase sample shows a percent certainty of 0.76 and RLH of 0.85 which means the fit between these data and the model is slightly worse than the fit of the data and model of the total sample. Both fits are however, good fits.

Table 4.8 below shows the average importance of each attribute for both the pre- and post-purchase sample. The results show that there are 4 attributes that differentiate considerably between pre- and post-purchase situation. First the most important aspect for people already owning a wall mount is “price”. The difference of 12.83 in pre-purchase vs. 20.03 in post purchase is substantially. Secondly “distance to the wall” is considerably more important in the post purchase situation as well. In the post purchase situation, it is with 13.13 4th most important attribute while in the pre-purchase situation its ranked 9th with an average importance of only 5.23. Both “brand” and “tilt ability” are less important in the post-purchase situation, brand even drops to the lowest ranked attribute with an average importance of only 4.14.

Table 4.8: HB importance estimations pre-purchase & post purchase

Pre-purchase	Average importance	Post-purchase	Average importance
Conceal cables	21.32	Price (euro)	20.03
Leveling after mounting	15.56	Conceal cables	18.35
Price (euro)	12.83	Leveling after mounting	14.28
Tilt	10.82	Distance to wall	13.13
Guarantee	8.36	Tilt	8.37
Brand	7.61	Guarantee	6.82
Design	7.37	Design	5.07
Installation service	6.33	Installation service	5.04
Distance to wall	5.23	Installation time	4.74
Installation time	4.55	Brand	4.12
Total:	100	Total:	100
Total respondents: 148		**Total respondents: 41**	

When interpreting these results, it should be kept in mind that the sample sizes are not close to equally distributed and that the sample size of the post-purchase situation is relatively small.

For the TURN survey, similar results are found, the ranking of the attributes were different at some aspects but in general the highest valued attributes were similar. Also the difference between pre- and post-purchase situation was considerably (see appendix 10).

Conclusion

From the HB analysis can be concluded that for the total sample the four attributes thought to be most important in the CBC Counts analysis are indeed the most important attributes, but are accompanied with a fifth (price). If we combine the results of the HB analyses of both surveys with the conceptual model proposed in section 2.7 and the assignment of the attributes proposed in section 3.4, the model shown in figure 4.2 arises. The model shows that the value added by services is considerable according to the consumer. It therefore indicates that the proposition of the author that service value should be a part of consumer perceived value models is correct. With these results, the fourth research question: *Is this literary based conceptualization of consumer perceived value applicable in a low involvement product focussed setting?* is answered.

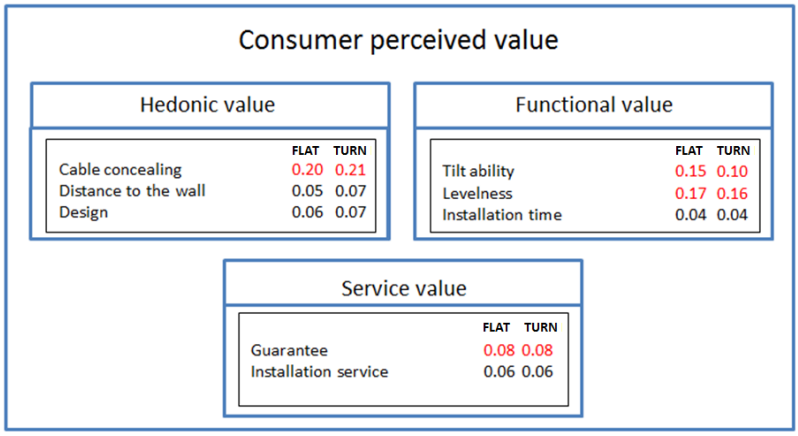

Figure 4.2: Consumer perceived value conceptualisation with the relative importance each attribute in this study.

The figure shows that all three types of value proposed in the conceptual model play a significant role in the consumer perceived value of the products in this category. So for the low involvement, product focussed category this conceptualisation would be proper.

The results of this HB analysis also indicate that there indeed are differences between a pre-and post-purchase situation. This makes that both the count analysis and the HB analysis show differences between respondents that already own a wall mount and respondents that do not own a wall mount. The latent class analysis shows however that the data should not be segmented in to different groups. These results somewhat contradict each other. One of the reasons that the latent class analysis does not segment on pre and post purchase situation could be that they only differ slightly on a couple of attributes and that the sample size of the post purchase situation is relatively small.

Research question five can be answered with the results of both the latent class and HB analysis: *Should the segmentation of Vogel's be changed according to the importance of different product attributes and if so, how?* The results show that Vogel's market should not be segmented. Even though there might be differences between consumers that own a wall mount or not, segmentation on the basis of this aspect is not really possible or useful because the repurchase behavior for a wall mount is very low. How Vogel's should deal with the difference between owner and non-owners is discussed in the practical implications chapter.

5 Discussion

This master's thesis studied the consumer perceived value of products with augmented services in a low involvement product focused setting. The thesis started with an introduction of the topic, explained the context in which the research was conducted and gave a description of the problem statement that was the basis of the 4 research questions that were considered in this research. This chapter discusses the answers to these research questions separately.

The answer to the first research question: *How should "consumer perceived value" be conceptualized in a product service setting based on current literature?* was found in the literature. Literature suggests that the consumer perceived value in a product service setting should consist of 6 different types of value: functional value, hedonic value and other oriented value of the product as well as functional value, hedonic value and other oriented of the service. It also suggests that the purchase situation (pre- or post-purchase) can have a considerable influence on this conceptualization.

The answer to the second research question: *Which attributes add value to Vogel's products and should therefore be taken into consideration in this research?* was found in the preliminary research. The interview with the head of product management, and the survey based on this interview, showed which attributes Vogel's thought would add value from their customers' perspective. The survey showed that the attributes: Design, Guarantee, Closeness to the wall, Cable management, Levelness, Brand name, Ease of installation, Tilt ability and Installation service were thought to add the most value.

The third research question: *Is this literary based conceptualization of consumer perceived value applicable in a low involvement product focused setting?* was answered with the results of the HB analysis, the HB analysis confirmed that consumers perceive value in attributes from all three proposed categories. So it can be concluded that in this low involvement product focused setting, all three types of value; functional value, hedonic value and service value, add value. The HB analysis also showed that the attributes that add the most value to Vogel's products are slightly different for the turnable and non-turnable products. However, the 4 most important attributes are the same for both product types. These attributes are: the possibility to conceal cables, the possibility to level after mounting, the possibility to tilt and lifetime guarantee and with these all three types of value are represented. The literature suggested that the purchase situation also played a big role in the perceived value models and the HB and CBC Counts analysis confirmed this.

The final research question was answered with the results of the latent class analysis. The Latent class analyses showed that segmentation into different groups would not yield better results. So the fourth research question: *Should the segmentation of Vogel's be changed according to the importance of different product attributes and if so, how?* Can be answered with the conclusion that Vogel's should continue to see their target market as one segment. They should however address the differences between pre and post purchase situation. But they should not try to segment on the bases of this. This is further discussed in the practical implications.

5.1 Academic implications

This research mainly showed that when looking at consumer perceived value, the current distinction between only product value or only service value should be smoothened. Current literature assesses consumer perceived value in either a product setting like the PERVAL model by Sweeney and Soutar (2001) or a service setting like the SERVE-PERVAL model by Petrick (2002). There is no grey area, it is either a product oriented model that does not consider service aspects or it is a service oriented model that does not consider product aspects. This research shows that for a product focussed offering with relatively general added services (e.g. guarantee), these services still account for a considerable part of the value perceived by the consumer. This means that the current distinction between product value models and service value models should be smoothened and service value should be incorporated in product focused offerings. If we look at the service continuum proposed by Oliva & Kallenberg (2003) shown in figure 5.1, this research is conducted on the left hand side of the continuum, where services are only an "add on".

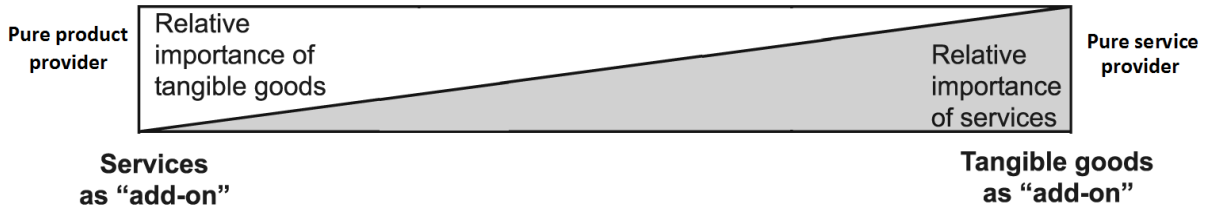

Figure 5.1: service continuum (Oliva & Kallenberg, 2003)

Still, these services add considerable value to the consumer. When moved to the right, the focus lies more and more on the services. This basically means that the place on the continuum on which services are the least important, they still add value and it can therefore be concluded that service value should always be considered as an integral part of the consumer perceived value models.

Secondly, this research shows that for both service and product oriented value, all different types of consumer perceived value can be traced back to 3 antecedents; "hedonic", "functional" and "other oriented". Since the research of Holbrook and Hirschman (1982) on the experiential aspects of value, "hedonic value" and "functional value" are often used as the two fundamental types of perceived value. The types of value that are added to these two "fundamental" types of value are however different in each research. This research succeeded to group these other types of value as "other oriented value". With this, a third "fundamental" type of value was found. Therefore "hedonic", "functional" and "other oriented" value can be considered, and should be used, as the bases of all consumer perceived value conceptualisations.

Finally, this research confirms the findings of Speng et al. (1993) and Parasuraman (1997). They argued that the purchase situation consumers are in, has an important influence on the value they perceive. This research confirms this by showing that there are considerable differences in value that is perceived by consumers that are in a pre- or post-purchase situation. Therefore when researching consumer perceived value, the purchase situation should always be accounted for.

5.2 Practical implications

In this thesis two of different types of products are researched; the non-turnable products and the turnable products. Even though the differences found between these two product types were small, various practical implications can be identified for each product type separately. The purchase situation also has considerable influence on the practical implications and therefore each product type in each purchase situation is considered separately. First the non-turnable products are considered. Table 5.1 shows the relative importance of all attributes in both pre and post purchase situation.

Table 5.1: HB importance estimations pre-purchase and post purchase for non-turable wall mounts

Pre-purchase	Average importance	Post-purchase	Average importance
Conceal cables	*21.32*	**Price (euro)**	*20.03*
Leveling after mounting	*15.56*	**Conceal cables**	*18.35*
Price (euro)	*12.83*	**Leveling after mounting**	*14.28*
Tilt	*10.82*	**Distance to wall**	*13.13*
Guarantee	*8.36*	**Tilt**	*8.37*
Brand	*7.61*	**Guarantee**	*6.82*
Design	*7.37*	**Design**	*5.07*
Installation service	*6.33*	**Installation service**	*5.04*
Distance to wall	*5.23*	**Installation time**	*4.74*
Installation time	*4.55*	**Brand**	*4.12*

Not all attributes are addressed in this section. Only the attributes that show considerable difference between Vogel's expected perceived value and the actual consumer perceived value are considered.

The *conceal cables* aspect is considered first. This attribute which was thought to be important by several employees, but not mentioned by the head of product management, is considered to be the most important physical aspect of the wall mount. It would therefore be wise to spend extra attention on this attribute.

Distance to the wall was considered to be one of the three most important attributes according to both the interview and the survey. The consumer however does not perceive this high value when he/she does not own a wall mount. When the consumer does own a wall mount, they do see the high value of this attribute. There are two ways of interpreting this result, first, because a wall mount is a product that is often only purchased once. Vogel's could decide to drop some of the resources, time and focus on this attribute and use these resources, time and focus on other attributes that are considered important by consumers in a pre-purchase situation. The second option is to educate the customer. The analysis shows that respondents in a post-purchase situation do see high value in this attribute, and therefore if Vogel's is able to educate the customer on the importance of this attribute, they could increase the satisfaction a consumer experiences when using the product.

Installation time was also considered to be an important aspect according to the internal survey, this research shows however that in both situations this aspect is not considered to be important by the consumer. It would therefore be smart for Vogel's not to spend too much attention on this attribute.

Brand was not considered as important by the employees of Vogel's but was an essential part of the future strategy according to the head of product management. The results show that *brand* is on the 6th place in the pre-purchase situation but drops significantly for the post purchase situation. This is problematic for Vogel's if they want to be seen as a strong premium brand. Research to find the reason that this drop in importance happens would be advisable.

Table 5.2 shows the relative importance of all attributes in both pre and post purchase situation for the turnable wall mounts. There are two main differences between the results of the non-turnable and the turnable wall mounts. The first is the importance of *distance to the wall*. In both the pre and post purchase situation this attribute is not considered to be important as opposed to Vogel's view. It is therefore advisable to spend less attention on this attribute for the turnable wall mounts.

Table 5.2: HB importance estimations pre-purchase and post purchase for turable wall mounts

Pre-purchase	Average importance	Post-purchase	Average importance
Conceal cables	*19.04*	**Conceal cables**	*23.68*
Leveling after mounting	*16.52*	**Leveling after mounting**	*15.12*
Tilt	*15.39*	**Tilt**	*14.57*
Price (euro)	*14.70*	**Price (euro)**	*11.33*
Guarantee	*7.74*	**Guarantee**	*8.77*
Brand	*6.24*	**Design**	*8.22*
Installation service	*6.01*	**Brand**	*7.17*
Installation time	*6.01*	**Installation service**	*5.04*
Design	*5.50*	**Distance to wall**	*3.87*
Distance to wall	*4.90*	**Installation time**	*3.34*

The second is the importance of design. The consumer does not perceive high value in this attribute when he/she does not own a wall mount. When the consumer does own a wall mount however, they do see the high value of this attribute. There are again two ways of interpreting this result, first, because a wall mount is a product that is not often purchased. Vogel's could decide to drop some of the resources, time and focus on this attribute and use these resources, time and focus on other attributes that are considered more important by consumers in a pre-purchase situation. The second option is to try and show the customer that they will value a beautiful design once the product is mounted. If Vogel's is able to convince consumers of the benefit or a nice design in a pre-purchase situation, the customer would be more satisfied when the product is used.

5.3 Limitations and implications for future research

In the academic implications it is explained that when looking at perceived value, the current distinction between only product value or only service value should be smoothened. This research showed that for a product focussed offering with added services that are relatively general (e.g. guarantee), these services still account for a considerable part of the value perceived by the consumer. This is also where one of the limitations of this research lies. The conceptualisation used in this research is only valid for this specific research setting, namely product focussed offerings with relatively general added services. It is probable that the value added by a service changes when the offerings become more service oriented. Future research should therefore focus on this aspect and examine how this conceptualisation and especially the part service value plays, would change when

the offering becomes more service oriented. As mentioned before, this research can be placed at the left hand side of the service continuum proposed by Oliva & Kallenberg (2003). At the right hand side under "services as a core offering" current service oriented research can be placed such as the SERV-PERVAL model (Petrick, 2002). With this, research on perceived value on both ends of the continuum is conducted. Future research should therefore focus on the rest of the continuum and should aim at finding how value makes the transition when the offerings go from product oriented to service oriented.

Closely related to the limitation described above, is the fact that in this research setting only the functional aspect of service value is considered. The hedonic and other oriented aspects are left out because the offerings were product focused. Future research should address these other types of value as well and should test the full conceptual model in a research setting where services are more important and all aspects of the model are represented.

There are also a few operational limitations, the first being the sample size. Because several factors limit the number of respondents, the results of some of the analysis do not have the appropriate sample size. Hair et al. (2006) suggests a sample size of 200, because both surveys had approximately 200 respondents the analyses for the whole sample have acceptable sample sizes, but the analysis on parts of the samples automatically have a sample size that is too small. Furthermore, the sample of the FLAT survey was not close to equally distributed over the age groups and this can lead to biases in the results. Future research could address both these issues by doing the same research on a larger scale this could be used to confirm the differences between pre and post purchase situation and could test how much this would affect the relative importance of the value types of the proposed conceptual model.

Another limitation lies in the use of the conjoint analysis. Because a conjoint analysis is used, the research is very specific to Vogel's products. The attributes that are taken into account are actual properties of Vogel's products. This means that there is no scale developed with items that can be used or tested more universally. If this same research was done in a different setting, a whole new conjoint analysis needs to be designed. Future research should therefore use a different research method that aims at developing a scale with several items that can be used to test the findings of this research in a wider setting.

References:

Aaker, D. A. (1991). 'Managing Brand Equity', *New York, NY: The Free Press*

Aaker, D.A. & R. Jacobson (1994). Study shows brand building pays off for stockholders. *Advertising Age*, 65(30), 18.

Agarwal, S. and Teas, R.K. (2001) 'Perceived Value: Mediating Role of Perceived Risk', *Journal of Marketing Theory and Practice* 9(4): 1–14.

Andreassen, T.W. and Lindestad, B. (1998) 'Customer Loyalty and Complex Services', *International Journal of Service Industry Management* 9(1): 7–23.

Allenby, G. M., Arora, N., and Ginter, J. L. (1995) "Incorporating Prior Knowledge into the Analysis of Conjoint Studies," Journal of Marketing Research, 32 (May) 152-62.

Babin, Barry J., William R. Darden, and Mitch Griffin (1994). Work and/or Fun: Measuring Hedonic and Utilitarian Shopping Value. Journal of Consumer Research, 20(March), 644–656.

Berning, C. A. K., & Jacoby, J. (1974) 'Patterns of information acquisition in new product purchases'. Journal of Consumer Research, l, 18-22.

Blackwell, S.A., Szeinbach, S.L., Barnes, J.H., Garner, D.W. and Bush, V. (1999) 'The Antecedents of Customer Loyalty. An Empirical Investigation of the Role of Personal and Situational Aspects on Repurchase Decisions', *Journal of Service Research* 1(4): 362–75.

Bowen, D., Siehl, C. and Schneider, B. (1991), 'Developing service-oriented manufacturing', in Kilmann, I. (Ed.), Making Organizations Competitive, Jossey-Bass, San Francisco, CA,
pp. 397-418.

Brady, M.K. and Robertson, C.J. (1999) 'An Exploratory Study of Service Value in the USA and Ecuador', International Journal of Industry Management 10(5): 469–86.

Bozdogan, H. (1987), "Model Selection and Akaike's Information Criterion (AIC): The General Theory and its Analytical Extensions," Psychometrika, 52, 345-370.

Caruana, A., Money, A.H. and Berthon, P.R. (2000) 'Service Quality and Satisfaction – the Moderating Role of Value', *European Journal of Marketing* 34(11–12): 1338–52.

Chang, T.-Z. and Wildt, A.R. (1994) 'Price, Product Information, and Purchase Intention: An Empirical Study', Academy of Marketing Science Journal 22(1): 16–27.

Chen, Z. and Dubinsky, A.J. (2003) 'A Conceptual Model of Perceived Customer Value in E-Commerce: A Preliminary Investigation', *Psychology & Marketing* 20(4): 323–47.

Chrzan, Keith (1999), "Full versus Partial Profile Choice Experiments: Aggregate and Disaggregate Comparisons." Sawtooth Software Conference Proceedings, 235-48

Chrzan, Keith and Terry Elrod (1995), "Partial Profile Choice Experiments: A Choice-Based Approach for Handling Large Numbers of Attributes." 1995 Advanced Research Techniques Forum, American Marketing Association.

Church, Allan H. 1993. "Estimating the Effect of Incentives on Mail Survey Response
Rates: A Meta-Analysis." Public Opinion Quarterly 57:62-79

Cobb-Walgren, C.J., C. Beal & N. Donthu (1995). 'Brand Equity, Brand Preferences, and Purchase Intent'. *Journal of Advertising*, 24(3), 25-40.

Crimmins, J. C. (2000). 'Better Measurement and Management of Brand Value'. *Journal of Advertising Research*, 40 (6), 136-144.

Cronin, J.J., Jr., Brady, M.K. and Hult, G.T.M. (2000) 'Assessing the Effects of Quality, Value, and Customer Satisfaction on Consumer Behavioral Intentions in Service Environments', *Journal of Retailing* 76(2): 193–218.

Damaraju Raghavarao , James B . Wiley , and Pallavi Chitturi (2010), Choice-Based Conjoint Analysis Models and Designs, Chapman and Hall CRC ISBN: 978-1-4200-9997-3

Danaher, P.J. and Mattsson, J. (1994) 'Customer Satisfaction During the Service Delivery Process', *European Journal of Marketing* 28(5): 5–16.

Dawar, N. & Parker, P. (1994) 'Consumers' Use of Brand Name, Price, Physical Appearance, and Retailer Reputation as Signals of Product Quality' Journal of Marketing, Vol. 58, No. 2 pp. 81-95

de Ruyter, K., Wetzels, M., Lemmink, J. and Mattsson, J. (1997) 'The Dynamics of the Service Delivery Process: A Value-Based Approach', *International Journal of Research in Marketing* 14(3): 231–43.

Dodds, W.B. (1991) 'In Search of Value: How Price and Store Name Information Influence Buyers' Product Perceptions', *Journal of Services Marketing* 5(3): 27–36.

Dodds, W.B. and Monroe, K.B. (1985) 'The Effect of Brand and Price Information on Subjetive Product Evaluations'*, Advances in Consumer Research* 12(1): 85–90.

Dodds, W.B., Monroe, K.B. and Grewal, D. (1991) 'Effects of Price, Brand, and Store Information on Buyers' Product Evaluations', *Journal of Marketing Research* 28(3): 307–19.

Dumitrela D.M.(2013), 'An overview of the consumer value literature – perceived value, desired value' The Proceedings of the International Conference "Marketing - from Information to Decision 6th edition": 169-186.

Flint, D.J., Woodruff, R. and Gardial, S. (2002). 'Exploring the Phenomenon of Customers' Desired Value Change in a Business-to-Business Context'. *Journal of Marketing,* 66(4): 102-117.

Gadiesh, O. and Gilbert, J.L. (1998), "Profit pools: a fresh look at strategy", Harvard Business Review, Vol. 76 No. 3, pp. 139-47.

Gale, B.T. (1994), 'Managing Customer Value: Creating Quality and Service That Customers Can See'*, Free Press, New York.*

Gardner, D. M.(l971)' Is there a generalized price/ quality relationship?'. Journal of Marheting Research, 8, 142-145.

Green, Paul E. Krieger, Abba M. and Wind, Yoram (1994) ' Thirty Years of Conjoint Analysis: Reflections and Prospects' Interfaces; 31, 3 pp. (s56-s73).

Grewal, D., Krishnan, R., Baker, J. and Borin, N. (1998a) 'The Effect of Store Name, Brand Name and Price Discounts on Consumers' Evaluations and Purchase Intentions', *Journal of Retailing* 74(3): 331–52.

Grewal, D., Monroe, K. B., & Krishnan, R. (1998b). 'The effects of price-comparison advertising on buyers' perceptions of acquisition value, transaction value and behavioral intentions'. *Journal of Marketing*, 62 (April), 46-59.

Green, P. E., and V. Srinivasan. 1978. Conjoint Analysis in Consumer Research: Issues and Outlook. Journal of Consumer Research 5 (September): 103-23.

Gustafsson, A ., Herrmann, A,. Huber, F,. (2007). 'Conjoint Measurement Methods and Applications' Springer-Verlag Berlin Heidelberg 4th edition.

Haaier, M.E., (1999). ´ Modeling Conjoint Choice Experiments with the Probit Model', Thesis Rijksuniversiteit Groningen.

Hair, J.F, W.C. Black, B.J. Babin, R.E. Anderson, and R.L. Tatham (2006), Multivariate Data Analysis, 6th Edition, Upper Sadle River, New Jersey, Pearson Prentice Hall.

Hamel, G. and Prahalad, C.K. (1994). 'Competing for the Future'. Boston, MA: *Harvard Business School Press.*

Hartline, M.D. and Jones, K.C. (1996) 'Employee Performance Cues in a Hotel Service Environment: Influence on Perceived Service Quality, Value, and Word-of-Mouth Intentions', *Journal of Business Research* 35(3): 207–15.

Hartman, R.S. (1967) ´The Structure of Value: Foundations of a Scientific Axiology´. *Carbondale, IL*: Southern Illinois Press.

Hartman, R.S. (1973) ´The Hartman Value Profile (HVP): Manual of Interpretation´. *Muskegon, MI*: Research Concepts.

Heberlein, Thomas A., and R. Baumgartner. 1978. "Factors Affecting Response Rates to Mailed Questionnaires: A Quantitative Analysis of the Published Literature." American Sociological Review 3:447-62

Hoeffler, S., Keller, K. (2003) "The marketing advantages of strong brands", Journal of Brand Management, Vol.10 No.6, August pp421-45

Holbrook, M.B. (1994) 'The Nature of Customer Value: An Axiology of Services in the Consumption Experience', in R. Rust and R.L. Oliver (eds) Service Quality: New Directions in Theory and Practice, pp. 21–71. Thousand Oaks, CA: Sage Publications.

Holbrook, M.B. (1996) 'Customer Value – A Framework for Analysis and Research', Advances in Consumer Research 23(1): 138–42.

Holbrook, M.B. (1999) 'Introduction to Consumer Value', in M.B. Holbrook (ed.) *Consumer Value. A Framework for Analysis and Research,* pp. 1–28. London: Routledge.

Holbrook, M.B. and Hirschman, E.C. (1982) 'The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun', *Journal of Consumer Research* 9(2): 132–40.

Huber, F., Herrmann, A. and Henneberg, C.S. (2007). Measuring customer value and satisfaction in services transactions, scale development, validation and cross-cultural comparison. *International Journal of Consumer Studies*, 31: 554-564.

Jacoby, Jacob, Jerry C. Olson, and Rafael A. Haddock (1971), 'Price, Brand Name and Product Composition Characteristics as Determinants of PerceivedQ uality,' Journal of Applied Psychology, 55, 570-79.

Johnson, R.M. and B.K. Orme (1996), "How Many Questions Should You Ask In Choice-Based Conjoint Studies?," Sawtooth Software Technical Paper.

Kantamneni, S. and Coulson, K. (1996). 'Measuring Perceived Value: Scale Development and Research Findings from a Consumer Survey'. *Journal of Marketing Management*, 6(2): 72-86.

Keller, K. L. (1993) 'Conceptualizing, measuring, and managing customer-based brand equity', *Journal of Marketing*, Vol. 57, January, pp. 1–22.

Kepferer, J. N. (2000), 'Strategic Brand Management – Creating and Sustaining Brand Equity Long Term' (First Edition), Kogan Page Publishers.

Kerin, R.A., Jain, A. and Howard, D.J. (1992) 'Store Shopping Experience and Consumer Price–Quality–Value Perceptions'*, Journal of Retailing* 68(4): 376–97.

Khalifa, A.S. (2004) 'Customer Value: A Review of Recent Literature and an Integrative Configuration', *Management Decision* 42(5–6): 645–66.

Kotler, Philip H. (1991),' Marketing Management: Analysis, Planning, and Control', *8th ed. Englewood Cliffs*, NJ: Prentice-Hall, Inc.

Kristensen T, Gabrielsen G, and Zaichkowsky J.L.(2012) 'How valuable is a well-crafted design and name brand: Recognition and willingness to pay' Journal of Consumer Behaviour, J. Consumer Behav.11: 44–55

Lapierre, J. (2000) 'Customer-Perceived Value in Industrial Contexts', *The Journal of Business & Industrial Marketing* 15(2–3): 122–40.

Lee, E.J. and Overby, J.W. (2004) 'Creating Value for Online Shoppers: Implications for Satisfaction and Loyalty', *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior* 17: 54–67.

Lemmink, J., Ruyter, K.d., and Wetzels, M. (1998). 'The role of value in the delivery process of hospitality services'. *Journal of Economic Psychology* , 19: 159-177.

Lenk, P. J., DeSarbo, W. S., Green P. E. and Young, M. R. (1996) "Hierarchical Bayes Conjoint Analysis: Recovery of Partworth Heterogeneity from Reduced Experimental Designs," Marketing Science, 15, 173-191.

Li, W.-K., Monroe, K.B. and Chan, D.K.-S. (1994) 'The Effects of Country of Origin, Brand, and Price Information: A Cognitive-Affective Model of Buying Intentions', *Advances in Consumer Research* 21(1): 449–56.

Louviere, J. J. and Woodworth, G. (1983), 'Design and Analysis of Simulated Consumer Choice or Allocation Experiments: An Approach Based on Aggregate Data', Journal of Marketing Research, 20, 350–367

Mathwick, C., Malhotra, N. and Rigdon, E. (2001) 'Experiential Value: Conceptualization, Measurement and Application in the Catalog and Internet Shopping Environment', *Journal of Retailing* 77(1): 39–56.

Mattsson, J. (1991) 'Better Business by the Abc of Values'. *Lund: Studdentlitteratur*

Mizik, N. and Jacobson, R. (2003) 'Trading Off between Value Creation and Value Appropriation: The Financial Implications of Shifts in Strategic Emphasis', Journal of Marketing 67(1): 63–76.

Oh, H. (2003) 'Price Fairness and Its Asymmetric Effects on Overall Price, Quality, and Value Judgments: The Case of an Upscale Hotel'*, Tourism Management* 24(4): 387–99.

Oliva, R. & Kallenberg, R. (2003) Managing the transition from products to services. International Journal of Service Industry Management, Vol. 14, No. 2, pp. 160-172

Orme, B.K. (2009), 'The CBC/HB System for Hierarchical Bayes Estimation Version 5.0 Technical Paper'*, Technical paper series,* Sequiem, WA: Sawtooth Software, Inc.

Orme, B.K. (2013), 'The CBC System for Choice-Based Conjoint Analysis'*,Technical paper series,* Sequiem, WA: Sawtooth Software, Inc.

Orme, B.K. (2004), 'The CBC Latent Class Technical Paper *', Technical paper series,* Sequiem, WA: Sawtooth Software, Inc.

Orme, B.K. (2008), 'The CBC Advanced Design Module (ADM) Technical Paper', *Technical paper series,* Sequiem, WA: Sawtooth Software, Inc.

Overby, J.W., Gardial, S.F. and Woodruff, R.B. (2004) 'French Versus American Consumers' Attachment of Value to a Product in a Common Consumption Context: A Cross-National Comparison', *Journal of the Academy of Marketing Science* 32(4): 437–60.

Parasuraman, A. (1997) 'Reflections on Gaining Competitive Advantage through Customer Value', *Journal of the Academy of Marketing Science* 25(2): 154–61.

Parasuraman, A. and Grewal, D. (2000) 'The Impact of Technology on the Quality-Value-Loyalty Chain: A Research Agenda', *Journal of the Academy of Marketing Science* 28(1): 168–74.

Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1985). A conceptual model of service quality and its implication for future research. *Journal of Marketing*, 49 (Aprilie): 41-50.

Patterson, Michael, and Keith Chrzan (2003), "Partial Profile Discrete Choice: What's the Optimal Number of Attributes." Sawtooth Software Conference Proceedings, 173-85.

Petrick, J. F. (2004). 'The roles of quality, value and satisfaction in predicting cruise passengers' behavioral intentions'. *Journal of Travel Research*. 42(4): 397-407.

Quinn, J.B., Doorley, T.L. and Paquette, P.C. (1990), "Beyond products: services-based strategy", Harvard Business Review, Vol. 68 No. 2, pp. 58-67.
Ramaswamy, V. , W. S. DeSarbo, D. J. Reibstein, and W. T. Robinson. (1993), "An Empirical Pooling Approach for Estimating Marketing Mix Elasticities with PIMS Data." Marketing Science, 12 (Winter), 103-124.

Rao, Akshay R. and Kent B. Monroe (1989), 'The Effect of Price, Brand Name, and Store Name on Buyers' Perceptions of Product Quality: An Integrative Review,' Journal of Marketing Research, 351-7.

Sánchez-Fernández, R., & Iniesta-Bonillo, M. A. (2007). 'The concept of perceived value: a systematic review of the research'. *Marketing Theory*, 7(4), 427–451

Scridon, Andrei Mircea (2013),' Conceptualizing Emotional Value', International Conference: *Marketing – from information to decision,* 6th Edition 2013

Sheth, J.N., Newman, B.I. and Gross, B.L. (1991a) 'Consumption Values and Market Choices'. *Theory and Applications*. Cincinnati, OH: South-Western Publishing Co.

Sheth, J.N., Newman, B.I. and Gross, B.L. (1991b) 'Why We Buy What We Buy: A Theory of Consumption Values', *Journal of Business Research* 22(2): 159–70.

Solomon, Michael R., Carol Surprenant, John A. Czepiel, and Evelyn G. Gutman (1985), "A Role Theory Perspective on Dynamic Interactions: The Service Encounter," Journal of Marketing, 49 (Winter), 99–111.

Spiteri, J.M. and Dion, P.A. (2004) 'Customer Value, Overall Satisfaction, End-User Loyalty, and Market Performance in Detail Intensive Industries', Industrial Marketing Management 33(8): 675–87.

Spreng, R.A., Dixon, A.L. and Olshavsky, R.W. (1993) 'The Impact of Perceived Value on Consumer Satisfaction', *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior* 6(1): 50–5.

Sweeney, J.C. and Soutar, G.N. (2001) 'Consumer Perceived Value: The Development of a Multiple Item Scale', *Journal of Retailing* 77(2): 203–20.

Sweeney, J.C., Soutar, G.N. and Johnson, L.W. (1999) 'The Role of Perceived Risk in the Quality–Value Relationship: A Study in a Retail Environment', *Journal of Retailing* 75(1): 77–105.

Vithala R. Rao (2014). 'Applied Conjoint Analysis', Springer-Verlag Berlin Heidelberg .

van der Haar, J.W., Kemp, R.G.M. and Omta, O. (2001) 'Creating Value That Cannot Be Copied', *Industrial Marketing Management* 30(8): 627–36.

Wang, Y., Lo, H.P., Chi, R. and Yang, Y. (2004) 'An Integrated Framework for Customer Value and Customer-Relationship-Management Performance: A Customer-Based Perspective from China', *Managing Service Quality* 14(2–3): 169–82.

Wernerfelt, B. (1988) 'Umbrella branding as a signal of new product quality: An example of signaling by posting a bond', *Rand Journal of Economics*, Vol. 19, No. 3, pp. 458–466.

Williams, P. and Soutar, G.N. (2000) 'Dimensions of Customer Value and the Tourism Experience: An Exploratory Study', paper presented at *Australian and New Zealand Marketing Academy Conference*, 28 November–1 December.

Wise, R. and Baumgartner, P. (1999), "Go downstream: the new imperative in manufacturing", Harvard Business Review, Vol. 77 No. 5, pp. 133-41.

Wittink, Dick and Cattin, Philippe 1989, "Commercial use of conjoint analysis: An update," journal of Marketing, Vol. 53, No.3 (July), pp. 91-96

Wittink, Dick; Vriens, Marco; and Burhenne, Wim ·1994, "Commercial use of conjoint in Europe: Results and critical reflections' international journal of Research in Marketing, Vol. 11, No.1, pp. 41-52.

Wood, C.M. and Scheer, L.K. (1996) 'Incorporating Perceived Risk into Models of Consumer Deal Assessment and Purchase Intent', *Advances in Consumer Research* 23(1): 399–404.

Woodruff, R. B. (1997) 'Customer value: The next source for competitive advantage'. *Journal of Academy of Marketing Science, 25*, 139-153.

Woodruff, R.B. and Gardial, S.F. (1996) 'Know Your Customer, New Approaches to Understanding Customer Value and Satisfaction'. *Cambridge: Blackwell Publishers, Inc*.

Wyner A. Gordon (1992) Uses and Limitations of Conjoint Analysis Marketing Research 4.2: 42.

Yu, J., and H. Cooper. 1983. "A Quantitative Review of Research Design Effects on Response Rates to Questionnaires." Journal of Marketing Research 20:36-44.

Zeithaml, V.A. (1988) 'Consumer Perceptions of Price, Quality, and Value: A Means–end Model and Synthesis of Evidence', *Journal of Marketing* 52(3): 2–22.

Appendices:

Appendix 1: Product categories Vogel's

When we look at the Vogel's product lines, their current categorization is mainly done on the basis of the motion attribute and it consists of 3 categories: FLAT, TILT and TURN. The categories are described as follows:

FLAT: These products have no ability to rotate, tilt or move; they are rigid and position flat against the wall.
TILT: These products have the ability to tilt forward at a small angle, rotation or other movements are not possible.
TURN: Turn products can rotate at a maximal angle; this angle depends on the sub-category. TURN 60 can turn 60 degrees, TURN 120 can turn 180 degrees and TURN 180 can turn 180 degrees. The products in the TURN category can also tilt.

The products of Vogel's can be placed in a product matrix. Figure A1.1 shows this matrix. The matrix consists of three columns which differ on the size of TV's they can be used for. The first column consists of products which are for TV's ranging from 48-81 cm, the middle column of products for 66-107 cm TVs and the third column of products for 81-140cm TV's. The middle column contains the products that are most sold and the focus of this research lies therefore on the products in this column. Another reason why this middle column is chosen is that almost all different attributes are present in these products. So almost all attributes and functions can be assessed within a relatively small amount of products. There are only two functions that products in this product range do not possess; those are the 60 degrees turn ability and the automatic turn function. Both attributes are present in only a small number of products and are according to Vogel's not of significant importance.

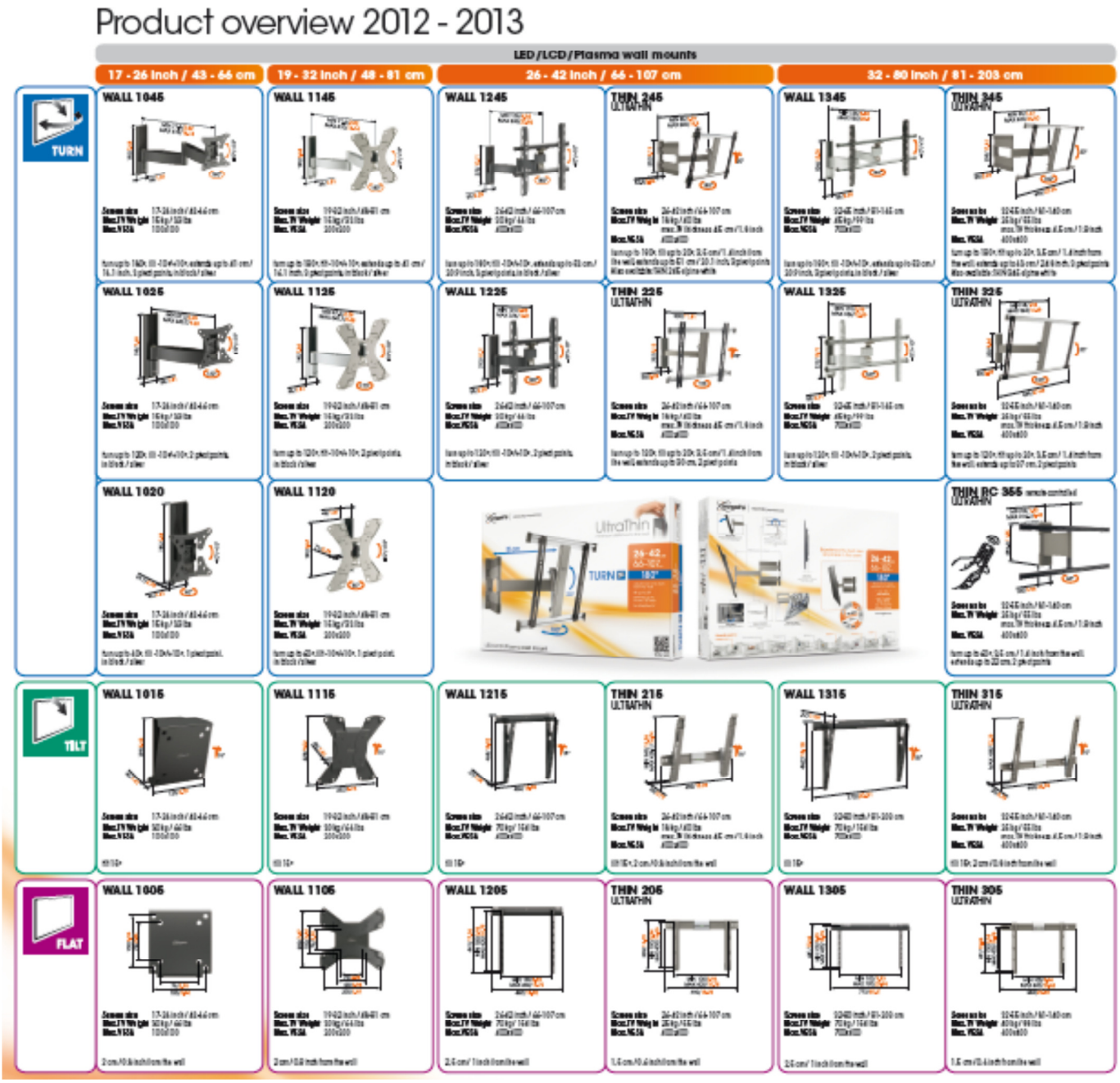

Figure A1.1: Vogel's product matrix

Appendix 2: Definitions of consumer perceived value

Figure A2.1: Several definitions of consumer perceived value chronologically.

Definitions of consumer perceived value	
„Perceived value is composed of all factors; qualitative and quantitative, objective and subjective, that jointly form a consumer's buying experience."	Schechter, 1984 in Zeithaml, 1988 (cited in Snoj *et al.,* 2004)
„ Perceived value is the consumer overall assessment of the utility of a product based on the perceptions of what is received and what is given''	Zeithaml, 1988
„ The mental estimate that consumers make of the travel product, where perceptions of value are drawn from a personal cost/benefit assessment''	Morrison, 1989 quoted in Murphy *et al.*, 2000: 46
„ A trade-off between the quality or benefits they perceive in the product relative to the sacrifice they perceive by paying the price"	Monroe, 1990
„ Consumer choice is a function of multiple consumption values. These are functional, social, emotional, epistemic and conditional value. The consumption values make differential contributions in any given choice situation. The consumption values are independent"	Seth *et al*., 1991
„ A cognitive trade-off between perceived quality and sacrifice''	Dodds *et al.* ,1991
''The notion of value for money refers primarily to the relationship between price, quality and quantity''	Stevens, 1992
„ Product value to a consumer is a comparison of tangible and intangible benefits from the generic as well as the supplementary levels of a product and the total costs of production and usage of a product"	Nilson, 1992 (cited in Snoj *et al.,* 2004)
"The perceived worth in monetary units of the set of economic, technical, service and social benefits received by a customer firm in exchange for the price paid for a product, taking into consideration the available suppliers' offerings and prices"	Anderson, Jain, and Chintagunta, 1993
„ An interactive relativistic preference experience"	Holbrook 1994; 1996; 1999
" market perceived quality adjusted for the relative price of your product"	Gale, 1994
„Value can be seen as a combination of a product's (destination's) perceived quality and associated price which a visitor will summarize as the value received''	Chang and Wildt, 1994 quoted in Murphy *et al.* 2000
„ Product value for a consumer is created when the benefits a consumer gets with a product are greater than the long-term costs a consumer is expected to have with a product."	Slater and Narver, 2000 (cited in Snoj *et al.,* 2004)
"the *emotional bond* established between a customer and a producer after the customer has used a salient product or service produced by that supplier and found the product to provide an added value"	Butz and Goodstein, 1996
„ Perceived level of product quality relative to the price paid''	Fornell *et al*., 1996
„ A customer' perceived preferences for and evaluation of those product attributes, attribute performances and consequences arising from use that facilitate (or block) achieving the customer's goal and purposes in use situations"	Woodruff, 1997, Parasuraman 1997
„Value is a positive function of what is received and a negative function of what is sacrificed''	Oliver, 1999
„ Perceived customer value = customer's perceived benefits - customer's perceived cost. That is, perceived customer value is the surplus (or the difference) between perceived benefits and perceived costs."	Day, 1999; Lai, 1995
„Value equals a perceived quality relative to the price"	Hallowell in Cornin *et al.*, 2000 (cited in Snoj *et al.,* 2004: 158)
„ The trade-off between the multiple benefits and sacrifices of a supplier's offering, as perceived by key decision makers in the customer's organization, and taking into consideration the available alternative suppliers' offerings in a specific-use situation (in	Ulaga and Chacour, 2001
„The consumer's assessment of the value that has been created for them by a supplier given the trade-off between all relevant benefits and sacrifices in a specific use situation"	Flint *et al.,* 2002: (cited in Snoj *et al.,* 2004)

Appendix 3: detailed description of the 3 types of conjoint methodologies

Traditional conjoint analysis is based on the respondent ranking and rating different product profiles. There are some advantages and disadvantages of this traditional approach. The most important advantage is that the respondents burden is relatively low because the required number of judgements is limited (Damaraju et al., 2010). A disadvantage of a TC with a rating scale for instance is that respondents use scales in different ways. Some use all categories, some do not, some use only the high end of the scale some the low end (Damaraju et al., 2010). A disadvantage of a TCA with a ranking system is that no conclusions can be drawn about how much a respondent favours one profile over another. For instance, the respondent's choice of one profile over another, could be 51% over 49% but also 99% over 1%, a ranking system does not show the difference about these. Finally one of the biggest shortcomings of TCA is the lack of relatedness to a real world setting (Louviere and Woodworth, 1983).

Choice-based conjoint analysis is different than TCA on several areas; first it is not based on a ranking or rating system but on a choice set. The respondent has to choose one profile over other alternative profiles. Unlike the TCA, CBC paints a more accurate picture of a real world competitive setting (Orme, 2009). A second difference is that the respondent can choose the option "no-choice". This option gives the respondent the chance not to choose any of the profiles because they are for instance equally attractive. However there are some disadvantages, first, no conclusions can be drawn about how much a respondent favors one profile over another (just like in TCA), or about the relatives attractiveness of the profiles that were not chosen. Second, the number of attributes is more limited due to the more complicated tasks (Hair et al. 2006).

Adaptive conjoint analysis is the third option; this method was mainly designed to handle a bigger amount of attributes. ACA employs a computerized process that adapts the profiles shown to a respondent as the choice task proceeds. In each section, only a subset of the total attributes were presented so the respondent would not get an information overload but still would lead to a full set of preference scores for the levels of interest (part-worth utilities) by the end of the interview (Orme, 2009). Moreover, the profiles can be composed of subsets of attributes, and therefore allowing for many more attributes in the design of the research (Hair et al. 2006). As mentioned before the advantage of the ACA is that it can handle much more attributes, the biggest disadvantage is that it is not appropriate for pricing studies. This because ACA is, like most traditional conjoint approaches, a main-effects model. This means that part-worth utilities for attributes are measured in an "all else equal" context (everything is held constant). This can be limiting for pricing studies where it is important to estimate price sensitivity for each brand in the study (Orme, 2009). Also, many times price is included in the attempt to represent value-the trade-off between the utility you get versus what you must give up; that is, price. Most times utility is defined by many factors whereas price is defined by only one factor. As a result, just due to the disparate number of factors there may be a decrease in the importance of price (Hair et al. 2006).

Appendix 4: Interview head of product management

Head of product management Ronald Boele explained that there are several product aspects which Vogel's gives special attention to in general, these product aspects are considered to be more important to the consumer and considerable more time effort and resources are spend on these aspects. First, the levelling of the TV is considered to be highly important, When the TV mount is installed the TV should be perfectly levelled. Especially for the wall mounts that have the ability to turn, considerable attention is needed to achieve this. This because the wall mount consist of beams and hinges that would strengthen the effect of any levelling discrepancies. The second important aspect is the sturdiness and stability of the wall mounts; sturdy wall mounts are considered a sign of quality and therefore much attention is spend on this aspect. The final aspect is closeness to the wall, Vogel's believes that the trend of people wanting to buy thinner TV's continues when consumers buy the complementary wall mount. The closer the TV/wall mount combination is, the better. To summarize, in general there are 3 aspects that Vogel's spends special attention to: *Levelness*, *Sturdiness and stability*, and *closeness to the wall*. Ronald Boele also emphasized the fact that Vogel's positions themselves as a premium brand and that they are market leader in TV wall mounts, they consider their brand name to be a highly important aspect and are going to focus more on brand the upcoming years. Aside from Levelness, Sturdiness, closeness to the wall and brand, there are several other aspects that gained more focus in recent years. One of those is the design of the wall mount, Vogel's recently released their new flagship product called the "DesignMount" on which they emphasize the design aspects of a wall mount. In line with this, the availability of products in different colors is being discussed. The last point of focus is the guarantee Vogel's provides for their products, In line with focus on a stronger brand they are considering a lifetime guarantee on more products.

Table A4.1 below summarizes the aspects (or attributes) that Vogel's focusses on and therefore consider to be important for the consumer, according to Ronald Boele head of product management:

Table A4.1: Important attributes according to Vogel's*

Attribute	Focus
Levelness	Always has been a focus on this aspect
Sturdiness and stability	Always has been a focus on this aspect
Closeness to the wall	Always has been a focus on this aspect
Vogel's brand name	Focus always been on this aspect but is recently strengthened.
Design of the wall mount	Focus on this aspect is recent
The color of the design mount	Focus on this aspect is recent
Lifetime guarantee	Focus on this aspect is recent

*Two important attributes that were discussed during the interview with the head product manager and were not included in the table or the above interview description where the tilt and turn function of the products. These were not included because in the problem statement those were already addresses considerably. These two attributes are the fundament of Vogel's current product lines and are therefore fixed attributes in this study.

Appendix 5: Detailed description of the internal survey

The internal survey was targeted at Vogel's employees and employees of Havoned (Vogel's distributor). Within Vogel's, three departments where key: Research & Development, Sales and Marketing. These three departments are key because they all have a direct connection to the products. Because Vogel's also has products that are not in the TV wall mount category, not all employees were asked to fill in the survey. Only personnel that had any connection with the TV wall mount product category was invited to fill in the survey. Because Vogel's has a strong connection and with their distributor (Havoned) and even embedded some of Havoned's employees into their company, Havoned employees are asked to fill in the survey as well.

To conduct the survey, Surveymonkey (www.surveymonkey.com) was used; this because it is an easy, quick and free tool. The downside of Surveymonkey is that no complex analysis can be done for free on the results but because the questions were fairly simple, this was not a problem.

To get a high response rate, the survey was kept as short as possible. With help of the head product manager, all Vogel's and Havoned employees that had a connection with the wall mount category were sent an e-mail invitation to fill in the survey. The e-mail contained a short explanation and the promise that it would only take 3 minutes to complete the survey.

The survey consisted of three short questions, the first being: "At which department do you currently work". The goal of this question was only to check if the completed surveys were equally divided over the departments. The second question was a rating question that asked the respondent to rate 7 attributes on a 5-point Likert scale. (1=adds no value, 2= adds little value, 3=adds reasonable value, 4= adds much value, 5= is essential) The 7 attributes that needed to be rated where the ones that resulted from the interview with the head product manager Ronald Boele. The question explicitly asked to rate the attributes that they would think the ***consumer*** would perceived as valuable. The last question asked the respondent to write down (and rate from 1-5) attributes they thought where important for the consumer and that where not amongst the first 7 that where asked in the question before. It was also mentioned that the turn ability and tilt ability did not need to be mentioned.

Results:

Vogel's currently has 33 persons employed that have a connection with the wall mount products and 30 filled in the survey (91%). From each department, one person did not fill in the survey. The distributor (Havoned) has 12 employees that currently deal with the wall mount products and 8 filled in the survey (0.67%). The results are shown in Figure A5.1 and it shows that from the predetermined attributes; stability and levelness are considered to be most important (4.5/5), lifetime guarantee, design and closeness to the wall are moderately important and color and brand are considered to be not that important, especially brand name with a score of 2.5/5.

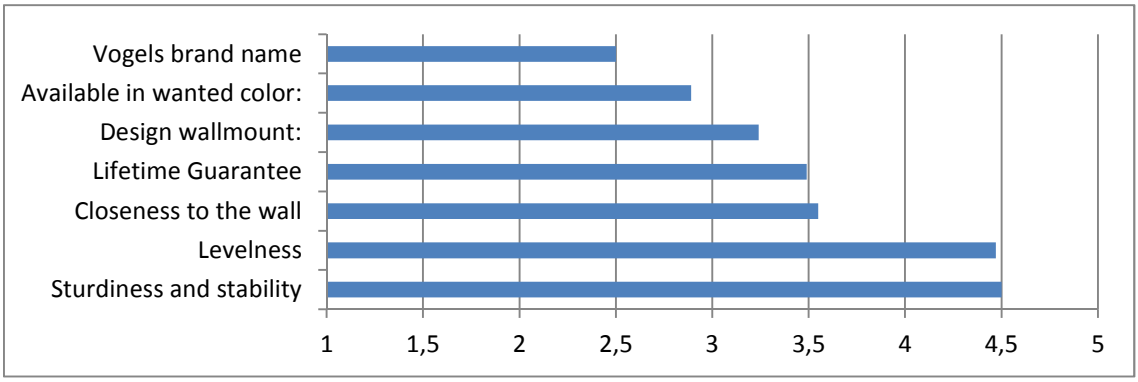

Figure A5.1: Average rating of attributes by Vogel's personnel

The results of the second question show that there are several other attributes that are considered to be important as well. When the data are cleaned, 21 different attributes are mentioned, of which Cable management with an average score of 3.9 (13x) and Ease of installation with an average score of 3.8 (10x) are the two that were mentioned considerably more than other attributes. The full results are shown in table A5.1 below:

Table A5.1: Important attributes named by Vogel's personnel

	Geen	Weinig	Redelijk	Veel	Essentieel belang	Totaal aantal keer genoemd:	Gemiddelde score:	Genoemd x Score
cable management:			2	10	1	13	3,92	51
Montage gemak			2	8		10	3,80	38
Veiligheid (tv/kind)			2		5	7	4,43	31
Hoogte verstelbaar		1		2		3	3,33	10
Aantal gaten in de muur					2	2	5,00	10
gebruiksvriendelijk				1	1	2	4,50	9
Voor gemonteerd				1	1	2	4,50	9
Smooth bewegen				1	1	2	4,50	9
gewicht (transport)			1	1		2	3,50	7
Hergebruik(andere tv)			2			2	3,00	6
WAF					1	1	5,00	5
Afmetingen					1	1	5,00	5
lengte van de arm					1	1	5,00	5
Niet piepen met bewegen					1	1	5,00	5
electrische bediening				1		1	4,00	4
Indicatoren voor terug beginstand				1		1	4,00	4
anti-diefstal			1			1	3,00	3
Safety label(TuV)			1			1	3,00	3
combineerbaar met kabelkolom			1			1	3,00	3
integratie stroomvoorziening			1			1	3,00	3
gereedschappen bijgevoegd			1			1	3,00	3

From the survey can be concluded that according to Vogel's personnel the most important attributes for the consumer are Levelness, Sturdiness and stability, Cable management, and Ease of installation followed with reasonable importance by Closeness to the wall, Lifetime guarantee and design, and finally colour and Vogel's brand name are considered to be of less importance. Table A5.2 gives an overview.

Table A5.2: Average rating of the 9 most important attributes by Vogel's personnel

Attribute	Importance
Levelness	4,5
Sturdiness and stability	4,5
Cable management	3,9
Ease of installation	3,8
Closeness to the wall	3,6
Lifetime guarantee	3,5
Design	3,3
Color	2,9
Brand name	2,5

Appendix 6: Assignment of the attributes

Tilt and turn ability: Both attributes help the consumer to fulfill a utilitarian need: turn or tilt the TV to watch from the desirable position. Therefore these attributes are functional attributes. The design of the wall mount reflects on the Aesthetic beauty of the product and is an attribute that reflects pleasure in an experiential way, the experience is valued as an end in itself and therefore design is a hedonic attribute. Lifetime guarantee is not an aspect of the product itself, it is a service that Vogel's offers with some of their products. Therefore guarantee is a service attribute. Closeness to the wall and the ability to conceal cables are both considered as hedonic attributes. They both influence how the product looks when it is mounted to the wall, concealed cables and closeness to the wall give the wall mount a clean tidy look and therefore reflect on the aesthetic beauty of the product. Levelness is considered as a functional attributed, when a TV is not leveled, one will not be able to watch TV properly and therefore the utilitarian function of the wall mount will not be proper. Installation service is an activity that Vogel's provides to the consumer with some of their products. Therefore installation is a service attribute.

Table A6.1: Validation of the attribute types.

	Service	Functional	Hedonic	**Agreement**
Tilt-function		*7*		*100%*
Turn-function		*7*		*100%*
Levelness		*5,5*	*1,5*	*78%*
Cable management		*2*	*5*	*71%*
Closeness to the wall		*0,5*	*6,5*	*92%*
Lifetime Guarantee	*7*			*100%*
Design			*7*	*100%*
Installation time	*1,5*	*5*	*0,5*	*71%*
Installation service	*6*	*1*		*86%*
Average agreement:				**89%**

To validate the authors choice regarding which attribute belongs to which type of value, 7 students of the Innovation Management Master at Eindhoven University of Technology were asked to determine the category for each attribute. First the different categories and attributes where explained to the students. After which they got a list with the attributes and were asked to choose which categories they thought the attributes fitted in. Table A6.1 shows the results:

With the lowest agreement of 71% and an average agreement of 89%, the conclusion can be drawn that the students in general agree with the author about the category in which the attributes should be placed.

Appendix 7: Both conjoint analyses and their attributes and levels

Table A7.1: Attributes and levels of the FLAT conjoint analysis

Attributes	Levels				
Price	*€30*	*€40*	*€50*	*€60*	*€70*
Design of the wall mount	*Design that fits interior*			*Standard neutral design*	
Guarantee	*Lifetime guarantee*			*2 year guarantee*	
Closeness to the wall	*2 cm*			*6 cm*	
Cable management	*Possibility to conceal cables*			*No possibility to conceal cables*	
Levelness	*Possibility to level TV after mounting*			*No possibility to level TV after mounting*	
Brand name	*Distinguished A-brand*			*B-brand*	
Installation Time	*15 min*			*45 min*	
Tilt ability	*Tilt able*			*Not tilt able*	
Installation service	*Installation service possible for a small charge*			*Installation service is not possible*	

Table A7.2 : Attributes and levels of the TURN conjoint analysis

Attributes	Levels				
Price	*€130*	*€145*	*€160*	*€175*	*€190*
Design of the wall mount	*Design that fits interior*			*Standard neutral design*	
Guarantee	*Lifetime guarantee*			*2 year guarantee*	
Closeness to the wall	*2 cm*			*6 cm*	
Cable management	*Possibility to conceal cables*			*No possibility to conceal cables*	
Levelness	*Possibility to level TV after mounting*			*No possibility to level TV after mounting*	
Brand name	*Distinguished A-brand*			*B-brand*	
Installation Time	*15 min*			*45 min*	
Tilt ability	*Tilt able*			*Not tilt able*	
Installation service	*Installation service possible for a small charge*			*Installation service is not possible*	

Appendix 8: Survey Design

Introduction question:

The introduction question makes sure that the respondents are distributed correctly over the two different surveys. The question asks the respondent if they can specify the arrangement of their living room. The answer to this question either leads them to the TURN survey (if there are living room seats that do not face their current TV at the right angle) or to the FLAT survey (if the living room seats are always at a straight angle with their current TV). To clarify this as much as possible, both choices are supported by text and an image. Figure A8.1 below shows the introduction question:

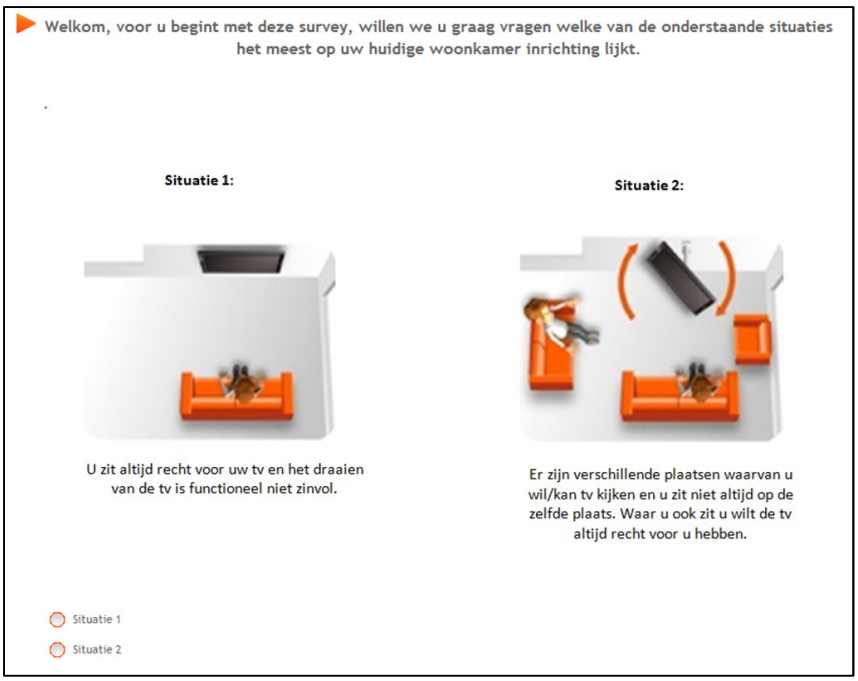

Figure A8.1: Introduction question survey

General questions:

Before the actual conjoint questions, a series of general questions is asked, starting with some basic demographic questions to get some insights in the characteristics of the sample and to test afterwards if the assumption that there is no difference between groups is correct. Respondent are asked for their age, sex, income and finally the price and size of their current TV is asked.

After these demographic questions, a question considering the purchase situation is asked. This because several articles on perceived value (Speng et al. 1993; Parasuraman, 1997; Woodruff, 1997), suggest that there is a difference in perceived value in pre- and post-purchase situation. The question that addresses this simply asks the respondent if their TV is already supported by a wall mount or not.

Conjoint questions:

The previous chapter explained the various choices considering the design of the conjoint analysis. This section explains how these choices are used and implemented in the actual survey. As mentioned in section 4.3.3 the optimum number of questions is 13 and the number of attributes per choice set is five. The first attribute is fixed (price) and the other 4 attributes shown, randomly rotate amongst the remaining 9 attributes. Figure A8.2 shows one of the questions of the survey:

Price (euro):	€50	€30
Installation time:	45 min	15 min
Installation service:	installation service not possible	installation service Possible for a small charge
Design:	Standard neutral design	Design that fits interior
Minimal distance from the wall :	2 cm	6 cm
	○	○

Figure A8.2: Example conjoint analysis question of the FLAT survey

Because some attributes are more complex, explanations with images and text are given before the start of the conjoint questions. The explanations are in the pictures below:

1. Het plaatje hieronder laat twee verschillende types muursteunen zien m.b.t het kantelen van de TV.

Niet kantelbaar

De TV heeft geen mogelijkheid om te kantelen

Wel kantelbaar

De TV heeft de mogelijkheid om te kantelen

2. Het plaatje hieronder laat zien wat bedoeld wordt met het bijstellen van Flatscreen TV's na het ophangen.

Als de TV lichtjes scheef is opgehangen aan de muur, kan hij nadat hij is ophangen nog in de goede positie worden bijgesteld.

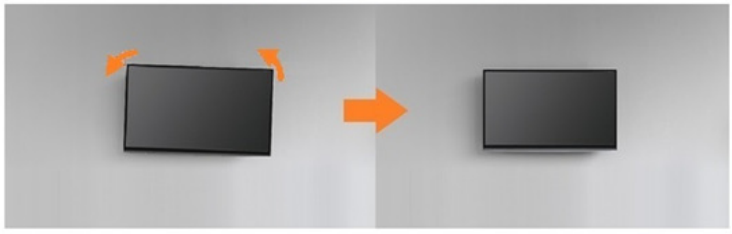

Figure A8.3: Example conjoint analysis question of the FLAT survey

Appendix 9: Cleaning the data based on completion speed.

The conjoint questions are always answered with a “1” or a “2”, so this aspect cannot be checked for outliers. However, the amount of time a respondent spends on answering a question is monitored. This means that people spending too little attention to a question can be filtered out. If a normal outlier analysis on the time spend is conducted, a few data points stand out as outliers. These data points however are all outliers because they have a relatively ***high*** question time. These data are not removed because spending allot of time on a single question probably just means that the choice was hard to make.

The questions which are answered relatively fast are not considered as outliers by the general outlier analysis in SPSS (no standard score is higher than 2.5 or lower than -2.5) Common sense however teaches us that some of the fast answered questions need to be removed. When a respondent takes less than 1 second to answer a question for instance, he/she clearly did not read the question and therefore these answers should not be used in the analysis. Logically, finding the cutoff value for the appropriate answering time is a hard task. To get an indication for this cutoff value an intuitive approach is used.

First a variable called “time_conjoint” is created, this variable shows the sum of the time spend on all 13 conjoint questions. To determine the cutoff value for this variable the creator of the survey filled in the 13 conjoint questions. Because the survey creator is familiar with the questions, choices and attributes, the time he spends on answering the questions should be much faster than the average respondent. To make the value more reliable, the survey was filled it in at five random moments on five different days. The mean answering time this resulted in (99 seconds), is used as the cutoff value. All respondent for which “time_conjoint” has a lower value than 99, are excluded from the analysis. The cutoff value determined above is valid for both surveys. This because the attributes analyzed in both surveys are identical, which means the complexity of the choice tasks are identical as well.

Appendix 10: Detailed description of the 3 analysis methods used

The CBC Count analysis:

The CBC count analysis provides quick and automatic calculation of the main effects and interaction effects for collected CBC data. It calculates a proportion of "wins" for each level, based on how many times a concept including that level is chosen, divided by the number of times a concept including that level appeared in the choice task (Orme, 2008). This CBC Counts analysis is conducted for the sample as a whole to get an indication which attributes are most important and to find out if there are interaction effects between brand and the other attributes. It also is conducted for groups separated on the basis of the general questions in the survey. This shows if there are differences in preferences between for instance, males and females and sheds light on possible segmentation options.

Latent class analysis

Latent Class is a utility estimation method to use with Choice-Based Conjoint data. Latent class segmentation divides respondents into segments having similar preferences based on their choices in CBC questionnaires. The latent class analysis detects subgroups with differing preferences and estimates part worths for each segment. The subgroups have the characteristic that the respondents within each group are relatively similar but the preferences are quite different from group to group (Orme, 2004). Latent class's role is to both assess the quality of the experimental design and to estimate the average preferences of the sample, but rather than finding average part worth utilities for all respondents together, it detects subgroups with differing preferences and estimates part worths for each segment. The subgroups have the characteristic that the respondents within each group are relatively similar but the preferences are quite different from group to group. The latent class estimation process works like this:

1. Initially, select random estimates of each group's utility values.
2. Use each group's estimated utilities to fit each respondent's data, and estimate the relative probability of each respondent belonging to each group.
3. Using those probabilities as weights, re-estimate the logit weights for each group. Accumulate the log-likelihood over all groups.
4. Continue repeating steps 2 and 3 until the log-likelihood fails to improve by more than some small amount (the convergence limit). Each iteration consists of a repetition of steps 2 and 3.

Latent class analysis does not assume that each respondent is "in" one group or another. Rather, each respondent is considered to have some non-zero probability of belonging to each group. If the solution fits the data very well, then those probabilities approach zero or one (Orme, 2004).

Because of the above mentioned process Latent class is a valid segmentation method that has been examined found to be effective in many articles in the marketing literature (Orme, 2004).

Two parameters are used to determine the number of segments; "Consistent Akaike Information Criterion" and "Relative Chi Square".

Consistent Akaike Information Criterion (CAIC) is among the most widely used measures for deciding how many segments to accept. CAIC was proposed by Bozdogan (1987), and an application similar to that of Sawtooth software is described in Ramaswamy et al. (1993). CAIC is closely related to the log likelihood. Sawtooth software's implementation of CAIC is given by the formula:

$$CAIC = -2 \text{ Log Likelihood} + (nk + k - 1) \times (\ln N + 1)$$

In this formula k is the number of groups, n is the number of independent parameters estimated per group, and N is the total number of choice tasks in the data set.
Unlike most measures, smaller values of CAIC are preferred. CAIC is decreased by larger log likelihoods, and is increased by larger sample sizes and larger numbers of parameters being estimated. (Orme, 2004)

Relative Chi Square is Chi Square divided by the number of parameters estimated (nk + k - 1).

Sawtooth software does not have a theoretical basis for this statistic, but Monte Carlo analyses of many data sets has led them to believe that it may be useful for choosing the number of segments. A bigger Relative Chi Square is preferred. (Orme, 2004)

The latent class analysis's main purpose in this research is segmentation. Even though a segmentation analysis on the basis of several characteristics is conducted in the CBC Counts analysis, Latent class analysis can segment on the bases of preferences and can therefore find possible segments that can't be found in the CBC analysis.

Hierarchical Bayes analysis

The earliest methods for analyzing choice-based conjoint data (e.g. the 70s and 80s) usually did so by combining data across individuals (e.g. counting and aggregate logit). Although many researchers realized that aggregate analyses could obscure important aspects of the data, methods for estimating robust individual-level part-worth utilities using a reasonable number of choice sets didn't become available until the 90s.

Landmark articles by Allenby and Ginter (1995) and Lenk, DeSarbo, Green, and Young (1996) described the estimation of individual part worths using Hierarchical Bayes (HB) models. This approach seemed extremely promising, since it could estimate reasonable individual part worths even with relatively little data from each respondent.

HB has been described favorably in many journal articles (Orme, 2009). Its strongest point of differentiation is its ability to provide estimates of individual part worths given only a few choices by each individual. It does this by "borrowing" information from population information (means and covariances) describing the preferences of other respondents in the same dataset. Although ICE also made use of information from other individuals, HB did so more effectively and required fewer choices from each individual.

In the HB analysis the model is evaluated on how well it fits the data, this is done by two parameters; "Percent certainty" and "Root likelihood".

Percent certainty indicates how much better the solution is than chance, as compared to a "perfect" solution. This measure was first suggested by Hauser (1978). It is equal to the difference between the final log likelihood and the log likelihood of a chance model, divided by the negative of the log likelihood for a chance model. It typically varies between zero and one, with a value of zero meaning that the model fits the data at only the chance level, and a value of one meaning perfect fit. (Orme, 2009)

Root likelihood measures the goodness of fit in a similar way. To compute the nth root of the likelihood is taken, where n is the total number of choices made by all respondents in all tasks. is therefore the geometric mean of the predicted probabilities. If there were k alternatives in each choice task and we had no information about part worths, we would predict that each alternative would be chosen with probability 1/k, and the corresponding would also be 1/k. The in this case would also be 1/n. A of for instance 2*1/n would implicate that the model is two times better at estimating utilities than a basic chance model would be one if the fit were perfect. (Orme, 2009)

The Pct. Cert. measure conveys essentially the same information, and both are good indicators of goodness of fit of the model to the data (Orme, 2009).

The HB Analysis is used to find the part worth utilities and average importance of all attributes. The average importance of each attribute combined with the categorization of each attribute gives insights in the correctness of the conceptual model.

Appendix 11: Detailed results TURN survey

CBC Counts analysis for TURN

For the CBC Counts analysis the main effects are checked to see if they are in line with those of the FLAT survey. Table A11.1 shows the main effects of the count analysis for the TURN survey

Table A11.1: main effects of the CBC Counts analysis for the TURN survey

Attribute	Percentages				
Price (euro)	*€130*	*€145*	*€160*	*€175*	*€190*
Sig. p<.01	0,2356	0,2116	0,1968	0,1836	0,1728
Tilt	*Able*	*Not able*			
Sig. p<0.1	**0,687**	**0,313**			
Design	*Fits interior*	*Neutral*			
Sig. p<0.1	0,552	0,448			
Brand	*A-brand*	*B-brand*			
Sig. p<0.1	0,573	0,427			
Guarantee	*Lifetime*	*2-year*			
Sig. p<0.1	**0,606**	**0,394**			
Distance to wall	*2 cm*	*6 cm*			
Sig. p<0.1	0,527	0,473			
Conceal cables	*Possible*	*Not possible*			
Sig. p<0.1	**0,756**	**0,244**			
Installation time	*15 min*	*45 min*			
Sig. p<0.1	0,531	0,469			
Leveling after mounting	*Possible*	*Not possible*			
Sig. p<0.1	**0,714**	**0,286**			
Installation service	*Available*	*Not available*			
Sig. p<0.1	0,538	0,462			
Total respondents	**201**				

The table shows that all main effects are significant ($p < 0.1$) and that the four attributes that are most important for the consumer are “Tilt ability”, “Guarantee”, “Conceal cables” and “Leveling after mounting”(colored red). These are the same as the four most important attributes in the FLAT survey. There are however some small differences in the percentages. This Count analysis shows that the general value perceived by consumers of each attribute is approximately the same for the FLAT and TURN surveys.

Latent Class analysis for TURN

To check if there are segmentation possibilities the Latent class analysis is performed on the TURN survey as well. The results of the comparison between 1 to 5 groups are given in the table below.

Table A11.2: main effects of the Latent Class analysis for the TURN survey

Groups	Pct. Certainty	CAIC	Relative Chi-Square	Iterations
1	28.27	2713.68	78.76	4
2	31.21	2731.44	41.86	25
3	32.82	2797.27	28.99	56
4	34.17	2872.29	22.50	45
5	35.79	2937.83	18.78	99
Total respondents: 201				

As explained in section 4.5, smaller values of CAIC and higher values of Relative Chi Square are preferred. Table A11.2 shows that when the number of segments increases, the CAIC increases and the Relative Chi Square decreases. So according to both statistics, no segmentation should be applied. The last column shows the number of iterations, the maximum was set at 100 iterations. The table shows that none of the solutions needed 100 iterations. This means that each solution was converged as much as possible within the number of iteration boundary. From the latent class analysis can be concluded that no segmentation should be applied.

HB analysis for TURN

To test if the final model that was created for the FLAT survey is in line with the TURN survey, the same 3 HB analyses are done. The first analysis is conducted for the whole sample, and after that, models are estimated for the pre-and post-purchase samples separately.

Total sample

The same method as in the previous chapter is used to assess the convergence. Figure A11.1 below shows the iteration progress for an analysis with 5000 and 1500 iterations before assuming convergence. The left graph shows that the convergence is reached at about 2000 iterations. The right graph shows that for a considerably larger number of iterations no more convergence can be identified.

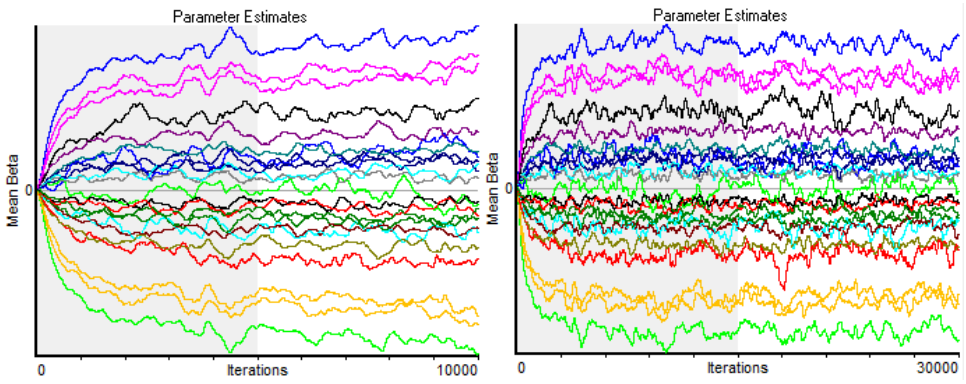

Figure A11.1: convergence process 5000 iterations (left), and 15000 iterations (right)

To acquire the utilities and relative importance of the different attributes the number of iterations before assuming convergence is kept at 5000. The Percent certainty for this model is 0.772. A value of 0 indicates that the model fits the data equally good then a chance model and a value of 1 means a perfect fit. The value of 0.772 therefore indicates that this model has a good fit. The RLH of 0.854, indicates that this model is 0.854/0.5 = 1.7 times better than a chance model.

Table A11.3 shows the average importance of the attributes ranked from highest to lowest. The table shows that "Conceal cables" is by far the most important attribute perceived by the consumer, followed by "Leveling after mounting". Third most important is "Price". Price is followed by "Tilt function" and "Guarantee". "Distance to the wall", "Design", "Brand", "Installation service" and especially "Installation time" are all of lesser importance. The results are in line with the results of the FLAT survey. The 5 most important attributes in both surveys are the same with only small differences in percentages. The 5 least important attributes are also the same but the order of those attributes is slightly different in both surveys. The only attribute that stands out is the "distance to the wall". This has an average importance of 7.04 in the FLAT survey and an average importance of 4.79 in the TURN survey.

Table A11.3: HB importance estimations total sample of the TURN survey

	Average importance
Conceal cables	*20.25*
Leveling after mounting	*16.53*
Tilt	*15.36*
Price (euro)	*13.63*
Guarantee	*7.82*
Brand	*6.04*
Design	*5.80*
Installation service	*5.58*
Distance to wall	*4.79*
Installation time	*3.87*
Total:	*100*
Total respondents: 201	

Pre- and post- purchase sample

The same analysis was conducted for the pre and post purchase sample. For the pre-purchase sample the percent certainty and RLH were respectively 0.751 and 0.842 and the post purchase sample these were 0.847 and 0.90 which means the fit between these data and their models is good.

Table A11.4 below shows the average importance of each attribute for both the pre- and post-purchase sample. The results show that almost all attributes differentiate but that 3 attributes stand out (colored red). First, the value that people see in the ability to conceal cables increases substantially once they own a wall mount (19.0 pre-purchase vs. 23.7 post purchase). This same increase in value is seen in the design attribute (5.5 pre-purchase vs. 8.2 post-purchase). The effect of purchase situation on installation time is the exact opposite. Respondents that already own a wall mount see less value in this attribute than respondents that do not own a wall mount (6.0 pre-purchase vs. 3.3 post-purchase). When interpreting these results, it should be kept in mind that the

sample sizes are not close to equally distributed and that the sample size of the post-purchase situation is relatively small.

Table A11.4: HB importance estimations pre-purchase and post purchase of the TURN survey

Pre-purchase	Average importance	Post-purchase	Average importance
Conceal cables	*19.04*	Conceal cables	*23.68*
Leveling after mounting	*16.52*	Leveling after mounting	*15.12*
Tilt	*15.39*	Tilt	*14.57*
Price (euro)	*14.70*	Price (euro)	*11.33*
Guarantee	*7.74*	Guarantee	*8.77*
Brand	*6.24*	Design	*8.22*
Installation service	*6.01*	Brand	*7.17*
Installation time	*6.01*	Installation service	*5.04*
Design	*5.50*	Distance to wall	*3.87*
Distance to wall	*4.90*	Installation time	*3.34*
Total:	*100*	Total:	*100*
Total respondents: 163		Total respondents: 38	

Conclusion

From the TURN HB analysis can be concluded that the results of the FLAT and TURN are comparable. The only attribute that stood out was distance to the wall. This attribute was considered to be more important in the FLAT survey than it was in the TURN survey and is discussed more in the practical implications. If the proposed conceptual model is combined with the assignment of the attributes and results of the TURN analysis, the model shown in figure A11.2 arises. The model shows that the value added by services is also considerable for the TURN survey according to the consumer and therefore indicates that current models are incomplete and service value should be a part of consumer perceived value models.

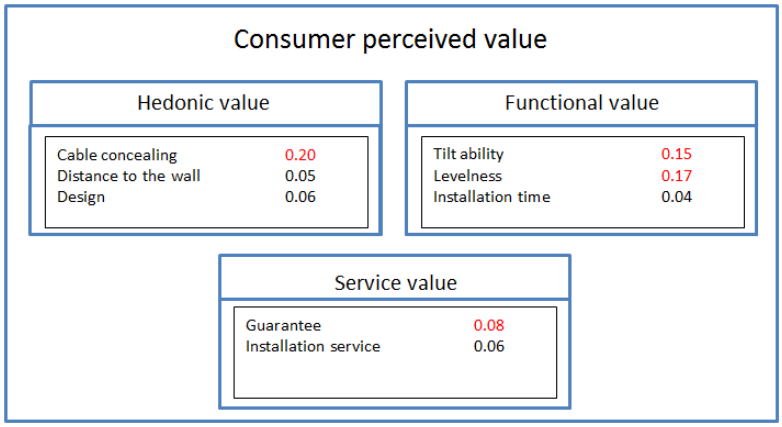

Figure A11.2: Consumer perceived value conceptualisation with the relative importance each attribute in this study.

The results of this HB analysis also confirm that a there is a considerable difference between pre-and post-purchase situation.