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Do Dutch youngsters embrace the Craft Beer Revolution?

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Executive Summary

Craft beer gaining popularity in the Netherlands

A consumer demand for alternative beer styles relative to the historically dominant pilsner has emerged across the globe. This is accompanied by a rising sentiment for purchasing beer from smaller local brewers instead of the mainstream large brewery corporations. These industry developments are considered a still ongoing ‘Craft Beer Revolution’. This revolution has also taken place in the Netherlands, which is nowadays illustrated by the availability of a wide variety of beer styles in Dutch retail and gastronomy.

For Dutch craft brewers especially younger beer drinkers seem to be a significant consumer segment of interest. This generation of beer drinkers is presumably more interested in exploring new beer tastes and is less price sensitive than older generations. This raises the question whether young beer drinkers are a growth opportunity for Dutch craft brewers.

Research questions

The following central research question is answered in this thesis:

What is the market opportunity of craft beer for younger beer drinkers on the Dutch market?

In order to determine the market opportunity, this consumer segment’s preferences regarding common craft beer attributes were investigated in five sub research questions. Concerning these questions younger Dutch beer drinkers’ preferences regarding alcohol content, sustainability, type of brewer and beer style, and the influence of gender on their preferences, were examined.

Literature findings

Based on literature, younger Dutch beer drinkers were expected to have a preference for no or lower alcohol beer because of current health trends and an increase in moderate drinking. This young consumer segment was further likely to be willing to pay a price premium for sustainably produced beer since green marketing strategies seem to appeal to this generation the most. Additionally, a preference for smaller independent breweries over large industrial breweries is expected for this group of beer drinkers. Smaller breweries’ beer is by beer drinkers generally considered to be more authentic and of better quality than industrial beer, and Millennials generally think that large corporations have too much influence. Since younger people generally tend to be variety seeking, they were also expected to prefer alternative beer styles over the standard pilsner. Finally, no gender differences regarding beer preferences were expected among younger Dutch beer drinkers because research regarding gender differences in (craft) beer preferences is ambiguous.

Methodology

Quantitative research was conducted by administering an online survey to Dutch beer drinkers from 18 to 30 years old. This consumer segment's preferences for the craft beer attributes of interest were estimated by using discrete choice analysis. Choice attributes and levels were selected and an experimental design was produced in JMP. Then, a choice model was estimated. The input for the conjoint choice model was generated by presenting respondents sets of hypothetical beer profiles. For the analysis parameter estimates, likelihood-ratio tests and marginal utility ranges were calculated to determine the utility effects of attribute levels, test the significance of factors included in the choice model and to determine the relative importance of the attributes. Finally, respondents' marginal willingness to pay (WTP) for the different attribute levels was calculated.

Research outcome

Respondents preferred an alcohol by volume (ABV) level of 7%, sustainably brewed beer, beer brewed by a microbrewery, blonde ale and a glass bottle packaging the most. For price, they preferred this to be as low as possible. The likelihood-ratio tests indicated that only *ABV*, *Type of brewer*, *Beer style* and *Packaging* were significant. Hence, respondents did not consider *Sustainability* and *Price* as important decision criteria for choosing beer. This was further supported by the calculated marginal utility ranges, which indicated that *ABV* was the most important attribute, followed by *Beer style* and *Packaging*. Similar results were found in respondents' WTP data. Finally, the likelihood-ratio tests indicated that respondents' gender did not influence their beer profile preferences. This was confirmed by the mostly similar WTP between male and female respondents.

Conclusions and recommendations

The literature and research outcome showed that the consumer segment of younger Dutch beer drinkers offers some opportunity for craft brewers. Respondents were willing to pay extra for sustainable beer, had a preference for microbreweries and with blonde ale they preferred another beer style over pilsner. Although the converse was expected from the discussed literature, respondents' preference for stronger beers can also be beneficial to some craft brewers. Respondents' gender was not of interest.

Market recommendations were made for the Dutch microbrewery Oersoep, which is recommended to focus on mid strong to strong blonde ales packaged in glass bottles when targeting this consumer segment. Both beers from its current assortment and an additional beer style are suggested. However, these beer (styles) may not be distinctive enough from the alternatives that industrial brewers offer. Therefore, future researchers could focus on younger beer drinkers' preferences for blonde ales, so that microbreweries like Oersoep could anticipate and may gain a competitive advantage over industrial brewers. Future researchers are further advised to make use of a professional panel to obtain a more representative sample and could consider conducting a field experiment for more accurate insights about the target population.

1. Introduction

1.1 *The emergence of 'The Dutch Craft Beer Revolution'*

Since the 1980s craft brewers have dramatically changed the global beer industry (Garavaglia & Swinnen, 2017). After a consolidation in the beer industry in the twentieth century, resulting in a few multinational brewers brewing homogeneous beer styles, a consumer demand for new beer styles from smaller local brewers has emerged across the globe. Between 1980 and 2015, the number of breweries has significantly risen in beer nations such as the United States (U.S.), the United Kingdom and the Netherlands. Especially in the U.S. this is due to a tremendous increase in the number of microbreweries. Despite strong differences between countries, Garavaglia and Swinnen consider the industry developments from the past two decades as 'The Craft Beer Revolution', which is still ongoing.

Van Dijk, Kroezen and Slob (2018) also describe this industry development in the Dutch beer industry since the 1980s. They subscribe the increase in the number of craft breweries in the Netherlands to both increasing demand for craft beers and the increasing attractiveness of supplying craft beers. The increasing consumer demand for craft beer was mainly caused by the growing consumer resistance of the dominant pilsner beer style, brewed by large brewing corporations, and a growing demand for local and non-mass-produced products in general. On the supply side the emergence of hobby brewing associations and new forms of financing, in particular crowdfunding, among other things, contributed to a wider availability of craft beer in the Netherlands. The much wider availability of craft beers in major supermarket chains nowadays relative to the 1980s and 1990s, when craft beer was mainly available in specialty stores, further illustrates the emergence of *The Dutch Craft Beer Revolution*.

A significant consumer segment of interest for craft brewers seems to be the younger generation of beer drinkers. In an industry report for the American Antitrust Institute, Ascher (2012) identifies the "millennial generation", aged 21 to 30 years, as the main consumer segment of interest for growth in the craft beer segment of the American beer industry. He claims this group of beer drinkers is more interested in exploring new beer tastes and is less price sensitive than older generations. Beside the U.S., similar results have been found in a research into the Mexican beer market (Gómez-Corona, Escalona-Buendía, García, Chollet, & Valentin, 2016). This raises the question whether young beer drinkers also offer the most growth potential on the Dutch craft beer market and whether by targeting this consumer segment Dutch craft brewers could make *The Dutch Craft Beer Revolution* last.

1.2 *Research questions*

The key objective of this thesis is to determine whether Dutch craft brewers should focus on targeting the younger generation of beer drinkers on the Dutch market. To fulfil this objective the following central research question will be answered:

What is the market opportunity of craft beer for younger beer drinkers on the Dutch market?

In order to answer this question five sub research questions will be formulated. First, younger Dutch beer drinkers' preferences regarding alcohol content will be investigated. Because of recent health trends, no or low alcohol beers may be an interesting product for craft brewers to produce (Donadini, et al., 2020). Hence, the first research question (RQ1) is:

RQ1. To what extent do younger Dutch beer drinkers prefer no or low alcohol beers over beers with a regular or high alcohol percentage?

Another subject of interest is sustainability, which is often associated with the Millennial generation (Smith & Brower, 2012). Since craft brewers operate on a small scale (Elzinga et al., 2015) and usually serve a more local market and make use of local ingredients for their beers, they often have a more environment-friendly brewing process than industrial brewers, who operate on a larger scale. Hence, craft brewers generally have a more sustainable image than industrial brewers. Thus, it is of interest to investigate whether, and to what extent, younger Dutch beer drinkers value the sustainability aspect in their beer purchase. Therefore, the second research question (RQ2) is formulated as:

RQ2. To what extent are younger Dutch beer drinkers willing to pay more for (more) sustainably brewed beer?

A further aspect of craft beer that will be considered in this thesis is whether younger beer drinkers care about the type of brewer. In line with the increased demand for local and non-mass-produced products among the Dutch population, as described by Van Dijk et al. (2018), one would expect the type of brewer to be another point of interest when purchasing beer. Consequently, the third research question (RQ3) will be stated as follows:

RQ3. Do younger Dutch beer drinkers prefer beer brewed by small independent breweries over beer brewed by industrial breweries, and if yes, to what extent?

Further suitability of this consumer segment will be assessed by investigating the extent to which younger Dutch beer drinkers prefer alternative beer styles, which are often associated with craft brewers (Elzinga, Tremblay, & Tremblay, 2015), over pilsner. Hence, the fourth research question (RQ4) is:

RQ4. To what extent do younger Dutch beer drinkers prefer other beer styles over pilsner?

Finally, it may be interesting to assess whether gender influences craft beer consumption. Traditionally, beer has been mainly targeted at men (Donadini & Porretta, 2017). However, with changing gender roles

there may be growth potential for craft brewers by targeting women. Thus, the fifth research question (RQ5) is:

RQ5. To what extent does gender influence craft beer consumption among younger Dutch beer drinkers?

Once these sub research questions have been examined the central research question can be answered as well. Besides, after examining the sub research questions Dutch craft brewers can be recommended on how they can succeed in the Dutch beer market, i.e. once they know younger beer drinkers' preferences they can adjust their assortment accordingly.

1.3 Possible ethical issues

Discussing the market opportunity for selling craft beer can be seen as a controversial topic. The negative health effects of alcohol have been acknowledged by among other the World Health Organisation, which claims that alcohol globally contributes to 3 million deaths per year (World Health Organization, 2020). On the other hand, determining whether no or low alcohol beers have potential among young Dutch beer drinkers will also be investigated in this thesis. The possibility of contributing to the production and sales of no or low alcohol beers at the cost of regular or high alcohol beers could decrease the negative health effects associated with beer sales.

Additionally, it is controversial whether the selling of unhealthy goods is immoral. When individuals have a certain willingness to purchase unhealthy goods, to what extent are the suppliers then to blame? The exact assessment of the appropriateness of selling unhealthy goods such as alcoholic beverages depends on which theory of well-being one adheres. For instance, when one takes a hedonistic perspective, which considers pleasure as something beneficial (Reiss, 2013), one might consider the pleasure the consumption of (alcoholic) beer creates as a good reason for suppliers to sell beer to consumers, despite the health damage this causes for consumers. Conversely, when one would take an objective-list theory of well-being, which considers health as a thing that everyone values or ought to value (Reiss, 2013), one might find the health damage alcoholic beverages cause a good reason for not engaging in the sale of (alcoholic) beer. Hence, there can be both proponents and opponents of the sale of alcoholic beverages and beer in particular.

1.4 Possible research limitations

In this research the focus will be on assessing the suitability of the younger generation of Dutch beer drinkers as target segment for craft brewers. Whether other segments have favourable characteristics regarding craft beer will not be assessed. Hence, only the feasibility of increasing craft beer sales for the younger generation will be determined, while older generations may be more attractive to target when considering all aspects associated with craft beer.

Further, not all beers that craft brewers produce have the attributes that are investigated in the research questions. For instance, a brewery may very well fit the criteria of being a craft brewery even if it only brews pilsner. This might reduce the relevance of this research for some craft brewers. However, consumer insights regarding this market segment remain relevant for these brewers. After all, knowing whether a segment is unattractive to target is valuable information as well, i.e. this information indicates that resources should be allocated on targeting other segments.

1.5 Chapter descriptions

The thesis will be structured as follows. In chapter 2 a literature study is conducted. First, craft beer is defined and the eligibility of the younger generation of beer drinkers is determined. Then, literature regarding each research question is evaluated and hypotheses are formed, after which a conceptual research model is constructed. Chapter 3 contains the research methodology. In this chapter the type of research, the data collection process, the research sample and the data analysis method are discussed. The outcomes of the research and analyses are presented in chapter 4. Finally, in chapter 5 the key findings of this research are discussed, recommendations are made on how the Dutch craft brewery Oersoep can succeed in the Dutch beer market and on what future research can be conducted, and limitations are identified.

2. Literature Study

2.1 Dutch beer market

The Dutch beer market currently consists of over 400 breweries, which offer a wide variety of beer styles (Nederlandse Brouwers, 2020). This is due to that these breweries vary from large industrial brewers to small microbreweries and from breweries that are centuries old to brand new breweries. In 2016, 12 million hectolitres of beer was sold in the Netherlands, of which 85% was brewed in the Netherlands as well. According to Van Dijk et al. (2018), the market share of craft brewers is, despite a large growth in recent years, relatively small compared to the large industrial brewers.

The dominance of the large brewers can be seen when looking at the market shares for pilsner specifically, which is the most consumed beer style in the Netherlands with a market share of presumably 80%, according to the Netherlands' largest supermarket chain Albert Heijn (2020). Datling (2020) claims that Heineken had a distribution share of no less than 46.6% for pilsner with its brands Amstel, Brand and Heineken (Heineken Nederland, 2020) in 2019. AB InBev's brands Dommelsch, Hertog Jan and Jupiler (Anheuser-Busch InBev, 2020) had a share of 21.2%. Further, Asahi Group's Grolsch (Koninklijke Grolsch, 2020) had a distribution share of 8.3% and Swinkels Family Brewers' Bavaria (Swinkels Family Brewers, 2020) had a share of 6.4%. These four industrial brewers alone had a combined distribution share of 82.5%, which represents the dominance of the large brewers on the Dutch beer market.

2.2 Definition of craft beer

Although there is no consent on an exact definition of craft beer, craft beer is generally associated with small scale brewing facilities and a variety of beer styles (Elzinga et al., 2015). According to the Brewers Association (2020), the major trade group for craft brewers in the U.S., “an American craft brewer is a small and independent brewer”. This comes down to a maximum production of approximately 3 percent of the American beer industry’s annual sales and less than 25 percent of the craft brewery being owned by a non-craft brewer. Further, innovative (alternative) beer styles are mentioned by the Brewers Association as a hallmark for craft beer as well. As these criteria solely apply to the American beer industry, in this thesis Dutch craft brewers are more generally defined as brewers with a small market share and who are mostly independent. Craft beer is defined as beer explicitly brewed by craft brewers.

2.3 Craft beer and Millennials

Before discussing the topics that are relevant for research questions, the eligibility of the younger generation of Dutch beer drinkers to focus on for craft brewers will be justified. According to Ascher (2012), the Millennial generation is the consumer segment with the most growth potential for craft brewers. In a more recent research about craft beer on the American market (Malone & Lusk, 2018), Millennials aged 21 to 34 were the most likely to drink craft beer as well. Also Gatrell, Reid and Steiger (2018) state that in the U.S. much of the growing demand for craft beer is coming from Millennials. In a Mexican research, Gómez-Corona et al. (2016) found similar results, with young adults being the most interested in craft beer.

Gatrell et al. (2018) further describe that Millennials have several *favourable* attitudes regarding craft beer. Millennials generally think that large companies have too much influence and they are willing to pay more for products of socially responsible companies. For the beer industry this implies that Millennials value small scale craft brewers that contribute to their local communities. Furthermore, as consumers, Millennials tend to be adventurous and seem to appreciate authenticity and creativity, which is in accordance with the innovative beer styles that are associated with craft beer.

Another aspect commonly associated with craft beer is sustainability (Gatrell et al., 2018). Smith and Brower (2012) indicate that Millennials take note of a company’s reputation, read product labels and look for other clues on product packaging to judge if a product is sustainable. Additionally, in their research into the Italian wine market, Galati, Schifani, Crescimanno and Migliore (2019) found that younger consumers are more willing to pay a premium price for natural wine, which is a comparable product to organic (craft) beer. These findings suggest that younger beer drinkers have a favourable attitude towards the sustainable image of craft brewers opposed to the more unsustainable image of industrial brewers.

On the Dutch market similar developments seem to be the case. A market report commissioned by Dutch brewery association Nederlandse Brouwers (De Jongh, Geerlings, & Tramper, 2019) also found the younger generation of Dutch beer drinkers to be more open to try new beer styles and care

more about sustainability than older beer drinkers. This implies that younger Dutch beer drinkers have more favourable attitudes to prevalent attributes of craft beer. Hence, in the Netherlands the younger generation of beer drinkers is of significant interest to craft brewers.

Altogether, the younger generation of beer drinkers offers the most growth opportunity for craft brewers in multiple countries. They seem to be more interested in purchasing beer from (small scale) craft breweries and are more open to trying new beer styles than older generations. Furthermore, the sustainable image of craft brewers appeals the most to this generation of beer drinkers. These results seem to apply to the Dutch beer market as well. Therefore, the scope of this thesis is restricted to younger Dutch beer drinkers.

2.4 Alcohol content

Health and wellness trends and the corresponding increase in moderate drinking during recent years offer potential for alcohol-free beer (Donadini, et al., 2020). There might be other reasons for the increase in moderate drinking than health consciousness regarding alcohol content, however. For instance, in recent years some Italian consumers shifted from wine to specialty beers, which are lower in alcohol than wine, because of stricter blood alcohol controls by the police while driving (Aquilani et al., 2015). In Iceland, for consumers who purchase light beer, which is lower in alcohol than regular beer, the lower calorie content compared to regular beer is more important than the lower alcohol by volume (ABV) compared to regular beer (Chrysochou, 2014). Hence, there can be other reasons for the increase in moderate drinking than health consciousness regarding lower alcohol content.

For young beer drinkers specifically there have been controversial results regarding preferences for no or low alcohol beer. Mejlholm and Martens (2006) found that Danish beer drinkers younger than 30 liked beers with a low or regular ABV better than older Danish beer drinkers, who showed a preference for strong beers with a high ABV. Furthermore, Porretta and Donadini (2008) state that alcohol free beer should be targeted at 20 to 35 year old males in Italy. Conversely, Donadini et al. (2020) showed that Polish male Millennials prefer beers with high alcohol content. This illustrates that there is no clear expectation for Dutch younger beer drinkers to prefer either beer with a low ABV or a beer with a high ABV.

Because of the current health and wellness trends, however, one could expect Dutch younger beer drinkers to have a preference for beers with no or a relatively low alcohol content. Hence, the first hypothesis (H1) is:

H1. Younger Dutch beer drinkers prefer no or low alcohol beer to regular or high alcohol beer.

Summarizing, beer consumers may have other reasons for purchasing beer with a lower ABV than deliberately choosing for a lower alcohol consumption. For younger beer drinkers there is no clear

evidence indicating whether they generally prefer no or low alcohol beer or not. All things considered, current health trends suggest they would have a preference for no or low alcohol beer.

2.5 Sustainability

Although sustainability is barely used to market specialty beer in the Netherlands (Van Dijk et al., 2018), it is not unusual for craft brewers in the U.S. to focus on sustainability issues regarding the environment, the economy and (social) equity in their local communities (Gatrell et al., 2018). Furthermore, society is showing an increased interest in local products and environmental and sustainability issues in general (Garavaglia & Swinnen, 2017). Additionally, Olajire (2012) suggests that reduced environmental impact or sustainable practices can serve as a means of differentiation for brewers, which is also the case in the wine industry (Pomarici & Vecchio, 2014). Therefore, sustainability is likely to appeal to Dutch beer consumers as well.

Especially younger beer drinkers are likely to be susceptible to green marketing strategies. In the wine industry younger consumers are more willing to pay a premium price for natural wine than older consumers, possibly because of the younger generation's concern about the environmental and social consequences of their purchases (Galati et al., 2019). This is consistent with the findings of Smith and Brower (2012), who state that allocating advertising expenditures to building a pro-environment reputation can have a strong impact on the environmentally conscious younger consumer, i.e. their results indicate that Millennials consider a company's reputation, product labels and packaging to determine if a product is environmentally preferable. This makes it plausible that also among beer consumers the younger generation is the most sensitive to green marketing strategies and is therefore willing to pay a price premium for sustainable practices. Hence, the second hypothesis (H2) is:

H2. Younger Dutch beer drinkers are willing to pay more for (more) sustainably brewed beer.

This paragraph illustrated that sustainability can be used to market (craft) beer. Green marketing strategies are expected to be effective when specifically targeted at the younger generation of beer drinkers. Therefore, younger Dutch beer drinkers are expected to be willing to pay extra for beer that is brewed by brewers who operate sustainably.

2.6 Type of brewer

In recent years, a consumer movement has taken place with consumers moving away from purchasing products produced by multinational firms and instead move toward products produced by smaller local companies. According to Van Dijk et al. (2018), a growing demand for local and non-massed produced products has also been one of the main reasons for the growth of the number of craft breweries in the Netherlands after 2003. This demand is illustrated by the growing number of festivals and activities around these themes, and the local names (sometimes in dialect) and imagery that some Dutch craft

brewers use to market their beers. Also in Mexico (Gómez-Corona et al., 2016) and the U.S. (Gatrell et al., 2018) an increasing number of craft beer consumers name a preference for local beer as a reason for buying craft beer. This is in accordance with the global trend concerning increasing consumer interest for local products and sentiment against globalization (Garavaglia & Swinnen, 2017).

Furthermore, craft beer drinkers perceive craft beer as more authentic and unique than mainstream industrial beer (Gómez-Corona et al., 2016). Consequently, craft beer drinkers may be motivated to express their taste and individuality by choosing craft beer instead of industrial beer (Choi & Stack, 2005). Donadini and Porretta (2017) found results consistent with these statements. According to them, beer drinkers attach importance to brewers' independence and have an aversion of large-scale corporate breweries. A possible explanation is that consumers associate smaller craft brewers with product craftsmanship and higher quality relative to industrial brewers (Aquilani et al., 2015). These findings suggest that a significant number of beer drinkers have a preference for smaller breweries relative to corporate breweries.

When considering Millennials, Gatrell et al. (2018) state that Millennial beer drinkers find craft brewers authentic, because craft brewers embody values that appeal to this generation, e.g. creativity, tradition and locale. Furthermore, Millennials generally think that large companies have too much influence. Thus, the third hypothesis (H3) is stated as follows:

H3. Younger Dutch beer drinkers prefer beer brewed by small independent breweries over beer brewed by industrial breweries.

Summing up, beer consumers seem to generally prefer beer from small independent breweries over beer from industrial breweries, which is consistent with general consumer interest for local products and sentiment against globalization. Possible explanations for this are that consumers perceive craft breweries as more authentic than industrial breweries and that consumers associate craft breweries with higher quality beer relative to industrial brewers. Since Millennials generally think that large corporations have too much influence, younger Dutch beer drinkers are expected to prefer craft beer over industrial beer.

2.7 Beer style

After the consolidation in the global beer industry in the last century, which resulted in the dominance of pilsner, a consumer demand for alternative beer styles emerged, both at a global level and in the Netherlands (Garavaglia & Swinnen, 2017; Van Dijk et al., 2018). According to Garavaglia and Swinnen (2017), the growth of the craft beer market is partially due to consumers demanding more variety in beer styles. In the Netherlands, in particular, consumer activists started to look for alternatives for the dominant pilsner because they were dissatisfied with the practices of brewing corporations and the corresponding beer culture that had emerged (Van Dijk et al., 2018).

This consumer demand for more variety is further illustrated by a rise in consumer demand for novel beer brands, styles and flavours in Italy, Mexico and the U.S. (Aquilani, Laureti, Poponi, & Secondi, 2015; Gómez-Corona et al., 2016; Malone & Lusk, 2018). Whereas a decade earlier research in Denmark and the U.S. (Mejlholm & Martens, 2006; Choi & Stack, 2005) suggested most beer consumers had a preference for more established beer brands and styles, a contrary development in consumer tastes has taken place with a rise in variety seeking beer drinkers.

Beside the general increasing demand for alternative beer styles, one would particularly expect Millennials, who generally value creativity (Gatrell et al., 2018), to be more interested in other beer styles than the dominant pilsner. Therefore, the fourth hypothesis (H4) is formulated as follows:

H4. Younger Dutch beer drinkers prefer other beer styles over pilsner.

This paragraph showed that the growth in the craft beer market was partially driven by a consumer demand for alternative beer styles to pilsner. This development has been confirmed by research showing an increased consumer demand for novel beer brands, styles and flavours, as opposed to the previous status quo described by research conducted ten years earlier. As younger people fit this variety seeking profile because they value creativity, the younger generation of Dutch beer drinkers is expected to prefer alternative beer styles to pilsner.

2.8 Gender

Regarding gender differences in craft beer preferences, there are some controversies in previous literature. Some research suggests there is no difference between men and women. For instance, Donadini and Porretta (2017) and Donadini et al. (2020) state that men and women have similar interests regarding craft beer attributes. However, in other studies males tended to have a stronger preference for craft beer than women. Gómez-Corona et al. (2016) found that Mexican men were more attached to craft beer than women. For the Italian market, Aquilani et al. (2015) found that male craft beer consumers are more likely than female craft beer consumers to consider craft beer of superior quality compared to industrial beer. Additionally, Mejlholm and Martens (2006) found that Danish male beer drinkers are more susceptible to new beer styles than female ones, which resonates with the innovative beer styles many craft brewers brew.

On the other hand, female Millennials are more influenced by green advertising than male Millennials, according to Smith and Brower (2012). Because of the sustainable image of craft beer, this may imply that female Millennials have a stronger preference for craft beer than male Millennials. However, as sustainability is only one out of many attributes of craft beer, there is no clear indication that this is the case. Since research regarding gender differences is controversial and there is no clear indication whether either men or women are more susceptible to craft beer, the fifth hypothesis (H5) is:

H5. Among younger Dutch beer drinkers there are no gender differences regarding preferences for craft beer.

This paragraph described that results regarding gender differences in craft beer preferences are ambiguous. Some papers indicated that there was no difference between genders, whereas some stated that men had a stronger preference for craft beer than women. Despite female Millennials being more susceptible to green marketing strategies, there are no gender differences regarding craft beer preferences expected among younger Dutch beer drinkers.

2.9 Conceptual research model

To answer the central research question several variables of interest for estimating the market opportunity of craft beer for younger Dutch beer drinkers have been identified in the previous paragraphs and hypotheses concerning the effects of these variables have been formulated. This results in a conceptual research model, which is presented in figure 2.1:

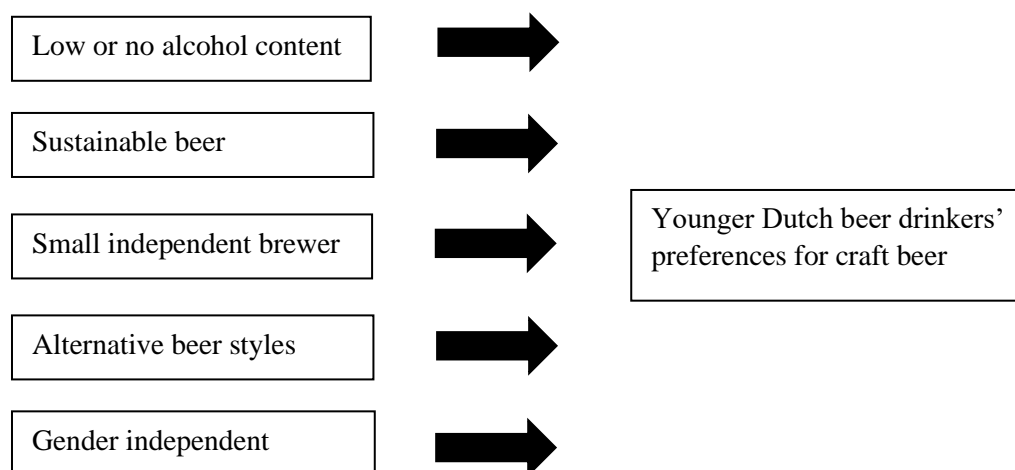


Figure 2.1 Relationship between the independent and dependent variables presented in a conceptual research model; the top and first arrow represents H1, the second arrow represents H2, the third H3, the fourth H4 and the fifth H5

In figure 2.1 the independent variables are illustrated in the left column. The arrows represent the effects that the independent variables have on the dependent variable. The dependent variable is illustrated in the right column. As the hypotheses indicated, the craft beer attributes which are specified as independent variables are expected to have a positive influence on the market opportunity of craft beer for the target segment. Younger Dutch beer drinkers are expected to have a preference for low or no alcohol beer, to prefer beer that is sustainably brewed, to rather buy beer that is brewed from small independent breweries, to prefer other beer styles than pilsner and in this consumer segment no gender differences are expected regarding preferences for craft beer. As explained in previous paragraphs these

expected preferences are all favourable to craft brewers. Hence, if younger Dutch beer drinkers have these preferences, they are likely to have a preference for craft beer.

2.10 Key findings

This chapter offered a theoretical framework for answering the central research question by discussing relevant literature. First, an overview of the Dutch beer market was given, from which it was clear that from the over 400 breweries a few industrial brewers dominate the market. Subsequently, craft beer was defined in order to be concise for the rest of this thesis. After this, justification was given for narrowing down the scope to the youngest generation of beer drinkers. It was found that this generation seems to be more interested in buying products from small companies, more open to try new beer styles and more susceptible to the sustainable image of craft brewers than older generations. Then, the variables of interest defined in the research questions in chapter 1 were discussed and corresponding hypotheses were formed. Although it is not completely clear whether younger beer drinkers generally prefer no or low alcohol beers, they are expected to do prefer beer with a lower alcohol content due to current health trends. Further, since Millennials are likely to be susceptible to green marketing strategies, younger Dutch beer drinkers are expected to be willing to pay a price premium for sustainably produced beer. Because beer consumers generally seem to perceive small breweries as more authentic and of higher quality than industrial breweries, and Millennials generally think that large corporations have too much influence, younger Dutch beer drinkers are expected to prefer craft beer over industrial beer. Furthermore, younger people generally fit the variety seeking profile that has developed among beer drinkers during recent years. Therefore, younger Dutch beer drinkers are expected to prefer other beer styles over the regular pilsner. With research regarding gender differences in craft beer preferences being ambiguous, no gender differences regarding craft beer preferences are expected among younger Dutch beer drinkers. Finally, a conceptual research model depicting the relationship between younger Dutch beer drinkers' preferences for craft beer and its possible determinants has been presented.

3. Research Methodology

3.1 Type of research

Before discussing what type of research is conducted in this thesis, a distinction between qualitative and quantitative research is made. According to Malhotra, Nunan and Birks (2017), qualitative research is mostly exploratory in nature and makes use of small samples. It is intended to provide depth, insight and understanding. Conversely, Malhotra et al. describe quantitative research as research techniques that typically seek to apply some form of measurement and statistical analysis in order to quantify data. Qualitative research is often used before quantitative research to define a research problem and to support quantitative research by identifying variables of interest. It can also be used after quantitative research to further elaborate on statistical findings.

In this thesis only quantitative research is conducted. The research problem is defined based on recent industry developments and variables of interest have been identified in academic literature. Hence, qualitative research is not necessarily needed for these purposes. To answer the central research question quantitative research is needed to determine the effects of the identified variables of interest, i.e. to determine the market opportunity of craft beer among younger Dutch beer drinkers statistical analysis is needed to determine to what extent younger Dutch beer drinkers prefer alternative beer styles, prefer no or low alcohol beers, are willing to pay extra for sustainability, prefer beer brewed by small independent breweries and to what extent gender influences craft beer preferences in this consumer segment.

3.2 Data collection method

When conducting quantitative research, a dataset is needed to make statistical inferences about a population. With respect to gathering data for this dataset, several quantitative data collection methods can be chosen from (Malhotra et al., 2017). One major method of obtaining information is the survey method. This method makes use of structured questionnaires which are then administered to a sample of a target population. A structured questionnaire is a formal questionnaire in which questions are asked in a prearranged order. For most questions participants typically have to choose from a set of predetermined alternatives. Advantages of this method are the simplicity of administering a questionnaire, the consistency of the obtained answers due to the predetermined alternatives, and the relative simplicity of coding, analysing and interpreting the data. Disadvantages are participants' possible unwillingness to give personal or sensitive information, participants' possible inability to give their actual motivations and the difficulty of wording questions in a consistent and understandable manner for participants.

Another major quantitative data collection method is quantitative observation. Malhotra et al. describe quantitative observation as systematically recording behavioural patterns of people, objects and events to obtain information a phenomenon of interest. During the observation the observer does generally not communicate with the observed people. Further, observation can be conducted in both a natural and an artificial environment. When compared with survey techniques, the main advantage of observational techniques is that they allow the measurement of actual behaviour instead of the measurement of preferences or intended behaviour. Moreover, with observational techniques there is no bias caused by the interviewer during the interviewing process, since the interviewing process is eliminated or reduced. On the other hand, the reasons for the observed behaviour remain uncertain to some extent because the underlying motives, beliefs, attitudes and preferences are not known. Furthermore, observation can be costly and time-consuming; especially when a large sample is needed. Besides, observational techniques may be unethical when it comes to privacy, e.g. when hidden cameras are used.

The final quantitative data collection method that is discussed here is the experiment. Whereas surveys and observations are used for descriptive research design, experiments are used for causal research design. According to Malhotra et al., one or more independent variables are manipulated in an experiment. The effects of the independent variables on one or more dependent variables are then measured, while controlling for other variables that may influence the results of the experiment (i.e. extraneous variables). Like observations, experiments can be conducted in both an artificial (laboratory) environment and a natural (field) environment. The main advantage of experiments relative to surveys and observations is that causal research designs are generally more appropriate for measuring cause-and-effect relationships than descriptive research designs, i.e. descriptive research designs do not meet all the required conditions for causality. For example, in descriptive research it is difficult to determine the time order of occurrence of variables. This can be controlled by the researcher in an experiment. Disadvantages of experiments are that they can be time-consuming, expensive and difficult to administer; especially for field experiments it can be hard to control for the effects of extraneous variables.

Due to time constraints and the limited budget available for this thesis, the survey method is chosen as single data collection method. Surveys are generally less expensive than observations and experiments. Furthermore, surveys are simpler to administer and to analyse than observations and experiments. Moreover, when compared with observations, surveys generally give a better indication of motives, beliefs, attitudes and preferences. These are important for determining the market opportunity of craft beer for younger Dutch beer drinkers, since determining market opportunity does not solely depend on actual choice behaviour. Hence, actual choices might not adequately represent craft beer's market opportunity. Thus, the survey method is the most appropriate data collection method for this thesis.

There are four major modes of survey administration (Malhotra et al., 2017). These are online surveys, telephone surveys, face-to-face surveys and postal surveys. Online surveys are conducted via the internet as self-completion questionnaires on computers, smartphones or other electronic devices. By telephone surveys is usually meant a traditional telephone interview or a computer-assisted telephone interview. Face-to-face interviews can be taken in the home or workplace, as street surveys or as computer-assisted personal interviews. Postal surveys are hard-copy, self-completion questionnaires administered through the post.

In this research, online survey administration is conducted. Compared with the other survey methods, this method offers several advantages. Responses to an online survey are relatively fast in comparison with face-to-face interviews and postal surveys, i.e. no meeting with respondents has to be arranged, as needs to be done for a face-to-face interview, and responses to an online survey are recorded immediately and do not need to be returned by post or have to be written down by an interviewer. Furthermore, online surveys are relatively cheap because there are no printing and postage costs. In addition, there is no interviewer bias present with online surveys since participants complete these

surveys themselves. This makes the measurements consistent. Besides, many participants feel more comfortable when they can control the context and circumstances in which they fill in the survey. Online surveys meet this need, since participants can respond to the survey whenever and wherever they like.

When considering the disadvantages associated with the online survey method, one disadvantage might be insufficient internet access for participants. However, as opposed to the elderly and perhaps young adults in less developed countries, in the target segment of younger Dutch beer drinkers the entire population is likely to have access to the internet. A more serious disadvantage of online surveys are sampling issues. When distributing online surveys, researchers do not always know whether participants are representative of a target population. When participants can decide themselves to participate to the online survey, important subsegments of a population may be underrepresented or even left out in a sample. This makes it harder to make general statements about a population. Nonetheless, the speed, the low costs, the consistent measurement and the comfortability for participants that the online survey offers, make the online survey the most feasible data collection method for this thesis.

3.3 Research method

To determine the market opportunity of craft beer for younger Dutch beer drinkers, this consumer segment’s preferences for the craft beer attributes of interest are estimated by using discrete choice analysis. According to Sammer and Wüstenhagen (2006), for a preference stated discrete choice model participants consider buying situations, in which they have to make a choice between two or more (hypothetical) products. Participants are assumed to select the beer profile they value the most. Preferences can then be derived from their buying choices.

Verma, Iqbal and Plaschka (2004) describe the typical stages of discrete choice analysis applications based on choice experiments as follows: identifying the determinant attributes, specifying the attribute levels, experimental design, presenting choice alternatives to respondents and estimating the choice model. The execution of this process is described in the next paragraphs.

3.4 Selection of choice attributes and levels

The attributes *ABV*, *Sustainability*, *Type of brewer* and *Beer style* have been identified as attributes of interest in chapter 2. In order to measure willingness to pay (WTP) *Price* is added to the model. In addition, *Packaging* is added to the model as a control variable since it is mentioned as another important influencer in craft beer quality judgement (Donadini & Porretta, 2017). The attributes and the levels that are used for the choice model are illustrated in table 3.1.

Attributes	Levels
ABV	1. 0% 2. 3% 3. 5% 4. 7% 5. 10%

Sustainability	1. Sustainable 2. Not sustainable
Type of brewer	1. Domestic 2. Import 3. Large craft 4. Microbrewery
Beer style	1. Pilsner 2. India Pale Ale (IPA) 3. Blonde Ale (e.g. Belgian blonde, Belgian triple) 4. Dark Ale (e.g. Belgian double, stout)
Price	1. €0.75 2. €1.50 3. €2.25 4. €3.00
Packaging	1. Glass bottle 2. Aluminium can

Table 3.1 Beer attributes and levels used in the choice model

The selected levels are meant to give a representative illustration of their attributes' availability on the Dutch beer market in order to maintain the external validity of the to be estimated choice model. The ABV levels represent no, low, regular, high and very high alcohol content for beer. Since there are currently no clear sustainability classifications or certificates for beer in the Netherlands, beers will hypothetically be considered as either sustainable or not sustainable. For type of brewer a similar classification as in Malone and Lusk (2018) was chosen. Brewers are classified as either domestic industrial brewery, foreign industrial brewery (import), domestic large craft brewery or as domestic microbrewery. The beer styles taken into account in this model are pilsner, India Pale Ale (IPA), blonde ale and dark ale. For price, four levels have been chosen within a price range that is common for beer in Dutch retail. Finally, beer is usually sold in either a glass bottle or an aluminium can in Dutch retail.

3.5 Experimental design

To produce the experimental design for this research the statistical software programme JMP (version 15) (SAS Institute Inc., 2020) was used. In this software a Bayesian efficient design is used to generate optimal choice sets. These choice sets are expected to have minimum estimation errors based on prior knowledge such as the identified attributes and levels. Next to the assumption that the attributes and levels specified in the previous section are determinant for estimating younger Dutch beer drinkers' preferences for craft beer, also prior assumptions about the means and variances of the choice model are made. The prior means indicate the researcher's prior belief on consumers' preferences and the prior variances indicate the error of the researcher's belief on the prior mean. JMP uses effect coding and for the attributes for which an order of preference is expected the prior mean values were set so that the range of the utility effect becomes 1. The selected reference levels are the levels that are expected to be preferred the most by respondents. For *Sustainability*, *Type of brewer*, *Price* and *Packaging* these are sustainable beer, microbrewery, €0.75 and glass bottle. Since for *ABV* and *Beer style* no clear order of preferences is expected, these prior mean values have all been set to 0 and alcohol free beer and IPA

were chosen as reference levels. The variances have been set in conjunction with a utility range of 1. The chosen values for the prior means and variances for each attribute level can be found in the Appendix in tables A.1 and A.2 respectively.

The minimum number of choice sets was chosen in JMP in order to minimise the time for respondents to fill in the survey. Out of the 1,280 ($5 \times 2 \times 4 \times 4 \times 4 \times 2$) possible combinations of attribute levels there are 818,560 ($\binom{1280}{2}$) possible choice sets. Out of these possible choice sets and combinations of attribute levels fifteen choice sets with thirty corresponding beer profiles were generated by JMP. Every hypothetical beer profile contains one level of each attribute. These were subsequently distributed to respondents by administering an online survey. The choice sets were presented in a randomised order to ensure internal validity. The survey questions including the beer profiles and choice sets can be found in full in table B.1 in the Appendix. After answering several screening questions to ensure respondents' eligibility for the survey, respondents had to select their preferred beer profiles. For further details into respondents' current beer consumption, respondents were asked which beer styles they had already tried and whether they usually pour beer in a glass before consumption. Finally, respondents had to indicate their age group and gender.

3.6 Data collection

For the online survey conducted in this research, the survey software Qualtrics (2020) has been used. The survey was distributed between June 3 2020 and June 14 2020 by sending intended participants an anonymous link generated by the software. I shared this link via WhatsApp and Facebook with my personal network. This can be considered as convenience sampling. In this non-probability sampling technique the interviewer selects participants which are relatively easy to obtain (Malhotra et al., 2017). The advantage of this sampling technique is its relatively cheap and fast execution. However, by using my personal network to recruit participants, representatives of some consumer segments of interest within the target population may be left out of the sample. Hence, using this sampling technique significantly decreases the sample's representativeness of the target population. Nevertheless, due to time and budget restrictions convenience sampling has still been chosen.

3.7 Choice model and analysis

In order to conduct the discrete choice analysis a choice model is estimated. Beside the described beer attributes, *Gender* is added to the model as well. Although gender is expected to have no influence on craft beer preferences among younger Dutch beer drinkers, there will be controlled for gender to make sure that this does not cause consumers to have different preferences. The following choice-based conjoint model is then estimated:

$$U_{nj} = \beta_1 X_{j1} + \dots \beta_{13} X_{j13} + \gamma_1 X_{j1} C_n + \dots \gamma_{13} X_{j13} C_n + \epsilon_{nj}$$

In this model, U_{nj} is the dependent variable. U_{nj} represents the utility respondent n derives from beer profile j . X_{j1} up to X_{j4} represent dummy variables for the different ABV levels for beer profile j , with no alcohol beer as reference category. X_{j5} represents a dummy variable for sustainability for beer profile j , with sustainable beer as reference category. X_{j6} , X_{j7} and X_{j8} represent dummy variables for type of brewer for beer profile j , with domestic microbrewery as reference category. X_{j9} , X_{j10} and X_{j11} represent dummy variables for beer style for beer profile j , with pilsner as reference category. X_{j12} represents a continuous variable for price for beer profile j . X_{j13} represents a dummy variable for packaging for beer profile j , with glass bottle as reference category. The corresponding parameters for the effects of the independent variables are given by β_1 until β_{13} . In addition, γ_1 up to γ_{13} represent the interaction effect of gender to control for respondents' heterogeneity regarding this respondent characteristic. C_n represents respondent n . Lastly, ϵ_{nj} represents the Gumbel distributed error term which makes this choice model a conditional logit model.

Because respondents are assumed to select the beer profile they value the most, i.e. which gives them the most utility, the parameter estimates β_1 until β_{13} indicate whether an attribute level positively or negatively affects respondents' preferences for a beer profile. Then, likelihood ratio tests are used to test the significance of the attributes' influence on the respondents' hypothetical choices. Also the significance of the influence of gender on respondents' hypothetical choices is tested by likelihood ratio tests. Subsequently, the importance of the attributes regarding respondents' preferences is estimated by calculating the range in marginal utility per attribute. The attribute which has the largest range in marginal utility has the most impact on respondents' hypothetical choices. Thus, that attribute brings the most change in utility for a respondent. Conversely, the attribute which has the smallest range in marginal utility, brings the least change in utility for a respondent. Finally, respondents' WTP for each attribute level is estimated. Craft brewers can respond to these findings accordingly by taking into account which of these beer attributes younger Dutch beer drinkers are expected to prefer the most and determine to what extent their current assortment appeals to this consumer segment. Consequently, they can make a more informed decision on whether to target this consumer segment.

3.8 Research sample

In this thesis the target audience is defined as younger Dutch beer drinkers. As Ascher (2012) described, Millennials between 21 and 30 years old offer the most growth opportunity for craft brewers in the U.S.. Since the legal drinking age is 18 in the Netherlands, younger Dutch beer drinkers are defined as Dutch beer drinkers between 18 and 30 years old in this research. Therefore, the complete research sample consists of Dutch beer drinkers aged 18 to 30. The sample consists of 124 participants in total. Of these participants approximately two thirds are male, leaving one third female. One participant indicated another gender. Further, there was a fairly equal share of participants aged 18-21 (41.1%) and

participants aged 22-24 (41.9%). The age groups 25-27 (4.8%) and 28-30 (12.1%) are significantly less well represented.

When it comes to participants' current beer consumption behaviour, their familiarity with beer styles and their habit for drinking beer from the glass or directly from the packaging have been assessed as well. Almost all respondents indicated that they had already consumed pilsner (96.0%), blonde ale (92.7%) and IPA (89.5%). Furthermore, the majority of respondents had already tried dark ale (77.4%) and other beer styles (70%). Thus, most of the respondents are quite familiar with the beer styles mentioned in the choice profiles. Further, 63.7% of respondents stated to usually pour beer into a glass before consuming it. This might imply that most respondents do not attach value to packaging when it comes to the taste of beer, since they do not drink directly from the glass bottle or aluminium can.

3.9 Possible bias prevention

In order to prevent any possible biased results several measures have been taken. To increase respondents' willingness to finish the survey, questions regarding demographics, which can be considered as sensitive by some respondents, were placed at the end of the survey. After filling in a majority of neutral questions possible initial mistrust has been overcome, the purpose of the research project has been made clear and respondents are more willing to give information (Malhotra et al., 2017). Furthermore, respondents were given the option to refrain from a response to demographic questions (see Q39 and Q40 in table B.1). Even though the screening questions at the beginning of the survey (Q3, Q4 and Q5) can be considered as sensitive questions by respondents, these were necessary to make sure that only respondents who are part of the target population participated. Furthermore, the screening question regarding age (Q4) is not as specific as the later question regarding to which age group a respondent belongs (Q40). These measures make sure that the possible exclusion of certain subsegments, in which people are less willing to provide demographic information, within the target population is prevented.

Another measure that has been taken to prevent biased results is randomising the order in which the choice sets of beer profiles have been presented to respondents, i.e. randomising the order of the choice sets increases the internal validity of the choice experiment. Internal validity measures whether manipulating the independent variables actually causes the effects on the dependent variable (Malhotra et al., 2017). By randomising the order in which the choice sets are asked, the question order does not influence respondents' answers. Respondents might for instance have a lower concentration at the end of a survey, which causes them to give rushed answers which not accurately represent their preferences. Hence, in this way the order of the choice sets might affect the value of the dependent variable. This would decrease the internal validity. Thus, randomising the order of the choice sets increases the internal validity of the choice experiment.

Finally, by conducting the survey online, interviewer bias has been prevented because there is no interaction between the interviewer and the respondent during the interview and because of the standardisation of the recording of respondents' answers due to the predetermined answer options.

4. Research Results

The central research question in this thesis was formulated as follows:

What is the market opportunity of craft beer for younger beer drinkers on the Dutch market?

In order to determine the market opportunity of craft beer for this consumer segment, a research sample was recruited. Subsequently, participants' utility regarding several beer attributes relevant to craft beer was derived by estimating the choice model specified in paragraph 3.7. Furthermore, the effect of participants' gender is examined by including an interaction effect in this choice model.

4.1 Model selection

Beside the beer attributes, respondents' characteristics can be included in the choice model as interaction effects. The characteristics that have been retrieved by the online survey are respondents' gender, respondents' age group, the beer styles respondents had tasted before and respondents' preference for either pouring beer in a glass or drinking directly from the packaging. These questions can be found in table B.1 (Q39, Q40, Q37 and Q38 respectively). In order to determine which characteristics were included in the final model, several models were estimated. The results can be found in table 4.1.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Interaction effect	Not included	Gender	Age	Beer styles tried before	Glass	Gender, Age
ABV	< 0.001**	< 0.001**	< 0.001**	0.784	0.791	< 0.001**
Sustainability	0.018*	0.489	0.168	1.000	0.358	0.440
Type of brewer	0.085	0.044*	0.105	0.153	0.904	0.048*
Beer style	< 0.001**	< 0.001**	< 0.001**	0.002**	0.011*	< 0.001**
Price	0.025*	0.621	0.081	1.000	0.062	0.411
Packaging	< 0.001**	< 0.001**	< 0.001**	0.654	0.487	0.001**
Age*ABV			< 0.001**			< 0.001**
Age*Beer style			0.047*			
Pilsner*ABV				0.013*		
Pilsner*Beer style				0.019*		
Pilsner*Price				< 0.001**		
Pilsner*Packaging				< 0.001**		

IPA*Price					0.041*	
IPA*Packaging					0.009**	
Blonde Ale*Beer style					0.007**	
Glass*ABV					0.001**	
Glass*Price					0.007**	
BIC	2297.531	2377.765	2348.611	2685.284	2366.354	2432.366

Table 4.1 Model estimation and results for different interaction effects; * $p < 0.05$; ** $p < 0.01$; only the significant interactions are shown in this table, the insignificant interactions are omitted, the full results can be found in the Appendix in tables C.2-C.7

The first row of the table indicates which characteristics were included as interaction effects in the different models. Then, the p-values of each beer attribute are shown for every model to see which attributes affect respondents' preferences. After *Packaging* the significant interaction effects are shown for each model. The p-values were calculated by performing likelihood-ratio tests in JMP. Finally, the Bayesian Information Criterion (BIC) values are given. This index is commonly used for model selection in practice. Generally, the model with the lowest BIC value is selected (Burnham & Anderson, 2004).

The first model does not include any interaction effect. In this model the factors *ABV*, *Sustainability*, *Beer style*, *Price* and *Packaging* are significant, which is the highest number of significant factors among all estimated models. Furthermore, this model has the lowest BIC. However, in order to test the final hypothesis regarding the influence of gender, this respondent characteristic has to be included in the model as interaction effect. In model 2 *Gender* is included as interaction effect. Whereas *ABV*, *Beer style* and *Packaging* remain significant when adding *Gender* to the model, *Sustainability* and *Price* are not significant anymore. Additionally, *Type of brewer* changes into a significant factor. Further, in this model there were no significant interaction effects.

The other respondent characteristics *Age*, *Beer styles tried before* and *Glass* are considered in model 3, 4 and 5 respectively. Because in model 3 the most variables are significant out of these models and the increase in BIC value relative to model 1 is the lowest, *Age* is added next to *Gender* in model 6 as additional interaction effect. Besides, model 3 has two significant interaction effects, whereas model 2 has none. In models 4 and 5 only *Beer style* remains significant out of the attributes. Although model 4 contains the highest number of significant interaction effects, the BIC increase for this model is relatively large, which can be explained by the structure of the survey question used to obtain the input for this respondent characteristic (see Q37 in table B.1), i.e. for this question respondents could choose multiple answers. Therefore, five different factors were needed to indicate whether respondents were familiar with a certain beer type. Hence, five factors were added in this model, which explains the relatively large increase of the BIC relative to model 1. Model 5 contains two significant interaction

effects. Because of the decrease in significant attributes, *Beer styles tried before* and *Glass* do not seem to improve the explanatory power of the model. Hence, these are not added to the final model.

In model 6 the same attributes are significant as in model 2. Even though model 6 contains one significant interaction effect, the BIC value is larger in model 6 than in model 2 because with *Age* an additional respondent characteristic is added. Hence, adding *Age* as an interaction effect in addition to *Gender* reduces the model’s explanatory power. Therefore, model 2 is chosen as choice model for the analysis.

4.2 Overall analysis results

From the parameter estimates generated by JMP, which are illustrated in the Appendix table C.1, the effects of the different attribute levels on respondents’ derived utility from a beer profile were obtained. In order to determine the utility effects of the reference categories the negative sum of the parameter estimates for the attribute levels was calculated. The utility effects of the different attribute levels will be discussed in the next paragraphs.

First, the results of the likelihood-ratio tests are discussed. The full output of the likelihood-ratio tests can be found in table C.3. As was already clear from model 2 in table 4.1, *ABV*, *Type of brewer*, *Beer style* and *Packaging* are significant, which implies that these factors have a significant influence on respondents’ preferences for a beer profile. *Sustainability* and *Price* do not influence respondents’ preferences significantly. Further, no significant interaction effects for *Gender* were found. Hence, respondents’ gender does not influence their preferences for any beer attribute.

Additionally, table 4.2 shows the range of respondents’ marginal utilities per factor. In order to calculate the range per attribute, the lowest marginal utility value was subtracted from the highest utility value. The attribute with the largest range has the most impact on participants’ preference for a beer profile.

Attribute	Range
ABV	1.230
Sustainability	0.220
Type of brewer	0.259
Beer style	0.929
Packaging	0.652

Table 4.2 Marginal utility ranges per factor

The table illustrates that *ABV* has the largest range and therefore is the most important attribute to participants when choosing between beer profiles. Also *Beer style* and, to a lesser extent, *Packaging* are important to participants. *Sustainability* and *Beer style* do not seem to be important. Whereas *Sustainability* is not significant, *Beer style* is, which may make one expect this factor to be more

important to participants. However, the lesser importance of this factor is consistent with its higher p-value in comparison with the other significant factors (see table 4.1 and C.1). Therefore, this factor has a less significant influence on respondents' preferences for a beer profile than *ABV*, *Beer style* and *Packaging*.

Price is not included as an attribute in the marginal utility range calculation because *Price* is a continuous variable in the choice model. Even though only four different price levels were used to construct the beer profiles, which may suggest the use of an ordinal variable, no price attribute levels were assigned for the analysis because *Price* was needed to be continuous in order to estimate participants' WTP. Consequently, this variable was converted from a categorical into a continuous variable in JMP. The marginal utilities for the other factors and their corresponding levels can be found in table C.8.

Finally, next to the parameter estimates, likelihood-ratio tests and marginal utilities also participants' marginal WTP was estimated in JMP. The marginal WTP is the extra price that participants are willing to pay for an attribute level compared to the specified reference levels. For this study the least preferred attribute levels by respondents have been chosen as reference categories; except for *Price*. The lowest price level participants could choose in the beer profiles is chosen as reference category: €0.75. As can be seen from table C.1, the other reference categories are 0%, not sustainable, large craft brewery, dark ale and aluminium can. Participants' WTP for each attribute level is then calculated by dividing the coefficient of each attribute level by the negative of the price's coefficient. Participants' marginal WTP for the specific attributes can be found in the next paragraphs. Complete overviews for the overall sample, males and females are given as well and can be found in tables C.9, C.10 and C.11 respectively. In the next paragraphs specific results for the beer attributes are considered.

4.3 Alcohol content

The first examined beer attribute is *ABV*. From the overall results it was clear that this variable is not only significant but also the most important to respondents. The effects of the attribute levels of *ABV* on respondents' utility are shown in figure 4.1.

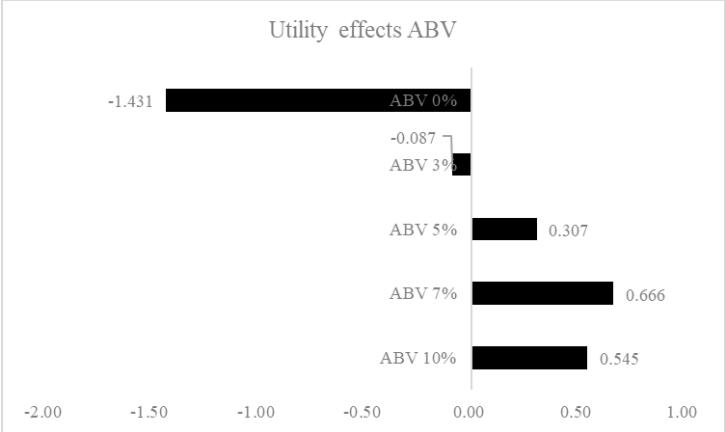


Figure 4.1 Utility effects ABV levels

It can be seen that an ABV of 7% is the most preferred by respondents. Also beers with an alcohol content of 5% and 10% increase respondents' preference for a beer profile. Conversely, beer profiles with an ABV of 0% and 3% decrease respondents' preference for a beer profile, with 0% beers being preferred the least. Participants' WTP for each ABV level is illustrated in table 4.3.

Factor	Level	Price change	New price
ABV	10%	€8.14	€8.89
ABV	7%	€8.60	€9.35
ABV	5%	€7.35	€8.10
ABV	3%	€5.34	€6.09

Table 4.3 WTP for ABV levels for overall sample; base price: €0.75; base ABV: 0%

In accordance with the parameter estimates for the ABV levels, respondents are willing to pay the most for beers with an ABV of 7% (€9.35) and the least for alcohol free beers (€0.75), i.e. respondents are willing to pay extra for all other ABV levels relative to an ABV level of 0% and pay the most for their most preferred level of 7%.

Respondents' general preference for relatively strong beers is in contrast to the current health and wellness trends and the increase in moderate drinking mentioned by Donadini et al. (2020) and the suggestion of Porretta and Donadini (2008) that alcohol free beer should be targeted at (male) 20 to 35 year olds in Italy. This result also contradicts the findings of Mejlholm and Martens (2006) who found that older Danish beer drinkers had a preference for stronger beers relative to younger Danish beer drinkers. Conversely, this does resonate with the findings of Donadini et al. (2020) that Polish Millennials prefer beers with a high alcoholic content. To explain the increase in moderate drinking Aquilani et al. (2015) and Chrysogou (2014) have already named other possible reasons than a preference for low alcohol content, i.e. stricter alcohol controls for drivers by the police and a lower calorie content of no or low alcohol beers.

4.4 Sustainability

The effect of *Sustainability* on respondents' utility is shown in figure 4.2. This figure illustrates that respondents have a preference for sustainably brewed beer. However, the performed likelihood-ratio test (see table C.3) indicates that *Sustainability* is not significant. Hence, whether a beer is produced sustainably does not affect respondents' preference for a beer profile.

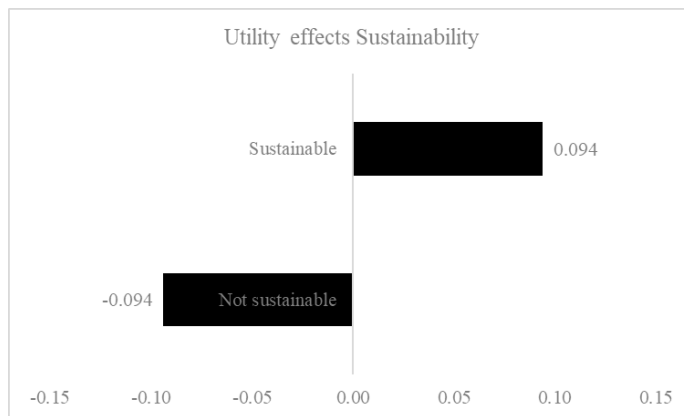


Figure 4.2 Utility effects Sustainability levels

Furthermore, as can be seen in table 4.2, *Sustainability* has the smallest marginal utility range out of all the attributes. This supports the result of the likelihood-ratio test by showing that *Sustainability* is of little importance to respondents when indicating their preference for a beer profile. When looking at respondents' WTP, table 4.4 illustrates that respondents are willing to pay extra for sustainably produced beer but that this additional WTP is relatively low compared with other attributes (see table C.9). This again resonates with the results of the likelihood-ratio tests and marginal utility ranges.

Factor	Level	Price change	New price
Sustainability	Yes	€1.54	€2.29

Table 4.4 WTP for Sustainability levels for overall sample; base price: €0.75; base sustainability: No

Respondents' preference, although insignificant, for sustainably brewed beer is to some extent in accordance with previous literature. It resonates with society's general increased interest in local products and environmental and sustainability issues (Garavaglia & Swinnen, 2017). Furthermore, according to Galati et al. (2019), younger Italian consumers are willing to pay extra for natural wine relative to regularly produced wine. This is also the case for the younger Dutch beer drinkers that participated to this research when it comes to sustainable beer, which could be considered as a comparable product.

On the other hand, whereas both Olajire (2012) and Pomarici and Vecchio (2014) suggested that sustainability could be a means of differentiation in the alcoholic beverage industry, and Smith and Brower (2012) stated that a pro-environment reputation can have a strong impact on the young environment conscious consumer, this does not apply to the sample recruited for this research. As was shown by the likelihood-ratio tests, the effect of *Sustainability* on respondents' derived utility from a beer profile is not significant. In line with Van Dijk et al. (2018), who describe that sustainability has hardly ever been used to market specialty beer in the Netherlands, the results of this analysis may suggest that there is no need for Dutch craft brewers to assign their marketing focus to sustainability.

4.5 Type of brewer

The next beer attribute that is discussed is *Type of brewer*. From figure 4.3 it can be seen that respondents have the highest preference for beer brewed by a microbrewery. For beer brewed by both national and foreign industrial breweries respondents' preference for a beer profile slightly increases. Conversely, respondents prefer beer brewed by large national craft breweries the least.

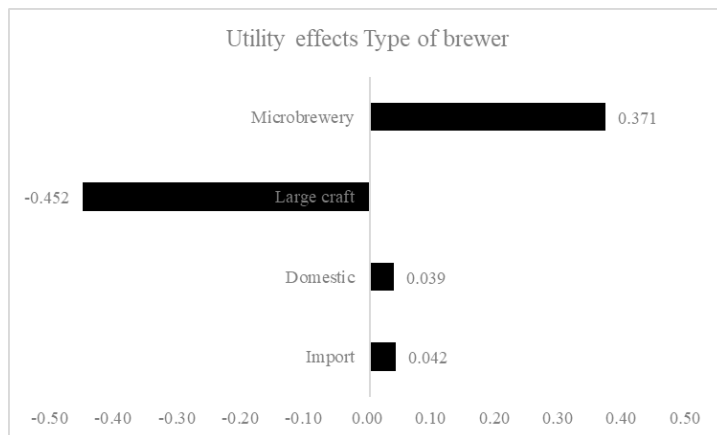


Figure 4.3 Utility effects Type of brewer levels

From the overall results it was clear that *Type of brewer* is significant, which implies that a beer's type of brewer affects respondents' preference for a beer profile, but that it has a relatively small marginal utility range. This implies that the impact of a beer's type of brewer is relatively low compared to the other attributes. This is further confirmed by respondents' WTP for beer brewed by other brewery types than national large craft breweries, which can be found in table 4.5. This is like respondents' WTP for sustainably brewed beer relatively low in comparison with their WTP for preferred levels of other beer attributes (see table C.9). These results suggest that the type of brewer is relatively unimportant to respondents when choosing a beer profile.

Factor	Level	Price change	New price
Type of brewer	Import	€1.04	€1.79
Type of brewer	Domestic	€1.37	€2.12
Type of brewer	Microbrewery	€1.81	€2.56

Table 4.5 WTP for Type of brewer levels for overall sample; base price: €0.75; base Type of brewer: Large craft

In accordance with the growing demand for local and non-mass produced beers and products in general (Donadini & Porretta, 2017; Garavaglia & Swinnen, 2017; Gatrell et al., 2018; Gómez-Corona et al., 2016; Van Dijk et al., 2018), the more authentic image of craft brewers opposed to industrial brewers (Gatrell et al., 2018; Gómez-Corona et al., 2016), and the perceived better taste of craft beer among beer drinkers (Aquilani et al., 2015), the microbrewery was the most preferred type of brewer among

respondents. On the other hand, respondents do not seem to have an aversion of industrial brewers, as suggested by literature. Both national and foreign industrial brewers have a (relatively small) positive effect on respondents' derived utility for a beer profile. In contrast to the assumed aversion of large-scale brewers by literature, respondents prefer large national craft brewers the least. A possible explanation for this controversial order of preference is that respondents only find a microbrewery truly authentic and therefore do not value large craft breweries.

4.6 Beer style

Figure 4.4 shows that respondents prefer blonde ale the most. Pilsner also has a positive effect on respondents' utility. Conversely, IPA and dark ale are penalised by respondents. Of these two beer styles, dark ale is preferred the least.

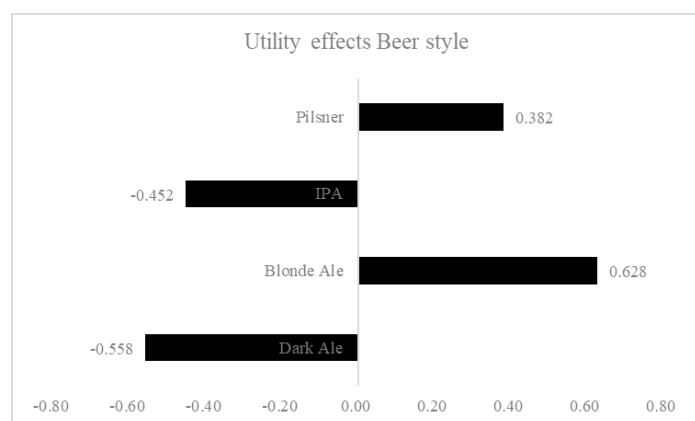


Figure 4.4 Utility effects Beer style levels

The results of the likelihood-ratio tests (see table C.3) indicate that *Beer style* is significant, which means that beer style is an important beer attribute for respondents. The importance of this attribute is supported by table 4.2, which shows that *Beer style* has the second largest marginal utility range. Hence, after *ABV* this was the most important decision criterion for respondents. Respondents' relatively high WTP for both blonde ale and pilsner relative to dark ale further supports these findings (see tables 4.6 and C.4).

Factor	Level	Price change	New price
Beer style	Blonde Ale	€6.49	€7.24
Beer style	IPA	€1.86	€2.61
Beer style	Pilsner	€4.39	€5.14

Table 4.6 WTP for Beer style levels for overall sample; base price: €0.75; base Beer style: Dark Ale

Garavaglia and Swinnen (2017) and Van Dijk et al. (2018) described an emerged consumer demand for other beer styles than the historically dominant pilsner in recent years. Furthermore, particularly younger people are likely to demand more variety in beer styles because they generally value creativity (Gatrell

et al., 2018). For the research sample was found that participants indeed preferred another beer style over pilsner, i.e. blonde ale. However, they still preferred pilsner over IPA and dark ale. This second best liking of pilsner might be explained by a lock-in effect such as Choi and Stack (2005) described for the American beer market. Choi and Stack stated that American consumers were satisfied with and became loyal to the major beer brands who produced mainly lager. Psychological switching costs possibly withheld American consumers from trying other beer styles than the standard lager. This could also be applicable to the sample in this research, even though most respondents (77.4%, see Q37 table B.1) had tried a dark ale before at the moment of filling in the survey. Van Dijk et al. (2018) stated that Belgian beer styles (mainly blonde ales) were introduced earlier by craft brewers on the Dutch market than American ales (such as IPAs, but also stouts). This might suggest that blonde ales may have become the standard next to pilsner on the Dutch market, and therefore respondents tend to stick with the more common beer styles. This would contradict the outlined variety seeking profile that generally applies to younger people, however.

4.7 Price and Packaging

Price and *Packaging* were included in the choice model to control for general product attributes relevant to consumer decision making. Furthermore, *Price* was needed to calculate respondents' WTP for the other beer attributes. From table C.1 it can be seen that *Price* has a coefficient of -0.093. Since *Price* is a continuous variable, this implies that for every additional euro a beer costs, respondents' utility decreases with 0.093, which means that respondents generally want to pay as little as possible for a beer. Although respondents prefer to pay the lowest possible price, *Price* is not significant according to the results of the likelihood-ratio tests in table C.3. Hence, this implies that respondents are relatively price inelastic when choosing between two beer profiles. This is consistent with the findings of Ascher (2012), who claimed that American Millennial beer drinkers are less price sensitive than older beer drinkers.

When it comes to *Packaging*, respondents preferred a glass bottle over an aluminium can, as is shown in figure 4.5. Moreover, this attribute is significant according to the results of the likelihood-ratio tests in table C.3. Thus, respondents considered glass bottle packaging as a reason to choose for a beer profile.

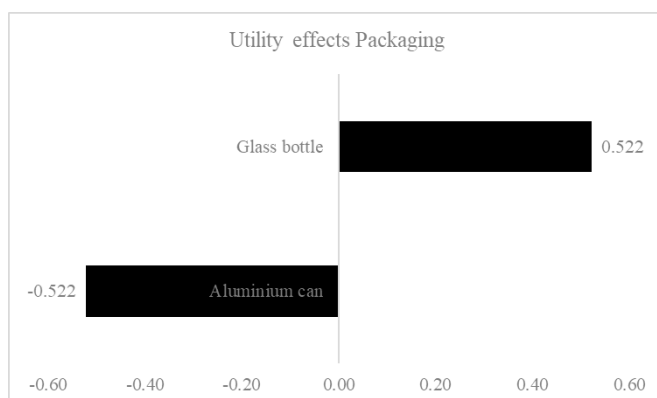


Figure 4.5 Utility effects Packaging levels

Nonetheless, *ABV* and *Beer style* are more important than the packaging of a beer in the eyes of the respondents, i.e. *Packaging* has the third largest range (see table 4.2). Moreover, from table C.9 it can be seen that respondents are also willing to pay more for their preferred ABV levels and beer styles than for a glass bottle. However, the relatively high WTP for a glass bottle, also illustrated in table 4.7, confirms that respondents seem to have a strong preference for a glass bottle relative to an aluminium can. Remarkably, most respondents (63.7%, see Q37 table B.1) indicated that they usually pour beer in a glass before drinking it. These respondents could believe that a beer’s packaging affects its taste. This might explain respondents’ general strong preference for a glass bottle packaging.

Factor	Level	Price change	New price
Packaging	Glass bottle	€4.55	€5.30

Table 4.7 WTP for Packaging levels for overall sample; base price: €0.75; base Packaging: Aluminium can

Similarly, Donadini and Porretta (2017) found that a glass bottle is the most preferred packaging among Italian beer drinkers. The importance of *Packaging* in their research deviates from the results for this sample, however. They found that this was the most important influencer in craft beer quality judgement, whereas *ABV* and *Beer style* were more important to respondents in this research. Also Sester, Dacremont, Deroy and Valentin (2013) suggested that consumers would rather reject a beer because of its taste than because of its packaging. This is consistent with the greater importance of *Beer style*, which greatly influences a beer’s taste, relative to *Packaging* in this research.

4.8 Gender

Lastly, the interaction effects between *Gender* and the beer attributes were investigated. From the overall results it was clear that none of these interaction effects are significant. Hence, respondents’ gender does not influence their preferences for any beer attribute. This is further illustrated by observing the differences in WTP between male and female respondents. These additional WTP data are shown for males and females in tables C.10 and C.11 respectively. The separate WTP data for the respondent who indicated ‘Other’ as gender is not illustrated because this only concerns one respondent. This respondent is included in the overall sample WTP in table C.9.

What stands out from tables C.10 and C.11 is that for all attributes female respondents seem to have weaker preferences than male respondents, which is shown by a lower WTP for their preferred attribute levels in comparison with male respondents. Further, the order of preferred levels is the same for men and women for all attributes but *Type of brewer*. Whereas male respondents have the same preference order that was mentioned in paragraph 4.5 for the overall sample, female respondents prefer national industrial brewers the most, large craft breweries second, then microbreweries and foreign industrial brewers the least. This is illustrated in table 4.8. However, according to the results of the likelihood-ratio tests, this difference between men and women is not significant.

Factor	Level	Price males	Price females
Type of brewer	Import	€2.56	€0.62
Type of brewer	Domestic	€2.83	€1.05
Type of brewer	Microbrewery	€3.83	€0.63
Type of brewer	Large craft	€0.75	€0.75

Table 4.8 WTP for Type of brewer levels: male vs. female; base price: €0.75; base Type of brewer: Large craft

In accordance with the findings of Donadini and Porretta (2017) and Donadini et al. (2020) the men and women in this research sample have similar interests regarding beer attributes. This is in contrast to the greater susceptibility of men to craft beer that was found by Aquilani et al. (2015), Gómez-Corona et al. (2016) and Mejlholm and Martens (2006). Also the suggestion that female Millennials are more susceptible to green marketing strategies than male ones (Smith & Brower, 2012) is not applicable to these participants. Women even had a lower WTP for sustainable beer than men.

4.9 Key findings

In this chapter the outcome of the analysis regarding the central research question and its corresponding sub research questions was described. First, the justification for including *Gender* as only interaction effect in the choice model was given by assessing the consequences of including other respondent characteristics as interaction effects in the model. Subsequently, the overall results of the research were described. From the results of the performed likelihood-ratio tests it was clear that only *ABV*, *Type of brewer*, *Beer style* and *Packaging* were significant. Hence, respondents did not consider *Sustainability* and *Price* as important decision criteria for choosing beer. This was further supported by the marginal utility ranges that were obtained for the attributes. According to these ranges, *ABV* was the most important attribute for respondents followed by *Beer style* and *Packaging*. *Sustainability* and also *Type of brewer* were less important to respondents. Then, respondents' most preferred attribute levels were retrieved by calculating the utility effects of each attribute level. This resulted in the following ideal beer profile.

Attribute	Level
ABV	7%
Sustainable	Yes
Type of brewer	Microbrewery
Beer Style	Blonde Ale
Price	€0.75
Glass bottle	Glass bottle

Table 4.9 Respondents' ideal beer profile

Respondents preferred an ABV level of 7%, sustainably brewed beer, beer brewed by a microbrewery, blonde ale and a glass bottle packaging the most. For price, they generally preferred it to be as low as possible. In table 4.9 €0.75 is chosen because this was the lowest price level that was presented to respondents in the online survey. Respondents' WTP for the attribute levels was consistent with the obtained utility effects. Finally, the influence of respondents' gender on their beer profile preferences was examined. The likelihood-ratio tests indicated that there was no such influence. This was confirmed by the mostly similar WTP between male and female respondents.

5. Conclusions & Recommendations

5.1 Literature expectations and research outcome

In chapter 2 expectations regarding the target audience's preferences for the beer attributes of interest were made based on the discussed literature. Younger Dutch beer drinkers were expected to have a preference for no or lower alcohol beer because of current health trends and an increase in moderate drinking. This young consumer segment was further likely to be willing to pay a price premium for sustainably produced beer since green marketing strategies seem to appeal to this generation the most. Additionally, a preference for smaller independent breweries over large industrial breweries is expected for this group of beer drinkers. Smaller breweries' beer is by beer drinkers generally considered to be more authentic and of better quality than industrial beer. Furthermore, Millennials also generally think that large companies have too much influence, which makes a preference for purchasing from smaller companies likely. The last beer attribute that was discussed in the literature review was beer style. Since younger people generally tend to be variety seeking, they were expected to prefer alternative beer styles over the dominant pilsner. Finally, no gender differences regarding beer preferences were expected among younger Dutch beer drinkers because research regarding gender differences in (craft) beer preferences is ambiguous.

When it comes to alcohol content, for the sample in this research it was found that an ABV of 7% was preferred the most, followed by alcohol contents of 10% and 5%. Furthermore, according to the marginal utility ranges this is the most important beer attribute for respondents. This implies that respondents attach great value to a high ABV level when purchasing beer. This contradicts the expected preference for lower alcohol beers, which would be in line with current health trends and the increase in moderate drinking. Possibly, beer drinkers are not health conscious since they already consume an alcoholic beverage when they drink beer. Perhaps this subgroup of young Dutch people is less sensitive to the introduction of healthier beverages (containing less alcohol) than their contemporaries. Other reasons for the increase in moderate drinking than a mere preference for a lower alcohol content have already been mentioned by Aquilani et al. (2015) and Chrysogou (2014). They claimed stricter blood alcohol controls for drivers and a lower calorie content were reasons buy a beverage with a lower ABV.

Altogether, there seems to be no preference for no or low alcohol beers by younger Dutch beer drinkers. Hence, the first hypothesis:

H1. Younger Dutch beer drinkers prefer no or low alcohol beer to regular or high alcohol beer.

is rejected.

From the analysis it was further clear that respondents did not find sustainability important. This factor was not significant and had the lowest marginal utility range. However, respondents did prefer sustainable beer over unsustainable beer and were willing to pay extra for sustainable beer, albeit relatively low in comparison with the other beer attributes. The slight preference for sustainable beer can be linked to society's increased interest in environmental and sustainability issues. However, the little importance respondents allocate to sustainability contradicts several researches which suggest that sustainability can be used as competitive advantage in the alcoholic beverage industry (Galati et al., 2019; Olajire, 2012; Pomarici & Vecchio, 2014) and to youngsters in particular (Smith & Brower, 2012). In accordance with the history of the Dutch beer market, in which sustainability is hardly ever used as a marketing tool (Van Dijk et al., 2018), sustainability does not seem to be an area on which brewers need to focus when marketing their beer. Nonetheless, respondents were willing to pay (slightly) more for sustainability. Therefore, the second hypothesis:

H2. Younger Dutch beer drinkers are willing to pay more for (more) sustainably brewed beer.

is accepted.

For type of brewer, respondents preferred microbreweries the most, which is in line with society's increased demand for local and non-mass produced products and the appealing authentic image of craft brewers. Besides, Millennials generally think large corporations have too much influence. Therefore, one would expect industrial brewers (both domestic and foreign) to be preferred the least by respondents. This was not the case, since large domestic craft brewers were preferred the least. This unexpected preference order may be explained by respondents only finding a microbrewery truly authentic. Thus, they may consider large craft breweries as not distinctive enough from industrial breweries. However, as microbrewery was the most preferred type of brewer, the third hypothesis:

H3. Younger Dutch beer drinkers prefer beer brewed by small independent breweries over beer brewed by industrial breweries.

is accepted.

As was clear from literature, other beer styles than the historically standard pilsner have both globally and in the Netherlands become more popular in recent years. In line with this development,

respondents preferred blonde ale over pilsner. Pilsner was still preferred over IPA and dark ale. A possible reason for this preference order was presented by Choi and Stack (2005). They claimed that American beer drinkers tended to stick to the standard or most known beer styles and beer brands for a long time due to psychological switching costs among other things. Although most respondents in this research had tried all four mentioned beer styles, pilsner and Belgian beer styles such as blonde ale were introduced earlier on the Dutch beer market than IPA and dark ale. This suggests that respondents prefer more familiar beer styles over new beer styles, which does not resonate with the generally variety seeking behaviour of young people. Nevertheless, their preference for blonde ale and pilsner may also be explained by a preference merely based on taste. Because with blonde ale an alternative beer style was preferred over pilsner, the fourth hypothesis:

H4. Younger Dutch beer drinkers prefer other beer styles over pilsner.

is accepted.

Lastly, it was found that respondents' gender did not influence their preferences regarding beer attributes. The interaction effects for gender included in the choice model were not significant. Additionally, the men and women in the sample had mostly similar preference orders for the different levels of the beer attributes, which could be seen from their WTP data. Of the controversial results in previous literature the similar liking of beer attributes between male and female respondents is in line with the findings of Donadini and Porretta (2017) and Donadini et al. (2020), who found that men and women have similar interests regarding beer attributes. Hence, the fifth hypothesis:

H5. Among younger Dutch beer drinkers there are no gender differences regarding preferences for craft beer.

is accepted.

Now the hypotheses have been concluded, the central research question can be answered. The central research question was defined as:

What is the market opportunity of craft beer for younger beer drinkers on the Dutch market?

To determine the market opportunity of craft beer, four beer attributes that were considered favourable to craft brewers were investigated. Respondents preferred sustainable over unsustainable beer, microbreweries over larger types of brewers and blonde ale over pilsner. Since craft brewers generally operate more sustainably, operate on a smaller scale and mainly produce other beer styles than pilsner in comparison with industrial breweries, a favourable image among younger Dutch beer drinkers is expected for craft brewers when targeting this consumer segment. Although respondents had a

preference for stronger beer, craft brewers currently do not focus on low or no alcohol beer necessarily. They may very well target younger beer drinkers with beers containing a high ABV. Because no gender differences in beer preferences were found, the market size covers all younger Dutch beer drinkers, which implies that craft brewers can target both men and women with the same assortment within this segment. Altogether, when considering the results based on this research sample, the market opportunity of craft beer for younger beer drinkers on the Dutch market is substantial.

5.2 Recommendations

Since Dutch craft brewers are the brewers of interest in this thesis, the scope of the market recommendations is restricted to a single microbrewery: Oersoep. This Nijmegen based brewery was also mentioned in the online survey as an example of a microbrewery (see Q6 in table B.1). The craft brewery has an assortment of 6 distinctive beers that are available all year round (Oersoep, 2020). These are a Session IPA with an ABV of 4.9%, a non-alcoholic IPA, a wheat beer (blonde ale) with an ABV of 5%, a Farmhouse Ale (blonde ale which they call *Saison*) of 7%, a fruity Sour Ale with an ABV of 4.8% and a *Doppelbock* (dark ale) with an ABV of 8.4%. These are supplemented by annually changing limited edition beers. For 2020 these beers are a *Tripel* (blonde ale) with an ABV of 8.5% and a Brett IPA with an ABV of 6.8%. All these beers seem to be sold in glass bottles. For more information about these beers Oersoep's website can be consulted .

From the ideal beer profile, which was illustrated in table 4.9, it was clear that an alcohol content of 7%, sustainably brewed beer, beer brewed by a microbrewery, blonde ale, a lowest possible price and a glass bottle packaging are expected to be preferred the most by younger Dutch beer drinkers. As was clear from the results section, Oersoep does not need to focus on promoting sustainability or to position its beers as cheap in order to appeal to young Dutch adults. The low importance of price is most likely advantageous for a microbrewery like Oersoep because large brewing corporations like Heineken and AB InBev are likely to be able to offer their beers at lower price levels due to cost savings made possible by economies of scale in their large scale production process.

What Oersoep should focus on when targeting young beer drinkers is producing mid strong to strong blonde ales packaged in glass bottles. Since all Oersoep's beers seem to be sold in glass bottles, the craft brewery does not need to change its packaging when targeting younger Dutch beer drinkers. Of its current year round available beers the Farmhouse Ale seems to be most appealing to this target segment because it is a blonde ale with the most preferred ABV level (7%). Also turning their *Tripel* into a year round available beer should be considered. This stronger blonde ale (ABV of 8.5%) is likely to appeal to young drinkers as well. Oersoep could further expand its assortment with a Belgian *Blonde* of 7% next to its Farmhouse Ale.

Further, since respondents prefer microbreweries the most, Oersoep should be preferred over Heineken or AB InBev when identical beers are offered. However, *Type of brewer* is not the most important attribute to the respondents in this research sample. Hence, Oersoep needs to offer beer that

is superior to, mostly based on alcohol content and beer style, industrial brewers' beer to increase its market share on the Dutch beer market. This may sound easier than it is, however. For instance, Heineken has Affligem in its brand portfolio, which has two comparable alternatives to Oersoep's Farmhouse Ale and *Triple*. These are a *Blonde* with an ABV level of 6.7% and a *Triple* with an ABV of 9% (Affligem beer, 2020). This raises the question whether Oersoep can compete with Heineken for the consumer segment of young beer drinkers.

Therefore, future research could focus on determining the optimal blonde ale for this consumer segment, e.g. several styles of blonde ales can be examined. Once this segment's exact preferences for blonde ales are known, microbreweries like Oersoep could anticipate on these preferences and may gain a competitive advantage over industrial brewers when they target younger Dutch beer drinkers.

For future researchers the use of a more representative sample for this consumer segment is further recommended. For this research convenience sampling has been used, causing the missing of representatives of some part of the target population. For example, only 16.9% of the sample is aged between 25 and 30 years old, whereas the rest of the sample consists of 18 to 24 year-olds. Hence, the older part of the target population may be underrepresented in the sample. Furthermore, as participants were only recruited within my personal network, representatives of younger beer drinkers with other socioeconomic or demographic backgrounds may not be included in the research sample. To overcome this issue, future researchers should consider using a professional panel that is more representative of younger Dutch beer drinkers.

Besides, conducting a field experiment could give further insights into younger Dutch beer drinkers' consumption behaviour. Whereas in the online survey participants had to choose between two hypothetical beer profiles, in real life they have many more options to choose from in a supermarket's beer aisle, for example. Furthermore, in real life consumers have the option to not purchase any beer at all when they do not like the assortment. This has not been taken into account in the online survey. Thus, carrying out a field experiment may give a more accurate image of the importance of beer attributes for participants' actual purchase behaviour.

5.3 Limitations

As was mentioned in the previous paragraph, due to the convenience sampling technique the sample is likely to be unrepresentative of the younger generation of Dutch beer drinkers. This makes statements about the target population less meaningful. Furthermore, in this thesis the analysis is limited to younger beer drinkers. To give Dutch craft brewers a more well-founded recommendation to focus on young beer drinkers, a comparison with older beer drinkers may be needed as well, i.e. these beer drinkers may also have favourable beer attribute preferences regarding craft beer. Thus, because the preferences of older Dutch beer drinkers have not been assessed, this consumer segment may be more attractive to target for craft brewers than younger beer drinkers after all.

Additionally, participants' WTP may have been overestimated. For instance, participants being willing to pay €8.60 extra for a beer with an ABV of 7% relative to a beer with an ABV of 0% seems intuitively quite unrealistic. Danyliv, Pavlova, Gryga and Groot (2012) name the absence of opt-out options in discrete choice experiments as a possible reason for overestimation of WTP, i.e. when participants do not have the option to forgo choosing between two beer profiles some attributes, which would otherwise not have been decisive for purchasing a beer, may be overvalued because of the mandatory choice. The excess estimates of WTP could also be explained by the selected price levels in the choice experiment, according to Danyliv et al.. This would be plausible for this research since the highest price level (€3.00) may not be high enough for participants to choose a cheaper but less appealing beer profile over a more expensive but for the rest more attractive beer profile, whereas a price level of e.g. €9.00 would likely push participants to the cheaper less appealing choice option. Therefore, the estimation of participants' WTP regarding the investigated beer attributes remains controversial. Consequently, also the acceptance of the second hypothesis, in which participants' marginal WTP for sustainability was examined, is questionable.

5.4 Conclusion

This thesis showed that the consumer segment of younger Dutch beer drinkers offers some opportunity to Dutch craft brewers. The respondents in the research sample showed a preference for beer attribute levels that are often associated with craft beer. They were willing to pay extra for sustainable beer, had a preference for beer brewed by microbreweries and with blonde ale they preferred another beer style over pilsner, which used to be the showpiece of industrial brewers. Also their preference for stronger beers can be beneficial to some craft brewers. In addition, respondents found alcohol content, beer style and to a lesser extent packaging the most important when choosing between different beers. Market recommendations were made for the Dutch microbrewery Oersoep. What Oersoep should focus on when targeting young beer drinkers is producing mid strong to strong blonde ales packaged in glass bottles. Of its current assortment its Farmhouse Ale and *Triple* fit this profile. Their assortment could further be extended with a Belgian *Blonde*. However, these beers may not be distinctive enough from the alternatives that industrial brewers offer, which was illustrated by Heineken's brand Affligem. Therefore, future researchers could narrow down the scope of research by solely focusing on this consumer segment's preferences for blonde ales. Once younger beer drinkers' exact preferences for blonde ales are known, microbreweries like Oersoep could anticipate on these preferences and may gain a competitive advantage over industrial brewers. Future researchers are further advised to make use of a professional panel to obtain a more representative sample and could consider conducting a field experiment for more accurate insights about the target population. Altogether, there is reason to believe that younger Dutch beer drinkers embrace *The Dutch Craft Beer Revolution* to some extent and that by targeting this consumer segment Dutch craft brewers can make the revolution last.

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Appendix

A. JMP Prior Assumptions

Effect	Prior mean
ABV 1: 10%	0.000
ABV 2: 7%	0.000
ABV 3: 5%	0.000
ABV 4: 3%	0.000
Sustainable: No	-0.500
Brewery type 1: Import	-0.500
Brewery type 2: Domestic	-0.167
Brewery type 3: Large craft	0.167
Beer style 1: Dark Ale	0.000
Beer style 2: Blonde Ale	0.000
Beer style 3: Pilsner	0.000
Price 1: €3.00	-0.500
Price 2: €2.25	-0.167
Price 3: €1.50	0.167
Packaging: Aluminium can	-0.500

Table A.1 Prior mean values

Effect	A* 1	A 2	A 3	A 4	S	BT 1	BT 2	BT 3	BS 1	BS 2	BS 3	Pr 1	Pr 2	Pr 3	Pa
A* 1	0.10*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A 2		0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A 3			0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A 4				0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S					0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BT 1						0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BT 2							0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BT 3								0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BS 1									0.10	0.00	0.00	0.00	0.00	0.00	0.00
BS 2										0.10	0.00	0.00	0.00	0.00	0.00
BS 3											0.10	0.00	0.00	0.00	0.00
Pr 1												0.10	0.00	0.00	0.00

Pr 2	0.10	0.00	0.00
Pr 3		0.10	0.00
Pa			0.10

Table A.2 Prior variance matrix; *A = ABV, S = Sustainability, BT = Brewery type, BS = Beer style, Pr = Price, Pa = Packaging; **For all prior variances three decimals have been used. The third decimal, which was 0 for every value, has been left out for brevity.

B. Survey Design

#	Question	Question type	Answer options	Descriptive statistics
Q1	Thank you for your interest in participating in this research conducted by Erasmus University Rotterdam. Your participation will help me greatly to finish my Bachelor thesis. The objective of this research is to investigate your choice behaviour regarding beer. The survey will take 5-10 minutes.	Instructions	Not applicable (NA)	NA
Q2	First, I would like to ask you a few questions to determine your eligibility for participating in this research.	Instructions	NA	NA
Q3*	Do you (occasionally) drink beer?	Dichotomous	Yes; No	Mean = 1.00
Q4*	Are you between 18 and 30 years old?	Dichotomous	Yes; No	Mean = 1.00
Q5*	Are you Dutch?	Dichotomous	Yes; No	Mean = 1.00
Q6	Imagine you are standing in the beer aisle in your local supermarket and you are about to buy a beer. In each of the following questions you compare two different beers and choose the beer you prefer the most. You can evaluate each option on the following attributes: 1. ABV (Alcohol By Volume / Alcohol percentage): this can be 0%, 3%, 5%, 7% or 10%. 2. Sustainability of the beer's brewing process: this can be either sustainable or not sustainable. Sustainable brewers use local ingredients to reduce transport,	Instructions	NA	NA

- minimize their electricity usage and/or use sustainable packaging materials.
3. Type of brewery: this can be a large foreign / import industrial brewery (like AB InBev with brands such as Corona, Jupiler and Leffe), a large domestic (Dutch) industrial brewery (like Heineken with brands such as Heineken, Brand and Desperados), a large domestic craft brewery (like Jopen) or a domestic microbrewery (like Oersoep).
 4. Beer style: this can be a Pilsner, an IPA (India Pale Ale), a Blonde Ale (like Belgian blonde and triple) or a Dark Ale (like Belgian double or a stout).
 5. Price: this can be €0.75, €1.50, €2.25 or €3.00.
 6. Packaging: this can be either a glass bottle or an aluminium bottle.

Q7**	Which beer would you choose?	Instructions	NA	NA																					
	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>7%</td> <td>5%</td> </tr> <tr> <td>Sustainable?</td> <td>No</td> <td>No</td> </tr> <tr> <td>Brewery</td> <td>Domestic</td> <td>Large craft</td> </tr> <tr> <td>Beer style</td> <td>Pilsner</td> <td>Dark Ale</td> </tr> <tr> <td>Price</td> <td>€ 2.25</td> <td>€ 1.50</td> </tr> <tr> <td>Packaging</td> <td>Glass bottle</td> <td>Glass bottle</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	7%	5%	Sustainable?	No	No	Brewery	Domestic	Large craft	Beer style	Pilsner	Dark Ale	Price	€ 2.25	€ 1.50	Packaging	Glass bottle	Glass bottle			
	Beer A	Beer B																							
ABV	7%	5%																							
Sustainable?	No	No																							
Brewery	Domestic	Large craft																							
Beer style	Pilsner	Dark Ale																							
Price	€ 2.25	€ 1.50																							
Packaging	Glass bottle	Glass bottle																							
Q8***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.29																					
Q9**	Which beer would you choose?	Instructions	NA	NA																					
	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>7%</td> <td>10%</td> </tr> <tr> <td>Sustainable?</td> <td>No</td> <td>Yes</td> </tr> <tr> <td>Brewery</td> <td>Large craft</td> <td>Import</td> </tr> <tr> <td>Beer style</td> <td>Pilsner</td> <td>Blonde Ale</td> </tr> <tr> <td>Price</td> <td>€1.50</td> <td>€3.00</td> </tr> <tr> <td>Packaging</td> <td>Aluminium can</td> <td>Glass bottle</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	7%	10%	Sustainable?	No	Yes	Brewery	Large craft	Import	Beer style	Pilsner	Blonde Ale	Price	€1.50	€3.00	Packaging	Aluminium can	Glass bottle			
	Beer A	Beer B																							
ABV	7%	10%																							
Sustainable?	No	Yes																							
Brewery	Large craft	Import																							
Beer style	Pilsner	Blonde Ale																							
Price	€1.50	€3.00																							
Packaging	Aluminium can	Glass bottle																							
Q10***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.74																					
Q11**	Which beer would you choose?	Instructions	NA	NA																					
	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>3%</td> <td>5%</td> </tr> <tr> <td>Sustainable?</td> <td>No</td> <td>Yes</td> </tr> <tr> <td>Brewery</td> <td>Domestic</td> <td>Import</td> </tr> <tr> <td>Beer style</td> <td>Blonde Ale</td> <td>Pilsner</td> </tr> <tr> <td>Price</td> <td>€2.25</td> <td>€3.00</td> </tr> <tr> <td>Packaging</td> <td>Aluminium can</td> <td>Aluminium can</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	3%	5%	Sustainable?	No	Yes	Brewery	Domestic	Import	Beer style	Blonde Ale	Pilsner	Price	€2.25	€3.00	Packaging	Aluminium can	Aluminium can			
	Beer A	Beer B																							
ABV	3%	5%																							
Sustainable?	No	Yes																							
Brewery	Domestic	Import																							
Beer style	Blonde Ale	Pilsner																							
Price	€2.25	€3.00																							
Packaging	Aluminium can	Aluminium can																							
Q12***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.52																					
Q13**	Which beer would you choose?	Instructions	NA	NA																					

	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>10%</td> <td>5%</td> </tr> <tr> <td>Sustainable?</td> <td>Yes</td> <td>No</td> </tr> <tr> <td>Brewery</td> <td>Domestic</td> <td>Microbrewery</td> </tr> <tr> <td>Beer style</td> <td>Dark Ale</td> <td>Blonde Ale</td> </tr> <tr> <td>Price</td> <td>€1.50</td> <td>€2.25</td> </tr> <tr> <td>Packaging</td> <td>Aluminium can</td> <td>Glass bottle</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	10%	5%	Sustainable?	Yes	No	Brewery	Domestic	Microbrewery	Beer style	Dark Ale	Blonde Ale	Price	€1.50	€2.25	Packaging	Aluminium can	Glass bottle			
	Beer A	Beer B																							
ABV	10%	5%																							
Sustainable?	Yes	No																							
Brewery	Domestic	Microbrewery																							
Beer style	Dark Ale	Blonde Ale																							
Price	€1.50	€2.25																							
Packaging	Aluminium can	Glass bottle																							
Q14***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.77																					
	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>3%</td> <td>10%</td> </tr> <tr> <td>Sustainable?</td> <td>No</td> <td>Yes</td> </tr> <tr> <td>Brewery</td> <td>Domestic</td> <td>Large craft</td> </tr> <tr> <td>Beer style</td> <td>Dark Ale</td> <td>Blonde Ale</td> </tr> <tr> <td>Price</td> <td>€3.00</td> <td>€2.25</td> </tr> <tr> <td>Packaging</td> <td>Glass bottle</td> <td>Aluminium can</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	3%	10%	Sustainable?	No	Yes	Brewery	Domestic	Large craft	Beer style	Dark Ale	Blonde Ale	Price	€3.00	€2.25	Packaging	Glass bottle	Aluminium can			
	Beer A	Beer B																							
ABV	3%	10%																							
Sustainable?	No	Yes																							
Brewery	Domestic	Large craft																							
Beer style	Dark Ale	Blonde Ale																							
Price	€3.00	€2.25																							
Packaging	Glass bottle	Aluminium can																							
Q15**	Which beer would you choose?	Instructions	NA	NA																					
	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>0%</td> <td>7%</td> </tr> <tr> <td>Sustainable?</td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td>Brewery</td> <td>Import</td> <td>Large craft</td> </tr> <tr> <td>Beer style</td> <td>IPA</td> <td>Blonde Ale</td> </tr> <tr> <td>Price</td> <td>€2.25</td> <td>€3.00</td> </tr> <tr> <td>Packaging</td> <td>Aluminium can</td> <td>Aluminium can</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	0%	7%	Sustainable?	Yes	Yes	Brewery	Import	Large craft	Beer style	IPA	Blonde Ale	Price	€2.25	€3.00	Packaging	Aluminium can	Aluminium can			
	Beer A	Beer B																							
ABV	0%	7%																							
Sustainable?	Yes	Yes																							
Brewery	Import	Large craft																							
Beer style	IPA	Blonde Ale																							
Price	€2.25	€3.00																							
Packaging	Aluminium can	Aluminium can																							
Q16***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.69																					
	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>7%</td> <td>5%</td> </tr> <tr> <td>Sustainable?</td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td>Brewery</td> <td>Large craft</td> <td>Domestic</td> </tr> <tr> <td>Beer style</td> <td>Dark Ale</td> <td>Blonde Ale</td> </tr> <tr> <td>Price</td> <td>€2.25</td> <td>€0.75</td> </tr> <tr> <td>Packaging</td> <td>Glass bottle</td> <td>Aluminium can</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	7%	5%	Sustainable?	Yes	Yes	Brewery	Large craft	Domestic	Beer style	Dark Ale	Blonde Ale	Price	€2.25	€0.75	Packaging	Glass bottle	Aluminium can			
	Beer A	Beer B																							
ABV	7%	5%																							
Sustainable?	Yes	Yes																							
Brewery	Large craft	Domestic																							
Beer style	Dark Ale	Blonde Ale																							
Price	€2.25	€0.75																							
Packaging	Glass bottle	Aluminium can																							
Q17**	Which beer would you choose?	Instructions	NA	NA																					
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	Beer A	Beer B																							
ABV	3%	10%																							
Sustainable?	Yes	No																							
Brewery	Import	Microbrewery																							
Beer style	Blonde Ale	Dark Ale																							
Price	€1.50	€0.75																							
Packaging	Glass bottle	Glass bottle																							
Q18***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.84																					
	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>3%</td> <td>0%</td> </tr> <tr> <td>Sustainable?</td> <td>No</td> <td>No</td> </tr> <tr> <td>Brewery</td> <td>Import</td> <td>Domestic</td> </tr> <tr> <td>Beer style</td> <td>Dark Ale</td> <td>IPA</td> </tr> <tr> <td>Price</td> <td>€2.25</td> <td>€3.00</td> </tr> <tr> <td>Packaging</td> <td>Aluminium can</td> <td>Glass bottle</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	3%	0%	Sustainable?	No	No	Brewery	Import	Domestic	Beer style	Dark Ale	IPA	Price	€2.25	€3.00	Packaging	Aluminium can	Glass bottle			
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ABV	3%	0%																							
Sustainable?	No	No																							
Brewery	Import	Domestic																							
Beer style	Dark Ale	IPA																							
Price	€2.25	€3.00																							
Packaging	Aluminium can	Glass bottle																							
Q19**	Which beer would you choose?	Instructions	NA	NA																					
	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>3%</td> <td>10%</td> </tr> <tr> <td>Sustainable?</td> <td>Yes</td> <td>No</td> </tr> <tr> <td>Brewery</td> <td>Import</td> <td>Microbrewery</td> </tr> <tr> <td>Beer style</td> <td>Blonde Ale</td> <td>Dark Ale</td> </tr> <tr> <td>Price</td> <td>€1.50</td> <td>€0.75</td> </tr> <tr> <td>Packaging</td> <td>Glass bottle</td> <td>Glass bottle</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	3%	10%	Sustainable?	Yes	No	Brewery	Import	Microbrewery	Beer style	Blonde Ale	Dark Ale	Price	€1.50	€0.75	Packaging	Glass bottle	Glass bottle			
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Beer style	Blonde Ale	Dark Ale																							
Price	€1.50	€0.75																							
Packaging	Glass bottle	Glass bottle																							
Q20***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.63																					
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Sustainable?	No	No																							
Brewery	Import	Domestic																							
Beer style	Dark Ale	IPA																							
Price	€2.25	€3.00																							
Packaging	Aluminium can	Glass bottle																							
Q21**	Which beer would you choose?	Instructions	NA	NA																					
	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>3%</td> <td>0%</td> </tr> <tr> <td>Sustainable?</td> <td>No</td> <td>No</td> </tr> <tr> <td>Brewery</td> <td>Import</td> <td>Domestic</td> </tr> <tr> <td>Beer style</td> <td>Dark Ale</td> <td>IPA</td> </tr> <tr> <td>Price</td> <td>€2.25</td> <td>€3.00</td> </tr> <tr> <td>Packaging</td> <td>Aluminium can</td> <td>Glass bottle</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	3%	0%	Sustainable?	No	No	Brewery	Import	Domestic	Beer style	Dark Ale	IPA	Price	€2.25	€3.00	Packaging	Aluminium can	Glass bottle			
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Beer style	Dark Ale	IPA																							
Price	€2.25	€3.00																							
Packaging	Aluminium can	Glass bottle																							
Q22***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.37																					
	<table border="1"> <thead> <tr> <th></th> <th>Beer A</th> <th>Beer B</th> </tr> </thead> <tbody> <tr> <td>ABV</td> <td>3%</td> <td>0%</td> </tr> <tr> <td>Sustainable?</td> <td>No</td> <td>No</td> </tr> <tr> <td>Brewery</td> <td>Import</td> <td>Domestic</td> </tr> <tr> <td>Beer style</td> <td>Dark Ale</td> <td>IPA</td> </tr> <tr> <td>Price</td> <td>€2.25</td> <td>€3.00</td> </tr> <tr> <td>Packaging</td> <td>Aluminium can</td> <td>Glass bottle</td> </tr> </tbody> </table>		Beer A	Beer B	ABV	3%	0%	Sustainable?	No	No	Brewery	Import	Domestic	Beer style	Dark Ale	IPA	Price	€2.25	€3.00	Packaging	Aluminium can	Glass bottle			
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Q23**	Which beer would you choose?	Instructions	NA	NA																					
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Q24***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.52																					
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Q25**	Which beer would you choose?	Instructions	NA	NA																					

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Q26***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.59																					
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Q27**	Which beer would you choose?	Instructions	NA	NA																					
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Q28***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.42																					
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Q29**	Which beer would you choose?	Instructions	NA	NA																					
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Q30***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.89																					
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Q31**	Which beer would you choose?	Instructions	NA	NA																					
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Price	€0.75	€1.50																							
Packaging	Glass bottle	Glass bottle																							
Q32***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.75																					
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Q33**	Which beer would you choose?	Instructions	NA	NA																					
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Packaging	Aluminium can	Glass bottle																							
Q34***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.82																					
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Q35**	Which beer would you choose?	Instructions	NA	NA																					
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Packaging	Aluminium can	Glass bottle																							
Q36***	Choose the beer you prefer the most	Dichotomous	Beer A; Beer B	Mean = 1.65																					

Q37	Please indicate which beer styles you have tried before.	Multiple choice (Multiple answers possible)	Pilsner; IPA; Blonde Ale; Dark Ale; Other beer styles	Frequencies: Pilsner: 119; IPA: 111; Blonde Ale: 115; Dark Ale: 96; Other beer styles: 87
Q38	When you buy a beer in either a glass bottle or an aluminium can, do you usually pour it in a glass before you consume the beer?	Dichotomous	Yes; No	Mean = 1.36
Q39	Please indicate your gender.	Multiple choice	Male; Female; Other; Prefer not to answer.	Frequencies: Male: 83; Female: 40; Other: 1; Prefer not to answer.: 0
Q40	What is your age?	Multiple choice	18-21; 22-24; 25-27; 28-30; Prefer not to answer.	Frequencies: 18-21: 51; 22-24: 52; 25-27: 6; 28-30: 15; Prefer not to answer.: 0
Q41	Thank you for your time spent taking this survey. Your effort helps me greatly to finish my Bachelor thesis. Your response has been recorded.	Instructions	NA	NA

Table B.1 The conducted online survey and its results; *screening question; **presented to respondents in a randomised order; ***presented to respondents in combination with the previous question; ****in dichotomous questions the first answer option is coded with the value 1 and the second with the value 2

C. JMP Output

Term	Parameter estimate	Standard error
ABV: 10% (X_{j1})	0.524 (β_1)	0.198
ABV: 7% (X_{j2})	0.651 (β_2)	0.192
ABV: 5% (X_{j3})	0.313 (β_3)	0.192
ABV: 3% (X_{j4})	-0.143 (β_4)	0.183
Sustainable: No (X_{j5})	-0.094 (β_5)	0.136

Type of brewer: Import (X_{j6})	0.042 (β_6)	0.181
Type of brewer: Domestic (X_{j7})	0.039 (β_7)	0.152
Type of brewer: Large craft (X_{j8})	-0.452 (β_8)	0.180
Beer style: Dark Ale (X_{j9})	-0.558 (β_9)	0.164
Beer style: Blonde Ale (X_{j10})	0.628 (β_{10})	0.158
Beer style: IPA (X_{j11})	-0.479 (β_{11})	0.187
Price (X_{j12})	-0.093 (β_{12})	0.188
Packaging: Aluminium can (X_{j13})	-0.522 (β_{15})	0.145
Gender * ABV: 10% ($X_{j1}C_n$)	-0.150 (γ_1)	0.135
Gender * ABV: 7% ($X_{j2}C_n$)	-0.196 (γ_2)	0.128
Gender * ABV: 5% ($X_{j3}C_n$)	-0.078 (γ_3)	0.132
Gender * ABV: 3% ($X_{j4}C_n$)	0.048 (γ_4)	0.126
Gender * Sustainability: No ($X_{j5}C_n$)	-0.012 (γ_5)	0.094
Gender * Type of brewer: Import ($X_{j6}C_n$)	-0.033 (γ_6)	0.125
Gender * Type of brewer: Domestic ($X_{j7}C_n$)	0.004 (γ_7)	0.105
Gender * Type of brewer: Large craft ($X_{j8}C_n$)	0.225 (γ_8)	0.122
Gender * Beer style: Dark Ale ($X_{j9}C_n$)	0.077 (γ_9)	0.112
Gender * Beer style: Blonde Ale ($X_{j10}C_n$)	-0.116 (γ_{10})	0.107
Gender * Beer style: IPA ($X_{j11}C_n$)	0.217 (γ_{11})	0.123
Gender * Price ($X_{j12}C_n$)	-0.037 (γ_{12})	0.124
Gender * Packaging: Aluminium can ($X_{j13}C_n$)	0.147 (γ_{15})	0.097

Table C.1 Parameter estimates (Model 2) generated by the choice experiment

Source	Chi-squared-value	Degrees of Freedom	P-value
ABV	131.437	4	< 0.001**
Sustainability	5.594	1	0.018*
Type of brewer	6.623	3	0.085
Beer style	145.083	3	< 0.001**
Price	5.033	1	0.025*
Packaging	45.197	1	< 0.001**

Table C.2 Likelihood Ratio Tests Model 1; * $p < 0.05$; ** $p < 0.01$

Source	Chi-squared-value	Degrees of Freedom	P-value
ABV	37.216	4	< 0.001**
Sustainability	0.478	1	0.489
Type of brewer	8.109	3	0.044*
Beer style	32.361	3	< 0.001**
Price	0.245	1	0.621

Packaging	13.635	1	< 0.001**
Gender*ABV	6.260	4	0.181
Gender*Sustainability	0.016	1	0.990
Gender*Type of brewer	4.518	3	0.211
Gender*Beer style	4.934	3	0.177
Gender*Price	0.083	1	0.773
Gender*Packaging	2.272	1	0.132

Table C.3 Likelihood Ratio Tests Model 2; * $p < 0.05$; ** $p < 0.01$

Source	Chi-squared-value	Degrees of Freedom	P-value
ABV	96.472	4	< 0.001**
Sustainability	1.900	1	0.168
Type of brewer	6.138	3	0.105
Beer style	25.266	3	< 0.001**
Price	3.053	1	0.081
Packaging	10.935	1	< 0.001**
Age*ABV	30.050	4	< 0.001**
Age*Sustainability	0.074	1	0.786
Age*Type of brewer	6.867	3	0.076
Age*Beer style	7.952	3	0.047*
Age*Price	0.622	1	0.430
Age*Packaging	0.081	1	0.776

Table C.4 Likelihood Ratio Tests Model 3; * $p < 0.05$; ** $p < 0.01$

Source	Chi-squared-value	Degrees of Freedom	P-value
ABV	1.738	4	0.784
Sustainability	0.000	1	1.000
Type of brewer	5.269	3	0.153
Beer style	15.197	3	0.002**
Price	0.000	1	1.000
Packaging	0.201	1	0.654
Pilsner*ABV	12.630	4	0.013*
Pilsner*Sustainability	2.438	1	0.119
Pilsner*Type of brewer	4.504	3	0.212
Pilsner*Beer style	9.904	3	0.019*
Pilsner*Price	11.022	1	< 0.001**
Pilsner*Packaging	11.268	1	< 0.001**
IPA*ABV	8.412	4	0.078
IPA*Sustainability	1.317	1	0.251
IPA*Type of brewer	1.799	3	0.615

IPA*Beer style	6.714	3	0.082
IPA*Price	4.197	1	0.041*
IPA*Packaging	6.855	1	0.009**
Blonde Ale*ABV	4.127	4	0.389
Blonde Ale*Sustainability	1.935	1	0.164
Blonde Ale*Type of brewer	2.957	3	0.398
Blonde Ale*Beer style	12.269	3	0.007**
Blonde Ale*Price	1.925	1	0.165
Blonde Ale*Packaging	3.245	1	0.072
Dark Ale*ABV	6.923	4	0.140
Dark Ale*Sustainability	0.251	1	0.617
Dark Ale*Type of brewer	2.306	3	0.511
Dark Ale*Beer style	3.282	3	0.350
Dark Ale*Price	0.837	1	0.360
Dark Ale*Packaging	0.471	1	0.493
Other beer*ABV	3.398	4	0.494
Other beer*Sustainability	0.000	1	1.000
Other beer*Type of brewer	6.329	3	0.097
Other beer*Beer style	2.236	3	0.525
Other beer*Price	2.059	1	0.151
Other beer*Packaging	1.169	1	0.280

Table C.5 Likelihood Ratio Tests Model 4; * $p < 0.05$; ** $p < 0.01$

Source	Chi-squared-value	Degrees of Freedom	P-value
ABV	1.699	4	0.791
Sustainability	0.846	1	0.358
Type of brewer	0.567	3	0.904
Beer style	11.064	3	0.011*
Price	3.492	1	0.062
Packaging	0.484	1	0.489
Glass*ABV	18.296	4	0.001**
Glass*Sustainability	0.000	1	1.000
Glass*Type of brewer	0.518	3	0.915
Glass*Beer style	2.487	3	0.478
Glass*Price	7.323	1	0.007**
Glass*Packaging	2.228	1	0.136

Table C.6 Likelihood Ratio Tests Model 5; * $p < 0.05$; ** $p < 0.01$

Source	Chi-squared-value	Degrees of Freedom	P-value
ABV	59.144	4	< 0.001**

Sustainability	0.597	1	0.440
Type of brewer	7.925	3	0.048*
Beer style	23.493	3	< 0.001**
Price	0.677	1	0.411
Packaging	10.779	1	0.001**
Gender*ABV	2.587	4	0.629
Gender*Sustainability	0.041	1	0.839
Gender*Type of brewer	4.279	3	0.233
Gender*Beer style	4.555	3	0.208
Gender*Price	0.233	1	0.629
Gender*Packaging	2.009	1	0.156
Age*ABV	26.336	4	< 0.001**
Age*Sustainability	0.093	1	0.761
Age*Type of brewer	6.582	3	0.087
Age*Beer style	7.630	3	0.054
Age*Price	0.742	1	0.389
Age*Packaging	0.000	1	1.000

Table C.7 Likelihood Ratio Tests Model 6; * $p < 0.05$; ** $p < 0.01$

Marginal probability	Marginal utility	Attribute level	Range*
		ABV	1.230
0.254	0.323	10%	
0.271	0.388	7%	
0.227	0.209	5%	
0.170	-0.078	3%	
0.079	-0.842	0%	
		Sustainability	0.220
0.445	-0.110	No	
0.555	0.110	Yes	
		Type of brewer	0.259
0.248	-0.002	Import	
0.260	0.045	Domestic	
0.214	-0.151	Large craft	
0.277	0.108	Microbrewery	
		Beer style	0.929
0.149	-0.456	Dark Ale	
0.377	0.473	Blonde Ale	
0.195	-0.189	IPA	
0.279	0.172	Pilsner	
		Packaging	0.652

0.343	-0.326	Aluminium can
0.657	0.326	Glass bottle

*Table C.8 Effect marginals; *Range is calculated by subtracting the lowest marginal utility value from the highest marginal utility value for each attribute*

Factor	Level	Price change	New price
ABV	10%	€8.14	€8.89
ABV	7%	€8.60	€9.35
ABV	5%	€7.35	€8.10
ABV	3%	€5.34	€6.09
Sustainability	Yes	€1.54	€2.29
Type of brewer	Import	€1.04	€1.79
Type of brewer	Domestic	€1.37	€2.12
Type of brewer	Microbrewery	€1.81	€2.56
Beer style	Blonde Ale	€6.49	€7.24
Beer style	IPA	€1.86	€2.61
Beer style	Pilsner	€4.39	€5.14
Packaging	Glass bottle	€4.55	€5.30

Table C.9 Willingness to pay (WTP) for overall sample; base price: €0.75

Factor	Level	Price change	New price
ABV	10%	€10.30	€11.05
ABV	7%	€10.91	€11.66
ABV	5%	€9.24	€9.99
ABV	3%	€6.70	€7.45
Sustainability	Yes	€1.63	€2.38
Type of brewer	Import	€1.81	€2.56
Type of brewer	Domestic	€2.08	€2.83
Type of brewer	Microbrewery	€3.08	€3.83
Beer style	Blonde Ale	€7.61	€8.36
Beer style	IPA	€1.68	€2.43
Beer style	Pilsner	€5.47	€6.22
Packaging	Glass bottle	€5.75	€6.50

Table C.10 WTP for males; base price: €0.75

Factor	Level	Price change	New price
ABV	10%	€4.88	€5.63
ABV	7%	€5.08	€5.83
ABV	5%	€4.48	€5.23

ABV	3%	€3.26	€4.01
Sustainability	Yes	€1.41	€2.16
Type of brewer	Import	-€0.13	€0.62
Type of brewer	Domestic	€0.30	€1.05
Type of brewer	Microbrewery	-€0.12	€0.63
Beer style	Blonde Ale	€4.77	€5.52
Beer style	IPA	€2.14	€2.89
Beer style	Pilsner	€2.74	€3.49
Packaging	Glass bottle	€2.73	€3.48

Table C.11 WTP for females; base price: €0.75