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Title thesis: Consumer Preferences for E-Retailer's Attributes in the Fixed Gear/Single Speed Bicycle Industry in the Netherlands.

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Consumer Preferences for E-Retailer's Attributes in the Fixed Gear/Single Speed Bicycle Industry in the Netherlands.

Bachelor Thesis

By: Dana Ibragimova (406837)

Abstract:

This research uses a discrete choice experiment (DCE) to find out how consumers respond to certain attributes for web-shops in the fixed gear/ single speed bicycle industry. This research is intended to help web-shops design their websites in a way that would result in acquiring more customers. Income level was chosen as the moderator variable and certain expectations were made. The results showed that all attributes except *Convenience,* had a significant effect on the choices made by respondents. Privacy and Security attribute was the most important factor for them when purchasing bicycles and parts online. The highest level of income had a significant influence on certain web-site attributes, whereas other levels were insignificant.

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1. Introduction

In 2017, in the Netherlands alone, the consumers spent €22.5 billion on online purchases, this is a 13% growth compared to 2016. Dutch consumers spent the most on Health and Beauty, Food/Near Food, Home and Garden, Shoes and lifestyle, and Clothing (Thuiswinkel, 2017). This growth shows that consumers place confidence in purchasing items online ever than before (Emarketer, 2017). With the help of Dutch giants such as Bol.com and Coolblue, consumers are able to purchase products from multiple categories with just a few clicks from one website.

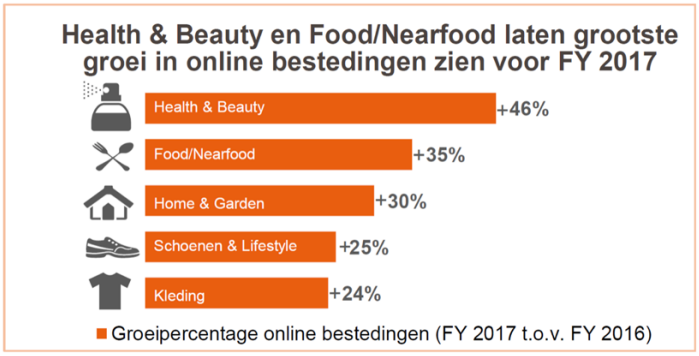

Figure 1: Growth percentage in online purchases 2016-2017. Source: www.thuiswinkel.org

Astonishingly, the Netherlands has the highest percentage of bicycle ownership in the world, with 22.5 million bicycles for 17 million people. That results in 1.3 bicycles per resident on average (Beslist.nl, 2016). However, as figures show, the majority of the population does not buy bicycles online. As of 1st January 2015, a new Dutch law was introduced; Work expenses Scheme (Werkkostenregeling). This meant that some costs could be covered, such as purchasing a company bicycle. As a result, there was 48% growth in total sales in the bicycle industry compared to the year 2014 (Gfk, 2015). Moreover, there was just a marginal increase in online purchases of bicycles. Overall, the Dutch are buying fewer bicycles each year, on the other hand, the bicycles that are purchased are more expensive each year. In 2007 for example, there were about 1.4 million bicycles sold, however in 2016 only 928,000 [Figure 2]. Contrarily, the worth of the bicycles sold in 2007, compared to 2017 stayed roughly the same (Rabobank, 2018).

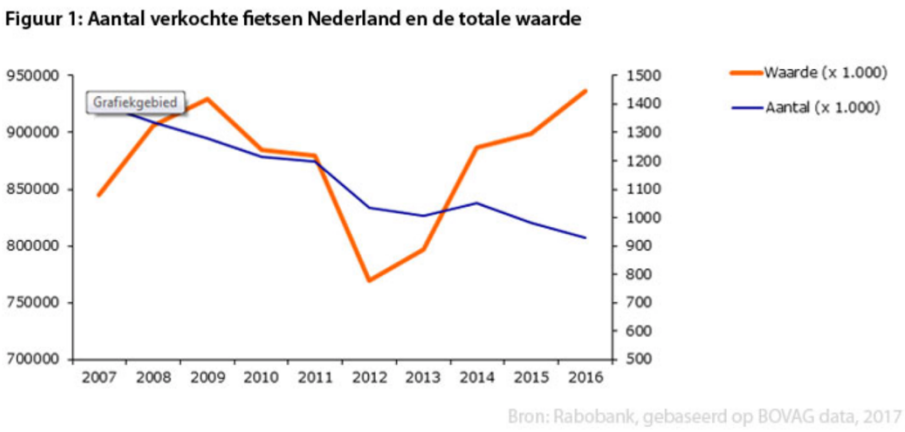

Figure 2: Number of bicycles sold and their worth in the Netherlands 2007- 2016. Source: www.Rabobank.nl

1.1. Problem Statement and Research Question

Since the world of e-retail is constantly changing, in order to adapt to very choosy consumers, it is important to be up-to-date with the attributes that are demanded such as lowest prices and variety of products to choose from (Jaishankar, Reynolds, Luckett, & Pomirleanu, 2010). The main purpose of this research is to find out what attributes are preferred when consumers purchase bicycles and parts online. Therefore, the research question is stated as follows:

"How do the different attributes influence consumer preferences when purchasing bicycles and parts online in the Netherlands?"

1.2. Managerial and Academic Relevance

Managerial relevance

This thesis is relevant for managers in the following ways; Firstly, the findings of this research will provide valuable insights for the managers of bicycle retailers on how to actively use attributes for their websites in order to increase sales and profit figures. Secondly, the results of this research might provide the marketing managers with new ideas concerning how exactly to target the different customer segments.

In particular, the insights of this thesis will provide guidance to the company Rat-Bikes in the Netherlands. Rat-Bikes is a Dutch company that operates in the bicycle industry. It is a parent company of six different web-shops. The web-shops operate in different segments of the bicycle industry, ranging from touring/racing/fixed gear bicycles to bicycle bags and saddles.

Additionally, Rat-Bikes has one “brick and mortar” store where all the operations are performed. Currently, Rat-Bikes makes an annual revenue of about €600,000 which is just 0.05% market share (Verhagen, 2018). Therefore, this research is intended to help the company Rat-Bikes to increase its revenue and profits.

My interest in this company is driven by the fact that I have been working for this company for a few years. Due to my passion for bicycles, with the results of this thesis, I would like to contribute to the marketing department to develop an appropriate marketing plan.

The aim is to provide among other company’s pertinent recommendations, to optimize their websites to make it a trust-worthy and consumer-friendly website.

Seeing that there is the growth in E-retail in the Netherlands, it is important for the company Rat-Bikes (RB) and other similar companies in the bicycle industry to be up-to-date with the changes in consumers preferences since the industry is slowly declining. Therefore, this research is intended to help the companies such as Rat-Bikes increase the revenue for its Fixed Gear/Single Speed category of bicycles by analyzing the attributes that consumers prefer. The main focus is on the website: www.singlespeedparts.nl the research will provide insights for the marketing managers to assist in finding the preferred attributes to their webpage that would help in creating a more profitable segment.

Academic Relevance

In terms of academic relevance, this thesis contributes to the following streams of literature. The first is retail literature that studies differences in consumers that shop online and in a traditional format. They test the attributes that shoppers evaluate on the basis of their preferences. Therefore, this thesis will be contributing to this stream of literature with its attempt to find how different attributes influence consumers in one single industry (Melis, Campo, Breugelmans, & Lamey, 2015).

The second stream of literature studied the effect of shipping fees on customer acquisition, customer retention and purchase quantities by (Lewis, 2006). In order to assist in the strengthening of the results, this thesis intends to find out how different shipping fee structures are preferred to consumers in the bicycle industry.

Additionally, discrete choice experiment (DCE) in the bicycle industry has not been conducted before. Therefore, this research would be beneficial as it would contribute to the DCE field of research.

1.3. The structure of the research

This research is composed of five sections. Theoretical framework (Section 2) will be discussed in the following section, where the attributes that are selected are explained in detail. The methodology section (Section 3) will further explain how the research is conducted and how the data is collected. Furthermore, the data analysis and results section (Section 4) are examined, and the research will come to an end with the conclusion and limitations section (Section 5).

2. Theoretical Framework

2.1. Literature

E-shopping has been used more often over the years and it is a significant characteristic of every retailer's strategy (Ganesh, Reynolds, Luckett, & Pomirleanu, 2010). In the paper written by (Ganesh, Reynolds, Luckett, & Pomirleanu, 2010), the authors try to reveal the similarities in traditional shoppers and online shoppers. They test the "Big Middle Theory" which is defined by (Levy, Grewal, Robert, & Cnnolly, 2005), the big stores such as Wal-Mart and Target are the ones that succeed in the long run since that is where the largest number of customers are captured. They used several web-site attributes such as safety, security, order confirmation, shipping costs, timely deliveries, as well as the ease of ordering, paying for, and returning merchandise purchased online, offline presence, price orientation, website attractiveness, merchandise variety and web security/certification. It was concluded that the two kinds of shoppers are indeed more similar to each other rather than different. Additionally, having an offline store together with an online store provides greater benefit. This paper points out the importance of product variety, furthermore the use of personalized customer service and lastly, addressing the safety and security by providing "offline" stores.

Another paper that discusses the importance of e-commerce and the reasons why certain consumers prefer shopping online, other than convenience and time costs. The authors have used fuzzy-set qualitative comparative analysis (fsQCA) in order to try to find the motivations

and barriers to online shopping (Chaparro-Pelaez, Agudo-Peregrina, & Pascual-Miguel, 2016). Firstly, they have concluded that there not one single reason as to why consumers purchase online, there are always a set of reasons that have to be present. Secondly, product variety and convenience are always positive conditions, however, the price is negative. Therefore, meaning that price is no longer a motivation for consumers to shop online. Additionally, even though the number of internet users is increasing every year, for many using the internet is considered a daily task, a large number of people are concerned about their privacy. Thus, the authors suggest that e-commerce retailers should keep working on keeping consumers data private and secure.

The difference between traditional retailers and e-retailers are that e-retailers create an additional process such as transportation costs and order assembly that are not present in traditional retailers (Rosen & Howard, 2000). In the article written by (Lewis, 2006), a research was conducted on how shipping costs affect the consumers purchase behavior. The author tried to find whether different shipping costs have any influence on the number of products that are purchased and how often the same customer purchased the products from the same website. It was concluded that the best policy for e-retailers is the one that offers free shipping above a certain amount (threshold-based) that consumers can order rather than have free shipping for every order or shipping costs that increases as the order gets larger (flat-rate shipping). This research was one of the first that tried to study the effect of shopping costs on order size, repeated order and customer acquisition (Lewis, 2006).

2.2. Hypothesis development

Attributes are factors that play a role as to why consumers decide to purchase certain products at a certain website. As per the attributes, the following are selected: Product variety, Convenience, Shipping costs, Security & Privacy and Website Design. The next subsections focus on factors that may influence consumers choice. I organize the following subsections as follows, first I give the explanation of the factor and why these factors are important and finally I provide my expectations on how they may influence consumer choice.

Product Assortment

Product assortment refers to the variety of options offered on the website (Morales, Kahn, McAlister, & Broniarczyk, 2005). Www.Singlespeedparts.nl is a website that sells a specific category of bicycles and parts, it offers its customers a range of products that are accordingly targeted to this specific segment. Thus, product assortment has been chosen as an attribute to find out whether the consumers of the Fixed Gear/ Single Speed market for bicycles would prefer to view and buy a larger variety of brands and/or products. Even though a larger assortment of products for consumers is considered profitable in some cases, having an "unlimited" online-shelf space can be seen as beneficial since there are ample opportunities to find the products required and additionally be able to compare them with a few clicks away (Haubl & Trifts, 2000). On the contrary past research has shown that large variety can be bewildering and decrease the likelihood of purchase (Huffman & Kahn, 1998). Additionally, having larger variety would mean that it will be even more difficult for the company to have stock in their only "offline" store, which in return would mean that customers would be only able to buy most of the products online without having the ability to have physical contact nor employee interaction (Haubl & Trifts, 2000). Thus, H1 is formulated as follows:

H1*: Consumers prefer greater product assortment more than lower product assortment.*

The expectation of H1 hypothesis is that when a consumer will prefer higher assortment variety of products to choose from, rather than a low variety of products.

Convenience

Convenience refers to how simple, intuitive and user friendly a website is to a customer (Srinivasan, Anerson, & Ponnavolu, 2002). E-retailers have been finding various paths to compete with their direct competitors in different ways over the past few years. In Denmark, for example it is now possible to purchase a Volkswagen car with just a few clicks and then delivered to the buyer's door step in a few days (Enberg, 2017). Amazon's "buy with 1-click"

option has made it for customers convenient in a way that they no longer need to input their personal details like credit card number in order to purchase products since it remembers their data from previous purchases. Therefore, this attribute was chosen since it would be interesting to know whether the Dutch consumers would like to purchase bicycle related items with, for example just a single click?

H2: Consumers prefer one-click purchase more than multiple click purchase option.

Due to Amazon's success of the "one click purchases", there is high expectation that Dutch consumers who trust the website will prefer purchasing with more convenience (one-click), rather than having to enter all the details each time they order products online. Therefore, it is expected that one-click purchase is preferred over multiple-clicks.

Shipping costs

Shipping costs are costs that a consumer has to pay when purchasing products online. These costs play in important role on the company's profitability, in the paper by (Koukova, Srivastava, & Steul-Fischer, 2012) the authors examined the effect of "flat rate shipping" and "threshold-based free shipping" and how consumers respond to such. Flat rate shipping is when there is a fixed fee regardless of the quantity or value that is ordered. Threshold-based free shipping is when there is free shipping above a specific amount. Singlespeedparts.nl uses a threshold-based free shipping, that is orders above €50 are shipped free of charge. Approximately 49% of retailers use flat-rate shipping fee structure and 43% use threshold-based structure (Koukova, Srivastava, & Steul-Fischer, 2012). Another paper written by (Lewis, 2006) found that a threshold-based shipping results in higher amount of revenues when compared to other types of shipping policies. Having the appropriate shipping free policy is important if a company is in need of a way to retain or acquire new customers.

H3: Consumers have a higher preference for flat-rate shipping compared to threshold-based free shipping.

The expectations of H3 hypothesis is that consumers only slightly prefer flat-rate shipping fee over threshold based.

Security and Privacy

Security and privacy refer to the risk of shoppers losing control over their personal information while purchasing online (Pan & Zinkhan, 2006). The increase in online shoppers has been tremendous over the past years. Internet literacy has been growing, from 3.39 billion in 2016 to 3.58 billion worldwide internet users in 2017 (Statista, 2017). Yet, privacy is still the main concern for many, customers often lose trust for a particular website because of privacy-related risks (Pan & Zinkhan, 2006). Spam, usage tracking, data collection and sharing of data with third-parties are included as privacy issues (Belanger, Hiller, & Smith, 2002). Security is usually defined as a protection against the following threats; destruction, disclosure, modification of data, fraud, waste, and abuse (Belanger, Hiller, & Smith, 2002). In order to find out the preferences of consumers regarding their concerns about privacy and security, this attribute was chosen. Marketers often collect user's information in order to target customers more accurately (Culnan & Armstrong, 1999). Therefore, it would be beneficial to find out to what extent consumers in the bicycle industry are willing to provide personal information to marketers.

H4: Consumers have a higher preference for higher level of privacy compared to the lower level of privacy.

It is expected that there are consumers are highly concerned about their privacy, therefore they would only be willing to provide the lowest amount of information to the companies.

Website Design

Website design refers to color, shapes, images and, videos, that as a result help to shape the user's perception of a website (Cyr, Head, & Larios, 2010). When an appropriate website design is present, visitors often transition into customers (McDowell, Wilson, & Owen, 2016). Having a website that is designed to look pleasant results in visitors having an enjoyable experience and therefore higher chances of purchases. A website that contains detailed product information and product videos additionally encourages consumers to purchase products from that particular website (McDowell, Wilson, & Owen, 2016). Convenience and time saved are the most well-known reasons as to why consumers shop online (Ranganathan & Ganapathy, 2002). Therefore, it is important for a website to be designed in a way that consumers spend the least amount of time finding the product and the information

(Ranganathan & Ganapathy, 2002). In consequence, a poorly designed website can often have a negative effect on sales (Ranganathan & Ganapathy, 2002). Correspondingly, the fifth hypothesis is formulated as follows:

H5: Consumers have higher preferences for a well-designed website compared to an unpleasant design.

The expectations of the fifth hypothesis are that the consumers have a higher preference for a website that is well-designed (i.e. including suitable images and videos, appropriate product information and effortless navigation through the website) compared to a poorly designed website.

Moderator variable

This research is going to examine whether income level moderates the factors that have been mentioned above. Below I provide specific expectations on how income level moderates the influence of each factor on consumer choice likelihood. (Wakefield & Inman, 2003) hypothesized that higher income leads to less price sensitivity for hedonic purchases i.e. purchases driven by desires whereas utilitarian purchases are driven by need. Therefore, for the factor "product variety", it might occur that consumers with higher income would prefer higher product variety than those with lower income since they have more money to spend. Additionally, higher income group would show higher preference for one-click purchases rather than multiple click purchases since it saves time which makes it more convenient for consumers to shop online. Shipping cost is a factor of price (Lewis, 2006), therefore meaning that lower costs are always preferred over higher. There are two shipping fee structures that are going to be examined in this research. Consumers with higher income may prefer flat rate shipping structure, whereas lower income consumers might prefer threshold-based shipping fee structure. Consumers with higher income are not very concerned about their privacy in the online stores compared to those with lower income levels (O'Neil, 2001). Additionally, primarily a person who has a higher income is more likely to shop online, therefore it can be expected that individuals with higher income are more likely to prefer websites with a pleasant design (Bigne, Ruiz, & Sanz, 2005).

3. Methodology

Discrete choice experiments (DCE) have been frequently used in the field of marketing. This research uses DCE approach to elicit attributes that consumers in the bicycle industry prefer when purchasing products online. A statistical software program (JMP) is used to generate ten choice sets with two profiles in a survey (Appendix Figure 5). This is important because an adequate choice design has to possess the four properties; level balance, orthogonality, minimal overlap and utility balance (Huber & Zwerina, 1996). Ten choice sets were chosen since a lower amount would result in less precision and a higher amount would result in tiredness of respondents and therefore lead to inaccurate results (Savage & Waldman, 2008). In order to satisfy the fourth condition (utility balance), the program is instructed to estimate prior means β_i, the combinations that are most likely to be dominated. This optimizes the accuracy of the coefficients that are based on a partial factorial design. For *shipping costs, product variety* and *convenience*, the prior means are estimated at zero since it is unknown which attribute is most preferred. For *privacy & security* and *website design* the prior means are estimated: β_{i1} and β_{i2} at -1 and -0.5. Since no prior study has been conducted, the prior variance matrix of the parameters is estimated at 1.

The first part of the survey consists of socio-demographic questions in order to analyze the impact of individual traits on the choices that have been made (Mangham, Hanson, & McPake, 2009). Therefore, the following questions were asked:

Demographics	***Choices:***
Age	-
Gender	Male/Female/Other
Yearly income (Before tax)	<€279999 €28000-€39999 €40000-€59999 €60000+ No Income
Highest Level of Education Obtained	No Schooling MBO Hogeschool University

The second part of the survey consisted of ten choice sets with two profiles, an example is shown below:

Option 1	
Product Variety:	**High Variety** (50+ Brands)
Convenience:	**Multiple Click Purchase**
Shipping Costs:	**Threshold Based Fee** *(Above 50€, free shipping)*
Privacy & Security:	**Medium Level** *(You will be asked to state your age and gender)*
Website Design:	**Unpleasant** *(Product images and product information/specifications)*

Option 2	
Product Variety:	**Low Variety***(Top 10 Brands)*
Convenience:	**One Click Purchase**
Shipping Costs:	**Flat-Rate Fee** *(The more you order, the more shipping costs you pay)*
Privacy & Security:	**Low Level** *(You will be asked to state your age, gender and accept cookies)*
Website Design:	**Less pleasant** *(Product Images, Product information/specifications and product videos)*

Table 1: Example of a choice set from the questionnaire

In order to gain consumer data, Qualtrics was used to generate an online survey that was distributed using a campaign on a social media website: Facebook. Additionally, the surveys were given out to students on campus of Erasmus University of Rotterdam, their responses were then recorded in Qualtrics.

The designs of the ten-choice set with two profiles were made to look identical and the survey in Qualtrics that was distributed

The attributes were selected on the basis of a group discussion from customers who purchased bicycles and parts online on a frequent basis at www.SingleSpeedParts.nl. The attributes that were chosen as the most important include: product variety, convenience, shipping costs, privacy & security and website design. Table 1 summarizes the attribute and their levels for the choice experiment.

Table 2: Discrete Choice Experiment Attribute Levels

Attributes	***Levels***
1.Product variety	High Variety Low Variety
2.Convenience	One click purchases Multiple Clicks
3.Shipping costs	Flat-Rate Threshold Based
4.Privacy and Security	High Level Medium Low Level
5.Website Design	Pleasant Design Less Pleasant Unpleasant

Attribute Levels

Product variety factor indicates the options available for consumers to choose from. This factor involves two levels, high variety meaning that most brands of bicycle-related products and parts are available for consumers to choose from and the low variety, where consumers have a very limited choice. In this research, low variety are the products from the top ten selling brands in terms of quantity. Whereas high variety are all the brands included in low variety, plus other brands that are being sold. The data has been obtained from Google Analytics of the website www.singlespeedparts.nl and is shown in the table below:

Low variety Brands	***High Variety***
Only 10 Brands available (including BLB, Dia-Compe, Knog, Halo, Etc.)	More than 50 brands available (Including, Shroom, Kryptonite, Gipiemme, Sturmey Archer, etc.)

Table 3: Low variety and High Variety Brands

People who shop online, consider convenience as the most important factor (Reichheld & Schefter, 2000). One of the reasons for Amazon's huge success is the fact that customers trust the website and are willing to let the company store all their personal details. They have since introduced the one-click purchase which has become a crucial aspect of the company's success (Reichheld & Schefter, 2000). Thus, it is important to find out whether existing customers of a particular web shop would prefer the same when purchasing bicycles and parts. This factor has two levels, *one-click purchasing* and *multiple clicks*. The customers would either have to buy a product with just "one click" since their information is already stored on the website or "multiple clicks" where customers would have to go through filling all the information regarding their payment details, shipping address, etc.

Figure 3 Amazon's One-click purchase example

Shipping costs indicate the price paid to get products delivered to customers in (€) Euro. The two different shipping fee structures that are going to be examined in this research are *flat rate* and *threshold-based* fees. Shipping costs are considered an element of price, meaning that people always prefer lower shipping costs than higher (Lewis, 2006). However, since this factor is decided after the products have been chosen, it is important to know what customers prefer when purchasing products from particular web shops.

Privacy and Security have three levels; high, medium and low level. On a high level of privacy, a customer will not be asked to provide any information, nor will the information be stored on the website after the customer purchased an item. Medium level of privacy is when a visitor will be requested to state the age and gender. The low level of privacy is when a customer is asked to provide the age, gender and additionally use cookies to gather relevant information about the customer and purchases. It is important to know consumers preferences regarding to what extent they are willing to provide information about themselves since marketers collect information to target consumers more effectively (Culnan & Armstrong, 1999).

Website Design is the final attribute that has three levels. For this specific research, the three levels are a “pleasant design” which includes detailed product information and specification, videos, music, images, ease of navigation, download speed and customer product reviews.
A “less pleasant” designed website is one that has images, product information and specification and videos. The “Unpleasant” design just has images and product information and specifications.

4. Data Analysis and Results

Data Analysis

Over two-week period 239 respondents filled the survey, however only a total of 196 (82%) respondents have completed the survey by answering all the questions, the other respondents were deleted from the sample. The participants who took the survey ranged from age 16-58, the mean age being 23 years (Appendix Figure 8). Out of 196 respondents, 58.2% were male and 41.8% were female (See Figure 4).

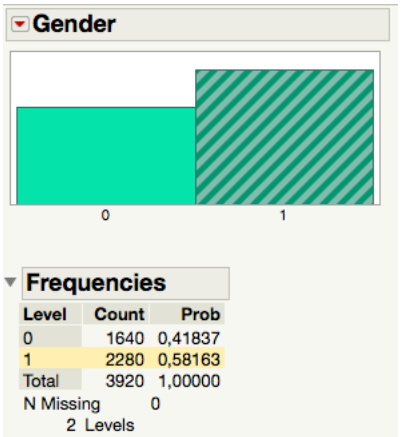

Figure 4 Demographic Data - Gender,

1= Male and 0=Female

The data collected from Qualtrics was then transferred to a statistical software JMP. P-value <0.05 is the level of significance that I have set, F-test determines that the variables and interactions have a significant influence on the perceived utility of an alternative, given the attributes of this alternative and the characteristics of a participant.

For each variable/interaction, I compared the attributes of the respondents toward different values, this can be done by comparing the effect marginals. In order to do a statistically robust analysis, parameter estimates, and the 95% confidence interval are used for the five attributes. Since not all levels of the attributes are made available in the parameter estimates within JMP, due to multicollinearity, I will compare the missing levels with the other levels within an attribute through the utility profiler to make a statistically robust analysis of the effects of these levels.

Results Model I

Model I (See Appendix Figure 11) analyzes the significance of the preferences of different attribute levels that was performed using the likelihood ratio test. The attributes in Model I will be discussed in further detail:

Attribute	**Explanation**
Privacy and security	It was found that this attribute has a significant influence on the perceived utility for an alternative in the choice set (P=0.00000 < 0.05). The estimate of the effect of Privacy and Security of Medium Level and High level is significantly positive (given the estimate, error term and the confidence interval). However, the estimate effect for Higher Level of Privacy and Security is larger than for Medium Level. Therefore, this positive effect on the perceived utility for the respondents is significant. Low Level of Privacy and Security is perceived negatively by the respondents, compared to high and medium levels. The variable of importance shows that Privacy and Security is ranked first as the most important attribute to the respondents.
Website Design	has a significant influence on the perceived utility for an alternative in the choice set (P=0.00000 < 0.05). The estimate effect of Pleasant website design is significantly negative, and the estimate effect of Less pleasant website design is significantly positive. The Pleasant website design is perceived very negatively by the respondents when compared to others. Less Pleasant design is perceived more positively than an Unpleasant website design. The variable of importance shows that Website Design is the second most important attribute.

Shipping costs	Has a significant influence on the perceived utility for an alternative in the choice set (P=0.00000 < 0.05). The estimate effect of Flat-rate shipping fee is significantly negative. Flat-rate shipping fee is negatively perceived by the respondents, compared to Threshold-Based shipping fee that is positively perceived when looking at the effect marginals. In the variable of importance analysis, Shipping costs is ranked as the third most important attribute.
Product variety	Has a significant influence on the perceived utility for an alternative in the choice set (P=0.00000 < 0.05). The estimate effect if High Product variety is significantly negative. Surprisingly, Low variety of products is perceived positively, while high variety is perceived negatively by the respondents. Product variety is the fourth most important attribute, that is shown in the variable of importance.
Convenience	This attribute has no significant influence on the perceived utility for an alternative in the choice set (P=0.12205 > 0.05).

Results Model II - IV

These models include the attributes that were mentioned in *Model I* and their interaction effects with different income levels (Figure 6). The drawback of the *Models II – IV* is that not all interaction effects are significant. Therefore, only the interaction effects that are significant are going to be discussed.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Privacy and Security	0,00000	0,00000	0,00000	0,00000	0,00000	0,00000
Shipping costs	0,00000	0,00000	0,00000	0,00000	0,00000	0,00000
Website Design	0,00000	0,00000	0,00000	0,00000	0,00000	0,00000
Product Variety	0,00000	0,00000	0,00000	0,00000	0,00000	0,00000
Convenience	0,12205	0,37832	0,03153	0,16072	0,09253	0,03983
<€279999*Product Variety		0,49084				
<€279999*Privacy and Security		0,58744				
<€279999*Convenience		0,71405				
<€279999*Shipping Costs		0,82799				
<€279999*Website Design		0,90002				
€28000-€39999*Product Varietly			0,09765			
€28000-€39999*Convenience			0,10419			
€28000-€39999*Shipping Costs			0,26829			
€28000-€39999*Website Design			0,72018			
€28000-€39999*Privacy and Security			0,93785			
€40000-€59999*Product Varietly				0,26656		
€40000-€59999*Convenience				0,59221		
€40000-€59999*Website Design				0,75150		
€40000-€59999*Privacy and Security				0,82512		
€40000-€59999*Shipping Costs				0,83625		
€60000+*Shipping Costs					0,01908	
€60000+*Product Varietly					0,02632	
€60000+*Convenience					0,03206	
€60000+*Privacy and Security					0,09125	
€60000+*Website Design					1,00000	
No Income*Product Variety						0,05685
No Income*Shipping Costs						0,06857
No Income*Website Design						0,1701
No Income*Convenience						0,18705
No Income*Privacy and Security						0,43898

Figure 5 P-Values Model 1 - Model 6 [Income levels]

Results Model V

The interaction effects of *Model V* are going to be analyzed in further detail since it has the best fit for the data. In particular, three of the interaction effects are going to be discussed since the other interaction effects do not have a significant effect.

Interaction	**Explanation**
€60000+*Shipping Costs	For this interaction effect between having an Income Level of above €60000, it was found that it does have a significant influence on the perceived utility for an alternative in the choice set (P-value=0.01908<0.05). The effect marginals show that individuals who earn more than 60000, have a higher preference for Threshold-Based shipping fee structure compared to flat-rate fee.
€60000+*Product Variety	For this interaction effect, it was found that it does have a significant influence on the perceived utility for an alternative in the choice set (P-value= 0.02632<0.05). The effect marginals show that those with income level of 60000+ have a higher preference for low product variety compared to high product variety.
€60000+*Convenience	For this interaction effect between Convenience and income level of 60000+, it was found that it does have a significant influence on the perceived utility for an alternative in the choice set (P-value= 0.03206 < 0.05). The effect marginals show that Multiple click purchase is preferred over one click purchase for individuals who earn 60000+.

5. Conclusion & Discussion

5.1 General Discussion

This research was conducted in order to find out consumers preferences for stated attributes in the bicycle industry in the Netherlands. The results showed that the website attributes; product variety, shipping fee, convenience, website design and privacy & security have a significant effect on the respondent's choice outcome.

Model I suggest that the best option for bicycle web shops in the Netherlands would be to offer Low variety of products (Only the top 10 brands), thus H1 is rejected. The website should also have a high level of privacy and security, i.e. customers will not be asked to provide any extra information for marketing purposes, thus H4 is not rejected. The website should only include images, product information/specifications and videos (less pleasant design), thus H5 is rejected. Convenience is insignificant. Threshold-based shipping is preferred the most, therefore, H3 is rejected.

When interaction effects of Income levels are added (*Model V)*, the results show that those who have an income level of €60000+ have a higher preference for threshold-based shipping fee structure, low product variety and multiple click purchase option. Since income level was chosen as the moderator variable, certain expectations were made. Surprisingly, the results were exactly the opposite of what was expected. The reasons for these results can be that even though they have more money to spend, they prefer having less product variety as they might be very brand loyal customers and only buy products from the same brand. Additionally, they prefer multiple click purchase option, i.e. they would have to enter their personal bank details for every purchase they make, the reason for this could be that they have more money to lose and would therefore prefer to enter their details every time they make a purchase instead of having the website remember their personal information. They also prefer a threshold-based shipping fee structure, it is quite common for web-shops in the Netherlands to offer threshold-based shipping fee structure (i.e. Free shipping when purchasing over a certain amount). Since the other interaction effects turned out to be insignificant, they are not going to be discussed (Appendix Figure 14).

In conclusion, privacy and security is the most important factor to consumers when purchasing bicycles and parts online, in the Netherlands. The demographic factors have no influence on the choices that were made by the respondents.

5.2. Academic Contribution

This research has contributed to the first stream of retail literature by showing what attributes are of importance to the consumers in one particular industry – Fixed Gear/ Single Speed bicycle industry in the Netherlands. Since the main aim of this thesis is to help the company Rat-Bikes.com to become more profitable in the Fixed Gear/ Single Speed parts industry, detailed information will be provided in the following sector.

5.3. Managerial Implications

In order to help the company Rat-Bikes.com and similar companies in the industry to become more profitable, some adjustments need to be made to their web-shops. The attributes and the managerial implications will each be discussed separately.

Security and privacy

In 2017 about 1.66 billion people worldwide purchased products over the internet (Statista, 2017) , yet *privacy and security* are still the most important factor to the respondents of this research. Privacy and Security is a significant factor for consumers who are purchasing bicycles and parts online. High level of privacy and security is always preferred over other levels, i.e. consumers prefer shopping on websites where the customer will not be asked to provide any information about them, nor will the information be stored on the website after the customer purchased products. Consumers would prefer that managers do not seek consumer information for marketing purposes. It is important for managers to educate their customers regarding how the information that is obtained will be used, stores or shared. Additionally, marketers should have established guidelines on what information is allowed to be collected and used. This would build trust between the company and its consumers, and accordingly higher profits.

Website Design

Website design as well is a significant determinant of consumer preference. Website design included three levels; pleasant, less pleasant and unpleasant. The respondents have chosen that a less pleasant design is the most preferred, that is a website that has product images, product information/specification and product videos. Therefore, meaning that those who purchase bicycles and parts online, prefer a rather "simple" website design with only the information that is directly related to the products. For managers it is important not to have other sort of information on the website since distractions are more likely to lead to no products being purchased. Managers should then focus on having appropriate and relevant images and information for all their products in their web-shop.

Product Variety

Surprisingly, *low variety* of products are preferred over *high variety, i.e.* only 10 Brands available (including BLB, Dia-Compe, Knog, Halo, Etc.) rather than 50+ brands. Therefore, this factor should be a careful consideration when choosing suppliers. This goes in line with (Huffman & Kahn, 1998), that larger product variety will actually decrease the likelihood of purchase. Therefore, managers should pick the products and brands very carefully before selling them on their website.

Convenience

Convenience, is not a significant determinant of consumer preferences in the bicycle industry. Since one-click purchase option still a relatively new concept in the world of e-commerce, even though it has been proven to be useful with Amazon.com, it is a factor that is associated with security and privacy. Many people today still prefer to use the multiple click purchase system since they might be afraid that their personal details, including bank details will be stored in the websites that they purchase from. Managers should therefore, maintain multiple click option in order to gain customers trust.

Shipping Fee

Shipping fee structure is a significant determinant of consumer preferences. In both models (*I and V*) consumers prefer threshold-based shipping fee structure over flat rate shipping fee. Threshold based shipping fee is when consumers purchase goods above a certain amount, they receive free shipping. Therefore, it is important for managers to impose such a shipping fee structure for their web-shop in the bicycle industry. This recommendation is based on the respondents of this particular research, therefore a change in the threshold-based value (for example, orders above €75 = free shipping) may change the results. It is crucial to have the appropriate shipping fee structure to retain and acquire new customers.

Income level

It is important for managers to target their customers using the most efficient way, since the income level of €60000+ was significant in this research, managerial implications will be given only for this level. Firstly, knowing that privacy is the most important factor for consumers when shopping online for bicycles and parts, it would be difficult to find out the income levels of consumers for web-shops. However, by targeting their preferences, such as low product variety, one-click purchase system and threshold-based shipping fee structure, marketers are indirectly targeting the group of individuals with an income level of €60000+ and others. An assumption can be made that individuals who earn €60000+ are the older age group, therefore a recommendation for the marketers and managers would be to target this income level by creating a different website that offers low variety of products (Top 10 brands), with a multiple click purchase option and a threshold-based shipping fee structure. As a result, this would not only make this a more profitable segment, but this would be an efficient way to target older consumers with a high-income level.

5.4. Limitations and Directions for Future Research

This research has several limitations; first limitation is that discrete choice experiments (DCE) rely on hypothetical choices, that is the respondents observe stated choice and not real-life

choices (Marti, Buckell, Maclean, & Sindelar, 2016). It is a good method to understand consumer preferences, however it is not meant to provide accurate market analysis. The second limitation is that over a two-week process it was possible to obtain 197 complete surveys from respondents in the Netherlands. However, as a result of limited resources, this is not a very representative sample of the entire population of Dutch fixed gear/single speed bicycle consumers. Limited number of respondents might be a reason as to why the demographic factors (age and gender) were insignificant, therefore it would be recommended for future research to obtain a larger sample.

Another limitation is that this research was mainly focused on five website attributes; however, consumers might have other preferences when purchasing bicycles and parts online. A recommendation would be to go more in-depth as to why consumers pick particular websites to shop at and why they eventually become loyal (profitable) customers. Accordingly, different products have different attributes, therefore if a web-shop sells different bicycle-related products and brands, the results may change correspondingly.

Even though the respondents have agreed to answer the survey, their truthfulness remains uncertain as some might have perceived it as uninteresting. There was no incentive that was provided for respondents, therefore a recommendation for future research would be to motivate respondents and reduce fatigue by providing monetary incentives in order to gain more accurate and truthful results.

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7. Appendix

Choice Design

Attributes

Name	Role	Attribute Levels		
Product Varietly	Categorical	High Variety	Low Variety	
Convenience	Categorical	One Click Purchase	Multiple Click Purchase	
Shipping Costs	Categorical	Flat-Rate Fee	Threshold-Based Fee	
Privacy and Security	Categorical	High Level	Medium Level	Low Level
Website Design	Categorical	Pleasant Design	Less Pleasant De	Unpleasant Desi

Model

Design

Choice Set	Product Varietly	Convenience	Shipping Costs	Privacy and Security	Website Design
1	Low Variety	One Click Purchase	Flat-Rate Fee	High Level	Less Pleasant Design
1	Low Variety	One Click Purchase	Threshold-Based Fee	Medium Level	Unpleasant Design
2	High Variety	One Click Purchase	Threshold-Based Fee	Low Level	Pleasant Design
2	High Variety	One Click Purchase	Threshold-Based Fee	Medium Level	Less Pleasant Design
3	Low Variety	One Click Purchase	Flat-Rate Fee	Medium Level	Pleasant Design
3	High Variety	Multiple Click Purchase	Threshold-Based Fee	High Level	Less Pleasant Design
4	Low Variety	One Click Purchase	Flat-Rate Fee	Low Level	Less Pleasant Design
4	High Variety	Multiple Click Purchase	Threshold-Based Fee	Medium Level	Pleasant Design
5	High Variety	One Click Purchase	Threshold-Based Fee	Low Level	Less Pleasant Design
5	Low Variety	Multiple Click Purchase	Flat-Rate Fee	Medium Level	Unpleasant Design
6	Low Variety	Multiple Click Purchase	Threshold-Based Fee	Low Level	Less Pleasant Design
6	High Variety	One Click Purchase	Flat-Rate Fee	High Level	Pleasant Design
7	High Variety	Multiple Click Purchase	Flat-Rate Fee	Medium Level	Less Pleasant Design
7	Low Variety	One Click Purchase	Threshold-Based Fee	High Level	Pleasant Design
8	High Variety	One Click Purchase	Flat-Rate Fee	Low Level	Unpleasant Design
8	Low Variety	Multiple Click Purchase	Threshold-Based Fee	High Level	Less Pleasant Design
9	High Variety	Multiple Click Purchase	Flat-Rate Fee	High Level	Unpleasant Design
9	High Variety	Multiple Click Purchase	Flat-Rate Fee	Medium Level	Pleasant Design
10	Low Variety	Multiple Click Purchase	Flat-Rate Fee	High Level	Pleasant Design
10	Low Variety	One Click Purchase	Threshold-Based Fee	Medium Level	Less Pleasant Design

Output separate tables for profiles and responses

Combine profiles and responses in one table

Make Table

Back

Figure 6 Choice Design

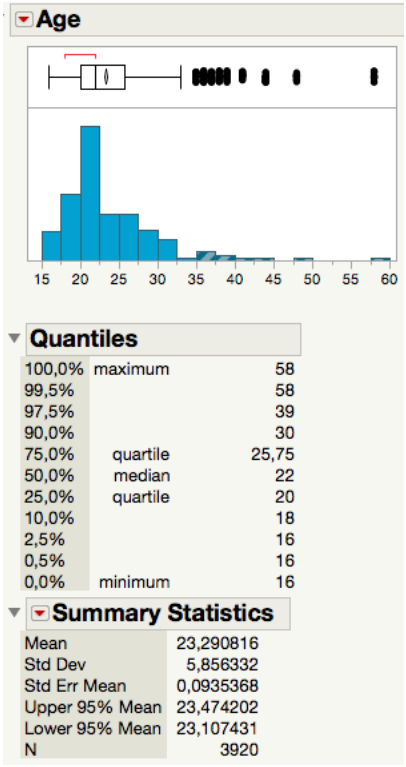

Figure 7 Demographic Data - Age

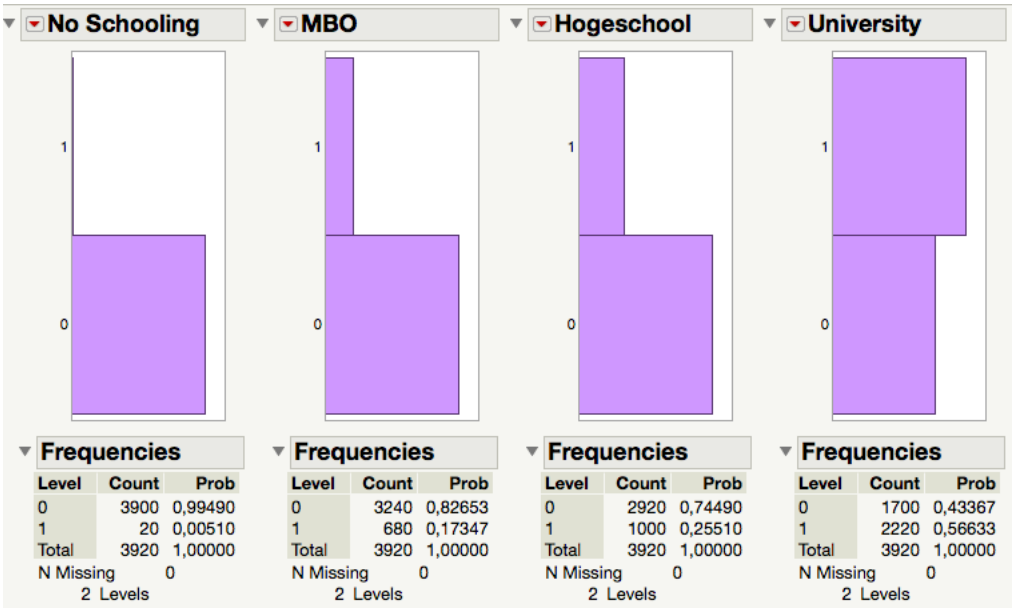

Figure 8 Demographic Data - Educational Level

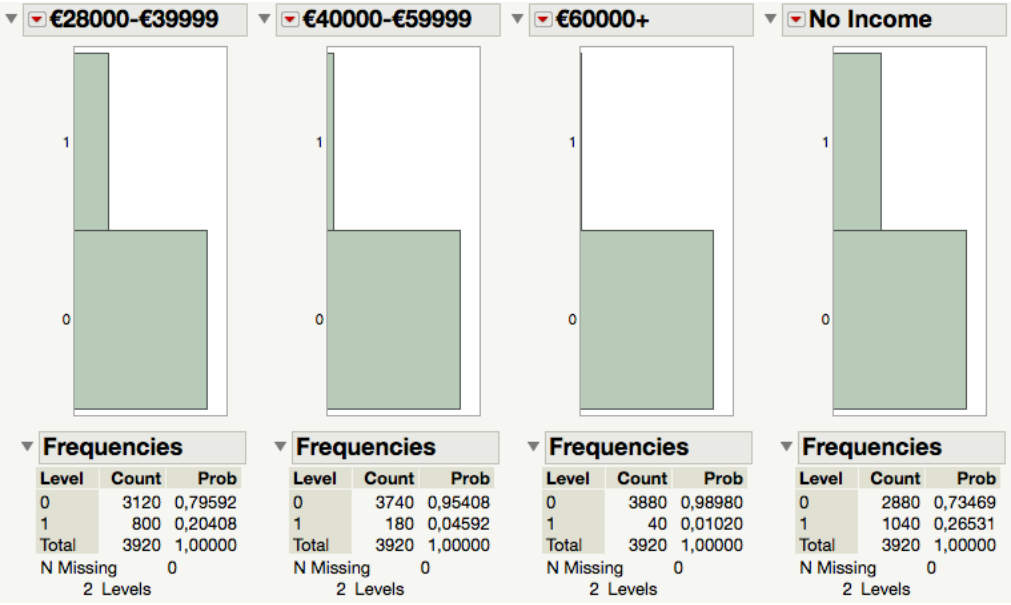

Figure 9 Demographic Data - Income Level

Model I

Choice Model

Effect Summary

Source	LogWorth	PValue
Privacy and Security	42,432	0,00000
Website Design	28,633	0,00000
Shipping Costs	27,475	0,00000
Product Varietly	17,268	0,00000
Convenience	0,913	0,12205

Remove Add Profile Effect Add Subject Effect FDR

Parameter Estimates

Term	Estimate	Std Error	Lower 95%	Upper 95%
Product Varietly[High Variety]	-0,298476227	0,0360150921	-0,369824	-0,22871
Convenience[One Click Purchase]	-0,052103451	0,0339042724	-0,118429	0,0143393
Shipping Costs[Flat-Rate Fee]	-0,313285290	0,0292563135	-0,370903	-0,256366
Privacy and Security[High Level]	0,491475181	0,0479069525	0,3984157	0,5861112
Privacy and Security[Medium Level]	0,328146776	0,0429077784	0,2449229	0,4130235
Website Design[Pleasant Design]	-0,442202951	0,0477303045	-0,536407	-0,349485
Website Design[Less Pleasant Design]	0,312906683	0,0438753280	0,2278297	0,399834

AICc	2191,5816
BIC	2230,5891
-2*LogLikelihood	2177,5242
-2*Firth LogLikelihood	2131,7605

Converged in Gradient

Firth Bias-Adjusted Estimates

Correlation of Estimates

Likelihood Ratio Tests

Source	L-R ChiSquare	DF	Prob>ChiSq
Product Varietly	74,733	1	<,0001*
Convenience	2,391	1	0,1221
Shipping Costs	121,260	1	<,0001*
Privacy and Security	195,408	2	<,0001*
Website Design	131,858	2	<,0001*

Utility Profiler

Figure 10 Model 1 Part 1 [Choice model, Likelihood ratio tests]

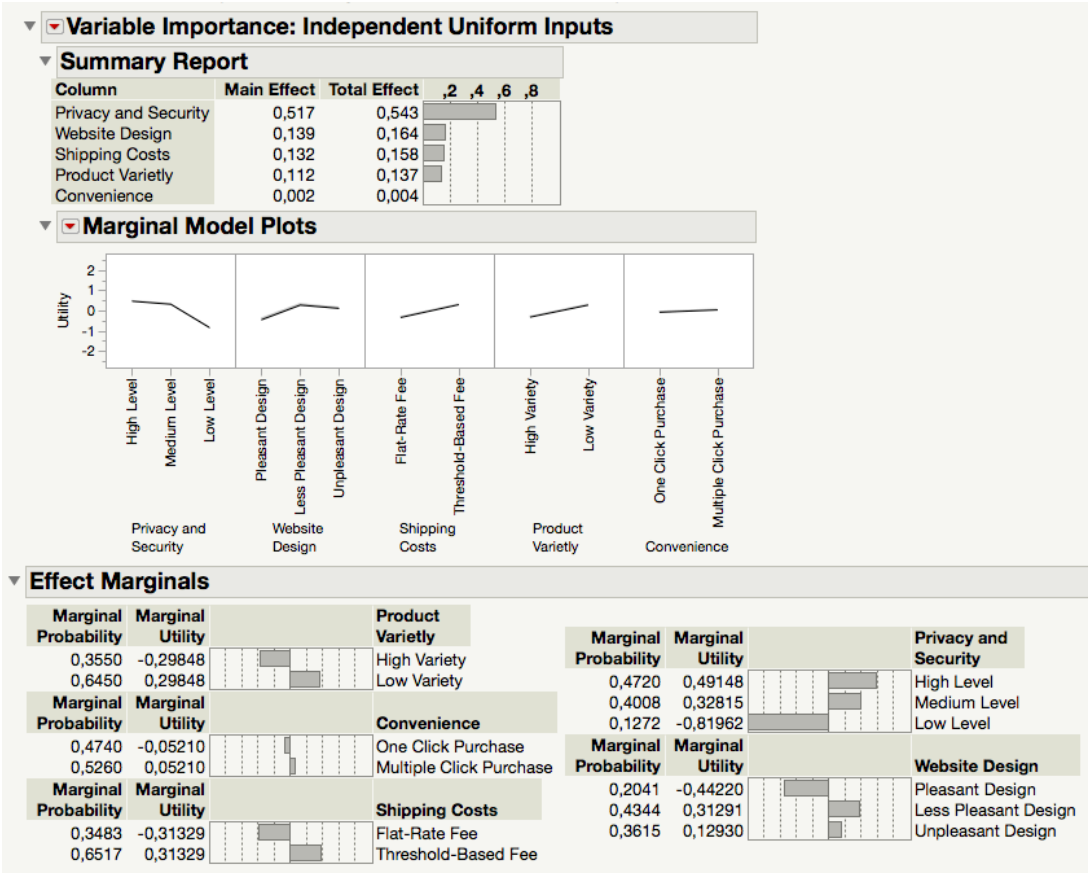

Figure 11 Model 1 Part 2 [Variable Importance and Effect Marginals]

Choice Model

Effect Summary

Source	LogWorth	PValue
Privacy and Security	41,049	0,00000
Website Design	28,535	0,00000
Shipping Costs	28,077	0,00000
Product Varietly	17,654	0,00000
Shipping Costs*€60000+	1,719	0,01908
Product Varietly*€60000+	1,580	0,02632
Convenience*€60000+	1,494	0,03206
Privacy and Security*€60000+	1,040	0,09125
Convenience	1,034	0,09253
Website Design*€60000+	0,000	1,00000

Remove Add Profile Effect Add Subject Effect FDR

Parameter Estimates

Term	Estimate	Std Error
Product Varietly[High Variety]	-0,304426615	0,0363595064
Convenience[One Click Purchase]	-0,057130414	0,0341694754
Shipping Costs[Flat-Rate Fee]	-0,318872606	0,0294760325
Privacy and Security[High Level]	0,491024608	0,0483329728
Privacy and Security[Medium Level]	0,322529169	0,0431431734
Website Design[Pleasant Design]	-0,443383651	0,0480002336
Website Design[Less Pleasant Design]	0,314354878	0,0441856023
Shipping Costs[Flat-Rate Fee]*€60000+	0,661432554	0,3712858870
Product Varietly[High Variety]*€60000+	0,871709884	0,5502466883
Convenience[One Click Purchase]*€60000+	0,903372757	0,6566677926
Website Design[Pleasant Design]*€60000+	0,212337322	0,5186442450
Website Design[Less Pleasant Design]*€60000+	-0,093119549	0,4361148234
Privacy and Security[High Level]*€60000+	0,809808005	0,9256239170
Privacy and Security[Medium Level]*€60000+	0,719108782	0,6270652750

AICc	2193,3353
BIC	2271,2492
-2*LogLikelihood	2165,1194
-2*Firth LogLikelihood	2107,9349

Converged in Gradient

Firth Bias-Adjusted Estimates

Likelihood Ratio Tests

Source	L-R ChiSquare	DF	Prob>ChiSq
Product Varietly	76,484	1	<,0001*
Convenience	2,830	1	0,0925
Shipping Costs	124,012	1	<,0001*
Privacy and Security	189,038	2	<,0001*
Website Design	131,409	2	<,0001*
Shipping Costs*€60000+	5,494	1	0,0191*
Product Varietly*€60000+	4,935	1	0,0263*
Convenience*€60000+	4,595	1	0,0321*
Website Design*€60000+	0,000	2	1,0000
Privacy and Security*€60000+	4,788	2	0,0912

Figure 12 Model 5 – Parameter estimated and Likelihood Ratio Tests

Effect Marginals

Marginal Probability	Marginal Utility	Product Varietly
0,3564	-0,29553	High Variety
0,6436	0,29553	Low Variety

Marginal Probability	Marginal Utility	Convenience
0,4761	-0,04791	One Click Purchase
0,5239	0,04791	Multiple Click Purchase

Marginal Probability	Marginal Utility	Shipping Costs
0,3488	-0,31212	Flat-Rate Fee
0,6512	0,31212	Threshold-Based Fee

Marginal Probability	Marginal Utility	Privacy and Security
0,4741	0,49929	High Level
0,4003	0,32987	Medium Level
0,1256	-0,82915	Low Level

Marginal Probability	Marginal Utility	Website Design
0,2044	-0,44122	Pleasant Design
0,4346	0,31340	Less Pleasant Design
0,3610	0,12781	Unpleasant Design

Marginal Probability	Marginal Utility	Shipping Costs*€60000+
0,3488	-0,31212	Flat-Rate Fee,
0,6512	0,31212	Threshold-Based Fee,

Marginal Probability	Marginal Utility	Product Varietly*€60000+
0,3564	-0,29553	High Variety,
0,6436	0,29553	Low Variety,

Marginal Probability	Marginal Utility	Convenience*€60000+
0,4761	-0,04791	One Click Purchase,
0,5239	0,04791	Multiple Click Purchase,

Marginal Probability	Marginal Utility	Website Design*€60000+
0,2044	-0,44122	Pleasant Design,
0,4346	0,31340	Less Pleasant Design,
0,3610	0,12781	Unpleasant Design,

Marginal Probability	Marginal Utility	Privacy and Security*€60000+
0,4741	0,49929	High Level,
0,4003	0,32987	Medium Level,
0,1256	-0,82915	Low Level,

Figure 13 Model 5 - Effect marginals

Choice Model

Effect Summary

Source	LogWorth	PValue
Privacy and Security	41,810	0,00000
Shipping Costs	27,805	0,00000
Website Design	26,797	0,00000
Product Varietly	17,456	0,00000
Convenience*Gender	0,815	0,15321
Convenience	0,688	0,20521
Shipping Costs*Gender	0,608	0,24679
Product Varietly*Gender	0,407	0,39205
Website Design*Gender	0,218	0,60497
Privacy and Security*Gender	0,009	0,97857

Remove Add Profile Effect Add Subject Effect FDR

Parameter Estimates

Term	Estimate	Std Error
Product Varietly[High Variety]	-0,302651719	0,0365996282
Convenience[One Click Purchase]	-0,043092731	0,0344276502
Shipping Costs[Flat-Rate Fee]	-0,318997344	0,0298619192
Privacy and Security[High Level]	0,492315158	0,0486373542
Privacy and Security[Medium Level]	0,326678184	0,0434584526
Website Design[Pleasant Design]	-0,434739341	0,0483828856
Website Design[Less Pleasant Design]	0,305046721	0,0444933690
Product Varietly[High Variety]*Gender[0]	-0,030595534	0,0365996282
Convenience[One Click Purchase]*Gender[0]	0,048913659	0,0344276502
Shipping Costs[Flat-Rate Fee]*Gender[0]	-0,033771108	0,0298619192
Privacy and Security[High Level]*Gender[0]	0,007661253	0,0486373542
Privacy and Security[Medium Level]*Gender[0]	0,006218261	0,0434584526
Website Design[Pleasant Design]*Gender[0]	0,036068738	0,0483828856
Website Design[Less Pleasant Design]*Gender[0]	-0,035555365	0,0444933690

AICc	2199,6587
BIC	2277,5726
-2*LogLikelihood	2171,4428
-2*Firth LogLikelihood	2080,1354

Converged in Gradient

Firth Bias-Adjusted Estimates

Figure 14 Model with Gender - Shows Insignificant values