

# Relative Importance of ESG branding on consumer purchase decisions

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The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

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## Abstract

In the last few decades, due to rising awareness on issues such as climate change, social factors and corporate governance has given “Environmental Social Governance” (“ESG”) brand which is applicable to everything from F500 companies, financial assets, and daily products that we use. The customer of today is well read and opinionated on the products used by her and uses her purchase behaviour to support such initiatives- a phenomenon known as Environmentally Preferable Purchasing (EPP) or Green Purchasing. As a result, companies are diversifying and expanding their product offering to offer products that are more in line with the preferences of today’s consumers. From the perspective of a firm, it can be difficult to balance the ESG level of a product offering relative to more tangible and well-known attributes when developing new products. Thus, the aim of this study is to understand the impact of ESG branding on consumer purchase decisions. How much do they value the ESG brand compared to attributes such as quality, quantity, and price? Is there a trade-off between a partially sustainable product and one with better attributes? How does is consumer purchase behaviour affected by product type – consumable vs durable? We make use of a choice based conjoint study with a full profile approach to create a realistic buying scenario. Based on the output gathered from the survey, we are able to compute the part worth utilities of each attribute level thus allowing a within product and between two products (pizza vs jacket) comparison. We find that for pizza (consumable category), quality is the most important attribute followed by price. This is an expected result as it is an edible and a FMCG product- purchased/consumed frequently. In case of jacket (durable), price is the most important attribute followed by the “ESG” attribute- showing that respondents have a bias towards sustainable purchases for durable products (purchased infrequently and long lasting). Finally, we find that, between the two product categories, the respondent’s utility gain/loss across the attribute levels do not differ significantly.

# Chapter 1

## Introduction

According to the World Economic forum (1), some of the major challenges of the 21s century include climate change, rising economic inequality and gender gaps. Our response to such challenges will be a significant determinant of the quality of life of future generations. As such, tacking these issues is of utmost importance and one of the ways we can tackle such issues is by being a more conscious consumer – by choosing and spending money and resources on those products that are deemed “ESG” positive- this will guide the market economy to produce goods and services that seek to rectify, directly or indirectly, such issues.

“ESG is a framework considering environmental, social and governance factors alongside financial factors in the investment decision-making process. Environmental, social, and corporate governance (ESG) is an approach to evaluating the extent to which a corporation works on behalf of social goals that go beyond the role of a corporation to maximize profits on behalf of the corporation's shareholders. Typically, the social goals advocated within an ESG perspective include working to achieve a certain set of environmental goals, as well as a set of goals having to do with supporting certain social movements, and a third set of goals having to do with whether the corporation is governed in a way that is consistent with the goals of the diversity, equity, and inclusion movement.” (2)

Environmental criteria considers how the company’s operations impact the environment e.g., using solar panels on office roofs to reduce their carbon footprint. It considers, in particular, the externalities levied by a corporation on the environment by means of greenhouse gas emissions, along with waste management, green energy utilization and energy efficiency policies. Supply chain elements such as toxic chemicals used in the manufacturing process and/or sustainability efforts to make up for the same are also key areas of interest.

Social criteria considers the dealings of the company with not just its stockholders but also other individuals and groups who may be affected by their policies (stakeholders) e.g., a factory releasing hazardous waste into a river affects the health and safety of those who live downstream. It also considers issues such as human rights, working standards/conditions at every step of the supply chain, and other workplace health and safety standards. The level of integration with the local population and its customs and culture is also an important factor.

Governance considers how the company manages its employees (how fair, transparent, and inclusive the work environment is) e.g., a company taking part in the Pride Month shows inclusivity towards LGBTQ+ employees. It is a set of rules or principles laid down that define

rights, responsibilities, and expectations between different stakeholders in the governance of corporations. It also includes financial elements such as honest and transparent accounting practices and executive pay.

In recent years, ESG reporting has been an important part of the financial report of F500 companies (3). Global sustainable investment now tops \$30 trillion—up 68 per cent since 2014 and tenfold since 2004 (4). This can be attributed to heightened consumer awareness regarding the positive and negative externalities linked with the business decisions of major corporations.

Thus, it can be ascertained that ESG branding is important at a micro level (perspective of an individual consumer) and at a macro level of a Fortune 500 company.

### **1.1) Problem description and research questions –**

Given the rise in public awareness and consumer demand of ESG branded products, many industries have diversified their product offering by including more sustainable products. For example, Nike has introduced several shoes with varying levels of usage of recycled materials (Flyknit with 60% less waste and containing 6-7 repurposed plastic bottles (5), Nike Air with 60% recycled materials used) (6), Decathlon marks all its products with a sustainability score of A (most sustainable) to E (least sustainable) (7). Fast food companies have also kept up with recent developments in consumer choice, Dominoes uses 70% recycled paper in its pizza packaging (8) whereas 75% of the total palm oil used by McDonald's is ecologically sourced (9). From these examples we see that several popular consumer products are still partially sustainable.

Therefore, it is interesting to research on how important the ESG attribute to a consumer is especially if the attribute is a categorical variable with several levels as compared to ESG being reduced to a binary one i.e., either present or not. The relative importance of the ESG attribute would be of particular importance to firms and marketers which are in the process of developing and marketing new products and would like to have a good understanding of the requirements of their consumer base.

Furthermore, there is a clear distinction between the consumers' adaptability between sustainable durable goods and sustainable consumables. Whether the filling of winter jackets is RDS certified down from birds or polyester (choice of filling does not affect the user experience given functional aspects of the jackets are similar) (10), but in the case of consumable goods such as fast food, taste is an important factor. From a market perspective, companies try to sell

food products which maximize the sensory pleasure from consumption- these are often high in fat, salt and taste enhancers such as MSG (Monosodium Glutamate) (11), and are quick and easy to prepare (11,12).

Thus, one would expect that people would be more conservative in their choices of consumables than durables in the ESG attribute and hence, we test the same using two similar conjoint tests focusing on two different products- jackets and pizza.

The aim of this research paper is twofold:

- 1) To calculate the importance of ESG branding to customers: This will be done by comparing various combinations of the same item with certain key differences in attributes- price, quantity, and quality\* variables and the ESG brand. Varying levels of ESG will be considered to ensure flexibility in consumer choice
- 2) To compare the results of question 1 for two different product categories – consumable goods (pizza) vs. durable goods (down jacket).

\* Quality in case of pizza is measured by the freshness of ingredients and in case of jacket is measured by durability. See the Theoretical framework section for a more detailed explanation.

## **1.2) Conceptual Framework and hypotheses-**

The conceptual framework shows (in form of a diagram) a systematic overview of the thesis statement and the relationship between the different elements within the research question. The model shows that price (H1), quantity (H2), quality (H3) and ESG brand (H4), all have a significant effect on purchase behaviour, and that a trade-off can be established and quantified between the ESG brand (with three levels) and the other three attributes (each having multiple levels). This model will be implemented for two different product categories- consumables (pizza) and durables (down jackets). Under the framework, academic literature provides an explanation for each individual element in the model.

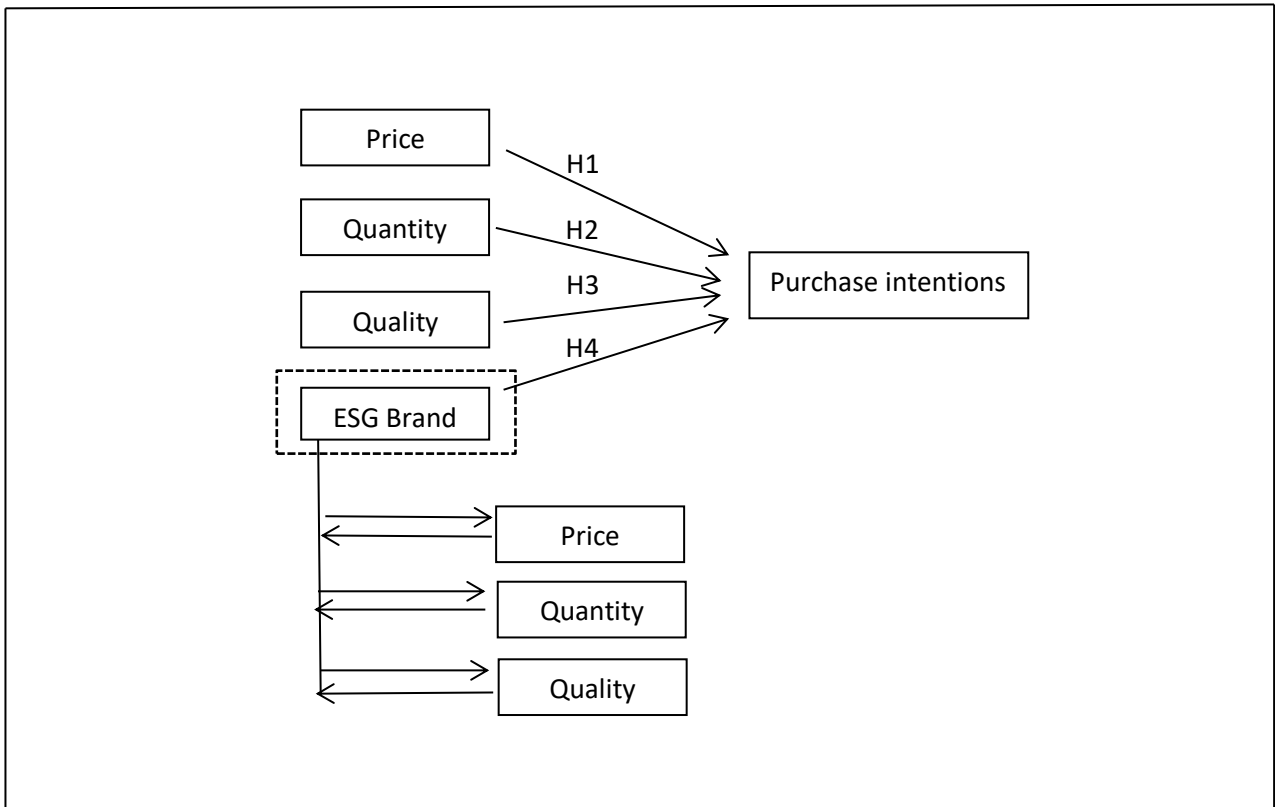


Figure 1: An overview of the drivers of purchase intentions and showing a trade-off between ESG and other attributes.

According to PA Mensah (13), perceived prices are one of the best predictors of green purchase intentions. When prices of green products are the same as that of conventional brands, customers have a high likelihood of making a switch. Kianpour et al (14) divided ecofriendly products in three categories - short, medium, and long term and found that >50% customers are willing to pay a premium of over 30% in purchasing an ecofriendly product that its conventional counterpart viewing it as a kind of “green investment”. Thus, Hypothesis H1 is evaluated. The aim is to determine if consumers are willing to pay more for an ESG branded good, by how much more they are willing to pay for varying levels of the ESG brand and how the two product categories differ in this regard.

*H1: Price has a negative effect on the purchase decision of consumer goods.*

According to Iwanow et al., (2005); Jägel et al., (2012) (15, 16), quality (esp. durability) is a major consideration among consumers when it comes to purchasing sustainable clothing. Like the

findings of K. Niinimäki (2010) (17), a strong positive correlation was found between green purchase behavior and preference for durability. An explanation of this could be because durable products last longer and hence are more sustainable. A study by Technomic 2016 (18), on consumer trends in the pizza market shows that consumer demands are evolving in favor of unique, high-quality, and better-for-you pizza ingredients and add-ons. This research aims to observe the effect of quality of sustainable products on purchase decisions. Durability in case of down jackets (durable) and freshness of toppings in case of pizza (consumables) are chosen measures of quality.

*H2: Quality has a positive effect on the purchase decision of consumer goods.*

Vermeer et al (2009) (19), did a qualitative study with 8 focus groups of 49 participants total in which the factors taken into consideration when purchasing readymade foods were discussed. Participants agreed, unanimously, that larger portion sizes were preferred since they offered better value for money. One woman commented:

“Consider McDonalds for instance. There you have a medium-sized menu and a mega menu, and the price differences between those meals are quite small. I don’t have specific information, but the mega menu is really mega! And I am easily tempted to choose the mega menu, because the price difference is small, while... I don’t need that mega menu at all, but it is tempting to buy it. Simply because you get more value for your money.”

Zlatevska et al (2014) (20), did a meta-analysis on the usage of portion size by marketers to attract customers, and found that if portion size would be doubled, consumption would increase by 35%. Although the meta-analysis also found that there are diminishing returns to increase in portion size, nonetheless, portion size is an important determinant of purchase behaviour.

*H3: Quantity\* has a positive effect on the purchase decision of consumer goods.*

*\*Quantity is measured in inches for pizzas and density of filling (g/sq. m) in case of jackets.*

Brach et al (2018) (21), conducted a study on the effects of third-party label certifications (TPCL’s) on consumer decision making, and found that TPCL’s such as ESG brands reduce the risks (financial, performance based) consumers associate with sustainable goods and hence positively influence consumer’s intentions for the same. They conclude by asserting that TPCL’s are an effective means of reducing the information asymmetries between producers and customers and reducing barriers to purchase. Moreover, Mehta (2013) (22) explains that numbers are becoming a trend in packaging as the world is getting more data driven. Labels that show the percentage



of natural ingredients used in any kind of consumer product are becoming more popular as people are getting more aware and eco-conscious.

*H4: ESG brand has a positive effect on purchase decision of consumer goods.*

Human beings, when deciding to purchase a product or a service, tend to perform a mental cost benefit analysis (Basten, U., Biele, G., Heekeren, H. R., & Fiebach, C. J. (2010)) (23). Under this method of decision making, all the costs and benefits associated with taking a decision are compiled, within a singular unit of measurement, and then compared to determine if the benefits outweigh the costs. If so, then the rational decision is to go forward with the decision. Within this framework, an increase in costs should be compensated with a proportional increase in benefits for the same decision to be taken. However, in certain cases, such as zero price goods (a good which costs nothing/free), human decision making is unconventional – “in that people do not simply subtract costs from benefits but instead they perceive the benefits associated with free products as higher (Shampanier, Kristina & Mazar, Nina (2007) (24), Hossain, Mehdi T. & Saini, Ritesh, (2015) (25).” So, within this conjoint study, when customers are faced with a choice for a product with a higher level of ESG attribute (than its alternative with a lower level), we expect them to place a higher than linear valuation (measured by part worth utilities) which determines purchase intention.

*H5: There is a non-linear relationship between ESG and purchase decision of consumer goods.*

### **1.3) Scientific and Social Relevance**

There are two main contributions of this research paper to the existing body of academic literature. Firstly, a deeper explanation of how varying levels of sustainability in a product is linked to customer purchase behaviour. Currently, academic literature that considers sustainability as a non-binary independent variable is limited. Secondly, how does consumer perception of the sustainability attribute change when it comes to consumable goods vs durable goods. Consumables are products to be used in the short run whereas durables are more long-term goods and hence the secondary aim of this paper is to analyse the differences in consumer purchase behaviour between two product categories. Thus, the aim of this master’s thesis is to add to the relevant field of study.

The social relevance of this study is that it provides further insights to manufacturing firms which are in the process of marketing and developing new products. A part worth analysis of product

attributes would allow these firms to have a better understanding of their customer base- their wants and expectations from a product; and hence the firm can modify its product offering accordingly. Keller and Lehman (2006) (26) argued that brand positioning, especially attribute association in the mind of customers is highly relevant for measuring, building, and managing customer equity. The results of this study would allow brand managers to identify which attributes matter most in driving customer perception and thereby, sales and allow market strategy firms to focus on the relevant key words they need to achieve their marketing outcomes.

#### **1.4) Outline**

Chapter 1 acts as an introduction to the research paper. A problem description and research questions are detailed along with the conceptual framework and hypotheses to be tested. It also includes a brief section on the scientific and social relevance of the research paper. Chapter 2 (theoretical framework) explains the theories relating to the research questions and covers important underlying concepts. Past research and findings will help formulate several hypotheses required to solve the problem of this research. Chapter 3 (method) will include a detailed explanation of the statistical techniques used in the research as well as an explanation of questionnaire structure. Programming software R will be used to create random and efficient choice sets used in the questionnaire. This is followed by the Chapter 4 (results) which will discuss important aspects of the data and analysing the data to explain the findings of this research paper. Section 5 which is the final section will conclude the text providing a summary of the findings as well as scope for further research.

## Chapter 2

### Theoretical Framework

The theoretical framework will provide support for this research and the result of the research questions. Relevant theories based on existing research will be discussed which lay a foundation for conducting the research in this paper. First, the relevance of a brand will be discussed in the context of influencing consumer purchase decisions. Secondly, the chosen method of analysis will be discussed with particular emphasis on its capability to answer the research objective. Thirdly, the ESG variable will be discussed- what it characterizes exactly in the case of each of the two product categories.

#### **2.1) Do brands influence customer purchase decisions?**

The crux of the thesis hinges on the contribution of a brand in driving purchases. Thus, it is important to establish the definition of a brand, its uses, and the scope of its utilization in driving sales. The origin of the word “brand” comes from the animal husbandry industry nearly two centuries ago– cattle ranchers used branding irons to distinguish their herd from those of others. As time went on, with the industrial revolution and the beginning of mass production, a need arose to put a mark on a product to indicate their source. And hence, the modern-day connotation, “brand” was formed. However, the scope of a brand is much more than just its distinguishing characteristics, according to Keller and Lehmann (26), “brands can simplify choice, promise a particular quality, reduce risk and/or engender trust.”

After a brief explanation of what a brand is and what it can do, we move on to a more specific example of the same- an ESG brand. An ESG brand, as opposed to conventional brands, is not an identifying mark of the origin of a product, but more of a proof of the externalities associated with a product in terms of its effects on the natural environment and human quality of life throughout its product lifecycle- from manufacture to disposal. These effects can be tangible- for example the carbon footprint of manufacture, efficient designing that results in lower transport emissions or more intangible such as environmentally sourced (RDS) down (used in down jackets) and fair-trade sourced coffee and chocolate, which preserves and enhances the quality of life of livestock and humans respectively.

Why do consumers purchase “ESG” branded products? This is important to understand consumer preferences with respect to socially desirable consumption. According to Hughner RS et al (2007) (27), consumers’ motives regarding the purchase of eco-friendly food include health and nutritional concern, environmental concern, food safety, animal welfare and supporting the local economy. Demographics also play an important role in determining consumer motives behind purchasing sustainable goods. Women are attracted to eco-friendly attributes when purchasing whereas men are driven by functional and economic aspects; young people are hedonistic, driven by aesthetics and tastes, whereas older respondents are thrifty and logical buyers for whom energy efficiency and product durability are important characteristics. Young parents have a greater affinity towards purchasing green (28). Studies (29) have shown that the term organic itself can act as a “heuristic cue”, a product with this term has strong evocative power and is perceived highly positively by the consumer. Organic branded products hold higher value not because of the marketing efforts of the manufacturer, but because the customer thinks it so.

With the rise in ESG branded products in recent years, the question arises as to how important the brand in influencing consumer decisions is as compared to more traditional function attributes. Chen et al (2012) (30) investigated 23 attributes driving customer intentions in purchasing organic food in China by means of a factor analysis and found that the ESG certification accounted for 24.7% of the total variance of 58.4% explained by the five dimensions. Product attributes also positively influenced purchase decisions. A similar study by Mesic et al (2010) (31) focusing on the Eastern Europe region of Bosnia, Slovenia and Croatia showed that ESG certification was an important determinant of purchase intentions with a bias towards purchases made directly from producers and specialized stores instead of supermarkets.

However, a clear gap has been identified (Devinney et al. (2010)) (32) between desire for ethical or “green” consumption and actual purchase behaviour- consumers are reluctant to indulge in sustainable consumerism when they realize they must spend more money. Thus, there is a clear trade-off between the willingness to pay and sustainability attributes in the mind of the consumer.

In recent years, research on consumer choice and willingness to pay for sustainable products is focusing on multi attribute choice models such as conjoint analysis. Rokka and Uusitalo, (2008) (33), performed a choice based conjoint on the relative importance of green packaging relative to other attributes and concluded that over a third of the consumers favoured ecologically sustainable packaging.

When it comes to consumer choice of sustainable durable goods, it is found that the most beneficial policy measures are labelling and certification (Piwońska et al, (2021) (34).

This brief literature review shows that while substantial research has been done on the effects of ESG labelling on products, there is a lack of research that focuses on varying levels of ESG labelling and a lack of research focusing on contrasting the effects of ESG label on purchase behaviour between consumable and durable products.

## **2.2) Discrete Choice Experiments- Conjoint analysis**

Within the method section, we will make use of the ordered logit model. This model is used when the dependant variables in categorical in nature and can have n number of values. The independent variables can also be >2 but in our study the independent variable is binary in nature. A more detailed explanation of the usage of this model in this study is provided in the following method section.

A discrete choice model (such as conjoint analysis) has a respondent choose between various alternatives (discrete) to model consumer choice. When the researcher specifies the attributes and levels of a product, the model identifies what was chosen and what wasn't to create a quantitative comparison of various choices. The following example demonstrates a case of a discrete choice experiment with varying choices, attributes, and levels.

An alternative is something that a respondent can decide to choose or not. When deciding whether to purchase a car, a Volkswagen, an Audi, or any other alternative can be considered. Since these models are experimental in nature, a fictional car with fictional attributes can be included. Each car has various attributes, differences in seating capacity, mileage, top speed and acceleration, comfort, and safety features etc. These are considered by a customer when choosing a car. By inspecting these features with an even higher level of precision, a car can seat 2 people, 4 people or 6 people. Thus, the seating attribute has 3 levels. If cars only came in black and white, the colour attribute would have 2 levels.

For calculating the value of the ESG brand in terms of tangible attributes, we will make use of a conjoint analysis. A conjoint can be used to analyse consumer evaluations of different combinations of product attributes to map out the combination of attributes that maximizes their utility. In doing so, we will be able to compare the relative importance of the ESG brand to these other attributes (29). We choose a menu based conjoint as it will allow participants to choose the specific attributes of the relevant product and because it mimics a real-world buying situation as it forces consumers to forego one attribute for another. As this process is an interactive one, it allows us to keep the participant engaged and reduces the chances of a participant blindly marking options leading to spurious results.

### **2.3) What does Quality measure exactly?**

The quality attribute in the case of pizza is measured by the freshness of its ingredients. This has been chosen because the freshness of ingredients ranks amongst the top drivers of consumer choice when considering food items at a supermarket. Di Vita et al (2016) (35), focused on the perception of attributes linked with pizza and which attributes correlated most strongly with purchase intentions and found that pizza made with fresh ingredients was strongly preferred compared to one made with refrigerated ingredients as the latter was not perceived as a high-quality food. Another survey (36), conducted by facilities management company Vixxo on more than 1,260 U.S. consumers to assess attitudes and buying preferences in a time of growing online alternatives for purchasing food products, found that food quality was the most important factor in selecting an item at a grocery store.

The quality attribute in the case of down jacket is measured by its durability (measured using the Martindale test). The Martindale test, also known as the rub test, tests the abrasion resistance of a fabric or upholstery by stimulating natural wear and tear against a standard abrasive surface with a specific amount of force applied. Based on the number of abrasion cycles that lead to the product being worn to a specified degree, the product is recommended for private, public, or military use. This measure has been chosen because by purchasing products that last longer, consumers can save money and be a “green’ consumer who shows care towards their environment (37). From the perspective of the manufacturing firm, promoting the use of sustainable, high-quality materials allows its consumers to consider it an altruistic product to purchase which is a status symbol and hence positively influence purchase decisions (38).

## Chapter 3

### Method

#### 3.1) Conceptualizing conjoint analysis

The aim of this paper is to analyse and quantify the partial values of each studied pizza/ down jacket attribute. Thus, a part worth choice based conjoint model will be used. This will allow us to compute the levels of each attribute in terms of a numerical utility value allowing us to compare the value of the ESG brand (all levels) to the other three (all levels). The survey respondents will have to choose between two products (shown at a time) each having all four attributes with one or more attribute levels differing between the shown products. This is called a full profile approach, and this has been adopted to mimic a real-world scenario as closely as possible. Two choices are shown at a time to prevent respondent fatigue and minimize high dropout rates given this is a primary survey. Given the practical limitations of this study (number of respondents), an orthogonal design is used instead of a full one allowing data analysis with less participants needed for the same number of attributes and corresponding levels. Since the same respondent will be exposed to all treatment variables, this study is conducted using a within-subject experimental design.

Given  $2 \times 2 \times 2 \times 3 = 24$  total unique attribute combinations, we use the fractional design framework allowing  $24/2 = 12$  unique combinations in the survey. According to Johnson and Orme (1996) (39), a rule of thumb for sufficient sample size for conjoint analysis suggests that the sample size required for the main effects depends on the number of choice tasks ( $t$ ), the number of alternatives ( $a$ ), and the number of analysis cells ( $c$ ) according to the following equation-  $N > 500c / (t \times a)$ . Inputting the values from the survey (6 questions, 2 alternatives per question and highest number of attribute levels = 3), more than 125 participants are needed when using this formula as a reference.

Green and Srinivasan (1978) (40) designed a model summarizing the steps involved in utilizing a conjoint analysis for the purpose of academic research. The framework from this model was used to design the conjoint study. See table 1 for a visual representation.

Step	Alternatives
1) Preference model	Vector model, ideal-point model, part-worth function model, mixed model
2) Data collection method	Two-factors-at-a-time, full-profile
3) Stimulus set construction	Fractional factorial design, random sampling from multivariate distribution
4) Stimulus presentation	Verbal description, paragraph description, pictorial, or three-dimensional model representation
5) Measurement scale for dependent variable	Paired comparisons, rank order, rating scales, constant sum paired comparisons, category assignment
6) Estimation method	MANOVA, PREFMAP, LINMAP, Johnson's nonmetric tradeoff algorithm, multiple regression, logit and probit model

Table 1: Steps involved in conjoint analysis (Adapted from: Green and Srinivasan (1978))

**3.2) Question 1- To calculate the importance of ESG branding to customers.**

This question seeks to find a quantifiable measure of the value the individual consumer places on an ESG brand. Thus, we use a conjoint analysis which is a survey based statistical technique where consumers are asked to rank (ranking based conjoint), rate (rating based conjoint) or choose (choice based conjoint). In conjoint analysis, respondents are asked to choose the option which presents the best combination of attributes (according to that consumer's preference) among a diverse set of alternatives. It provides insights into what drives consumer choice and what influences consumers in their purchase decision (Fader & Hardie, 1996) (41).

In this conjoint study, there will be 4 attributes linked to a consumer product – price, quantity, quality and ESG brand. By asking the respondents to choose between various combinations of the 4 attributes, the utility maximizing preferred combo will be ascertained and a measure of the ESG brands with respect to the other 3.

The chosen products will be pizza and down jackets.

In the case of pizza, the 4 attribute choices will be – quantity (10 inch vs. 12 inch), price (4.5 euros vs. 6 euros), quality measured using freshness of ingredients (fresh or refrigerated), ESG brand (33%, 66%, 100%).

Explanation of ESG levels: X% ESG means that x% of the calories in one pizza comes from sustainable food sources and (100 – X) % comes from unsustainable sources.



In the case of down jackets, the 4 attribute choices will be – quantity of down where more down means more warmth (125 g/sq. m vs. 160 g/sq. m), price ( 35 euros vs. 50 euros ), quality measure using durability (low or high)\*, and ESG brand (33%, 66% or 100%).

Explanation of ESG levels: X% ESG means that x% of down fillings comes from sustainable sources (cruelty free bird feathers) and (100-X) % comes from polyester (unsustainable). See table 2 for a visual representation.

\*- low durability means <10,000 cycles on the Martindale test and high durability means >20,000 cycles on the Martindale test.

The dependant variable (binary) in this study is purchase intention. The independent variables are price, quantity, quality and ESG. These independent variables will be represented by dummy variables in the regression equation. The regression equation is –

$$\text{Purchase intention} = Y = a + (b_1x_1 + b_2x_2) + (b_3x_3 + b_4x_4) + (b_5x_5 + b_6x_6) + (b_7x_7 + b_8x_8 + b_9x_9)$$

Where  $a$  = intercept;  $x_1, x_2$  = price dummies;  $x_3, x_4$  = quantity dummies;  $x_5, x_6$  = quality dummies;  $x_7, x_8, x_9$  = ESG dummies;  $b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8, b_9$  = attribute coefficients

Attributes	Attribute levels	
	Pizza	Down jackets
Price	4.5-euro, 6 euro	35-euro, 50 euro
Quantity	10-inch, 12-inch	125 g /sq. m, 160 g / sq. m
Quality	Fresh, refrigerated (Toppings used)	Low, High (Durability)
ESG Brand	33%, 66%, 100%	33%, 66%, 100%

Table 2: Attributes and attribute levels

The coefficients will be tested for significance with a likelihood ratio test, with the coefficient being significant when the p-value is lower than 0,01.

### 3.3) Survey design

The first part of the survey will involve choosing between two products of the same category with varying attribute combinations. This will be done for both pizzas and down jackets. These attribute combinations will be randomly created using an R package imported from GitHub named cbcTools (42). A brief section, focusing on demographic questions will follow. See table 3 for a tabular representation of the survey. See appendix 1 for a copy of the survey.

Question Type	Source	Structure
Choice based conjoint questions*	Orthogonal design	Choosing between two products of differing attribute levels
Demographic questions	Age, gender, monthly expenditure, education	Multiple choice

Table 3: Questionnaire structure

\*These questions will be asked for both products i.e., pizza and jackets.

The number of times each attribute level showed up in the survey is shown below. See figure 5 for a visual representation.

**Pizza –**

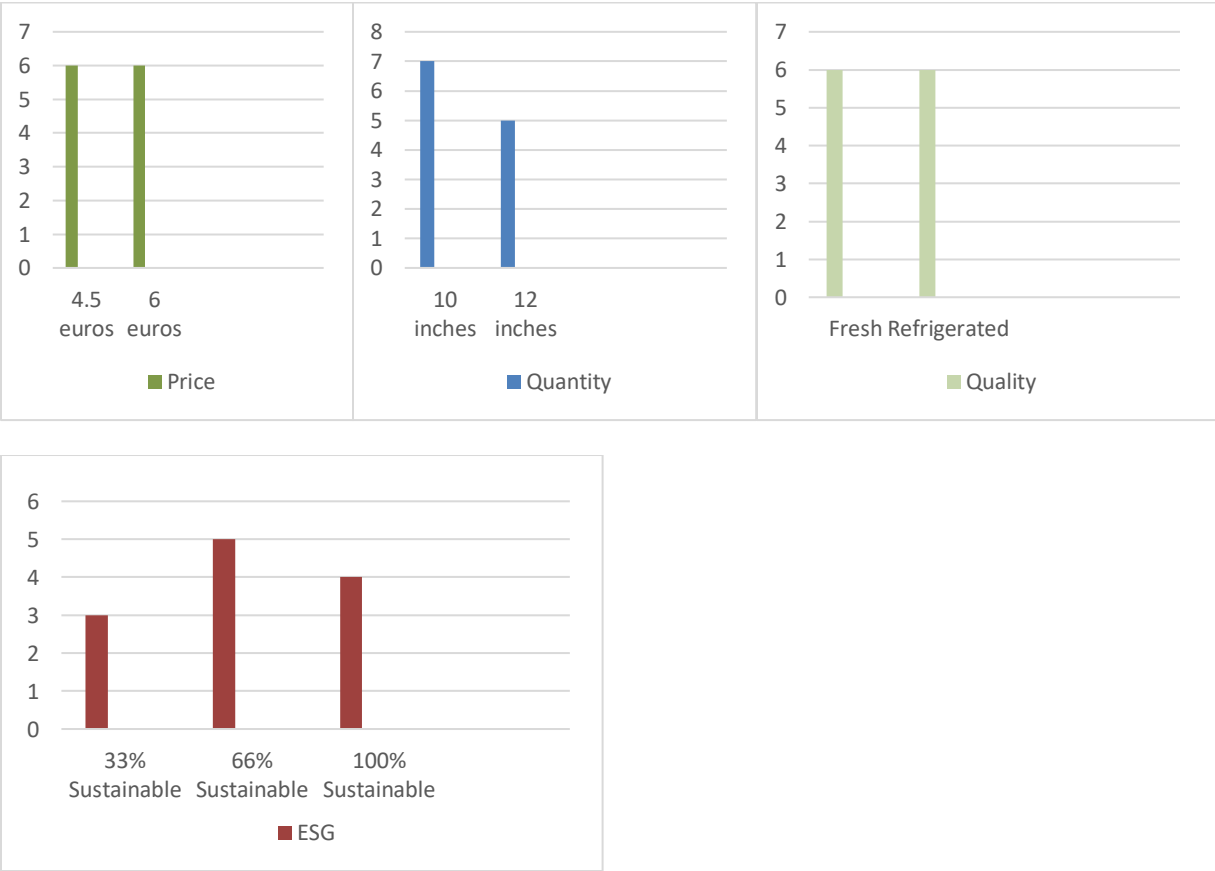


Figure 5a: Attribute level frequency (pizza)

## Jacket-

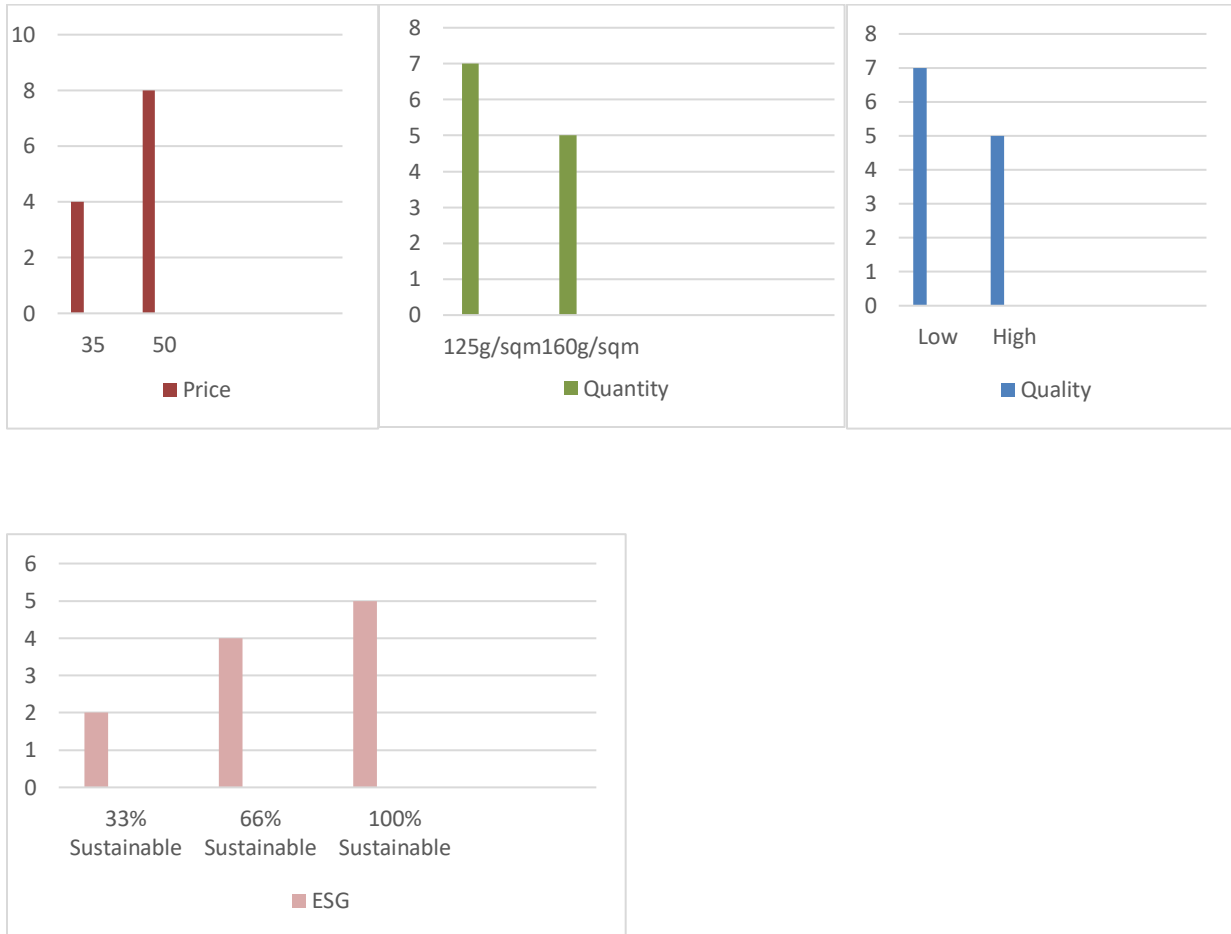


Figure 5b: Attribute level frequency (jacket)

### 3.4) Efficient choice designs

When designing the choice sets in a conjoint study, minimizing the number of respondents/ number of choices per respondent to realize a certain measure of accuracy is crucial. This can be done by designing an efficient choice set. Zwerina et al (2000) (43), maximize efficiency by minimizing the  $D_p$  error term which is a term explaining how good or bad a design is at extracting information from respondents in a discrete choice experiment. For the same Discrete Choice Experiment (DCE), a design with a low  $D_p$  error is preferred over a design with a high  $D_p$  error.

The paper suggests 4 properties to minimize such error. The first property is level balance. A DCE satisfies this property when the levels of any given attribute occur with the same frequency in the choice designs (Zwerina et al (2000) (43)). For example- the ESG variable has three different levels in this research (33%, 66% and 100%), so, each level should occur in approximately (1/3)

rd. of the choice sets shown to the respondent. The second property is orthogonality. A DCE satisfies this property when the levels of each attribute vary independently of each other (Zwerina et al (2000) (43)). A requirement to satisfy both above conditions is that the total number of unique choice sets must be a common product of each of the attribute levels. In this study, the attribute levels are 2,2,2,3. The total number of choice sets being 12 is a common product of the attribute levels and hence the study satisfies both above-mentioned conditions. The third property is minimal overlap. A DCE satisfies this property when the probability that an attribute level can repeat itself in a choice set is minimized (Zwerina et al (2000) (43)). For example- if the attribute level 33% ESG is common across both choices, a respondent answering the question reveals no information of the attribute's value. In this study, the overlap within the choice sets has been kept as minimal as possible, but not eliminated due to practical limitations.

### **3.5) Question 2- To compare the results of question 1 for two different product categories – consumable goods (pizza) vs. durable goods (down jacket).**

The value of the ESG brand in utils will be compared for the durable (down jacket) and the consumable (pizza) commodity along with its relative importance to the consumer with respect to the other attributes. After the results of the survey are available, the utility associated with each attribute level is shown which will be used to compare the ESG brand to the rest. This will be done using the Wilcoxon Signed Rank Test. This test is a non-parametric test which means that it does not require assumptions on the underlying population for the data to be analysed. This has been chosen since the paired data has <20 data points for each category and violates the assumption of normality required for parametric tests such as the Matched Pair T-test.

## Chapter 4

### Results

This chapter is divided into 4 sections-

- 1) Data collection and demographic results of the survey
- 2) Utility analysis
- 3) Significance of the predictor variables and their relationship with the dependant variable
- 4) Contrasting the results obtained for the two different product classes (consumable vs. durable)

#### 4.1) Survey Results

The survey has received 190 responses out of which 51 have been filtered out due to failing an attention check and incomplete responses. That leaves 139 responses filled up by friends, family, and students along with the usage of snowball sampling technique used to reach out to more respondents. The survey was distributed online on various social media and university platforms and hence most of the data has been collected from university students and young professionals (barring few outliers). Furthermore, since each respondent was shown 12 choice sets where they had to choose between two options, the dataset contains  $139 * 24 = 3336$  unique choice observations.

The survey has been filled up by people from age 17-64 with an average of 27. See figure 6 for a visual representation.

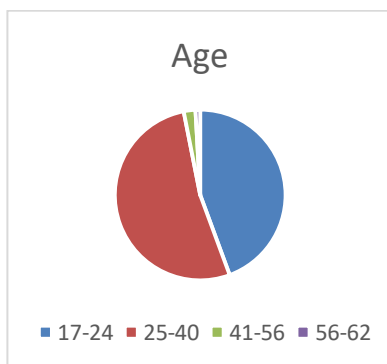


Figure 6

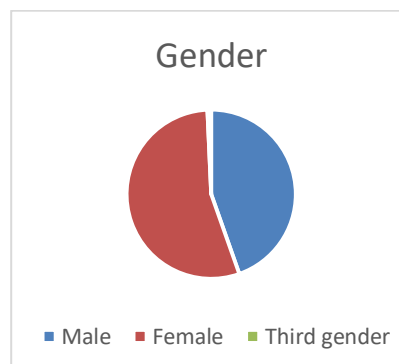


Figure 7

76 women and 62 men filled in the survey, so a roughly equal mix of both genders has been obtained. See figure 7 for a visual representation.

The level of education of the respondents ranges from high school to PHD level with most participants having a bachelor's degree. See figure 8 for a visual representation.

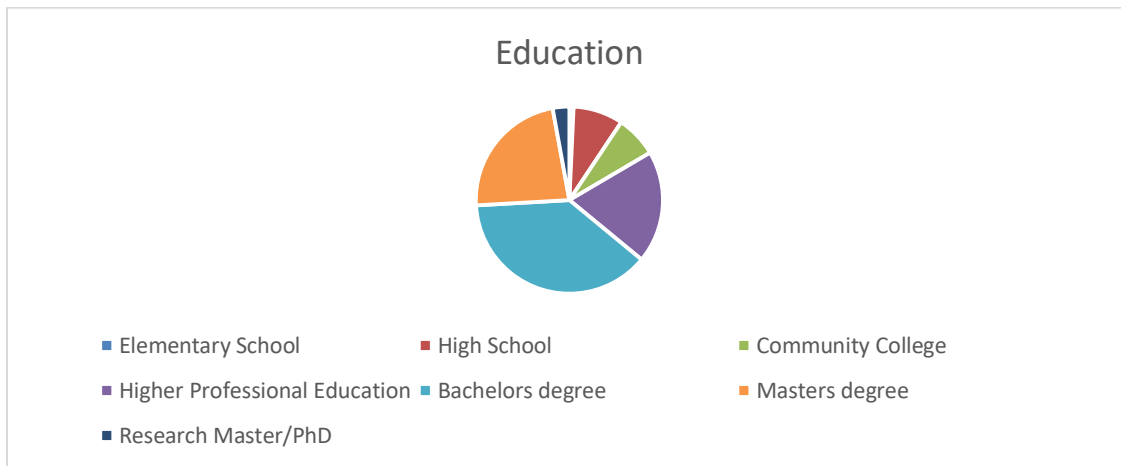


Figure 8

Given an average monthly expenditure of 1000 euros for the student population (official EUR website), majority of the respondents replied that their monthly expenditure is average and roughly equal number of people with below average and above average monthly expenditure giving rise to an approximate normal distribution of the same. See figure 9 for a visual representation.

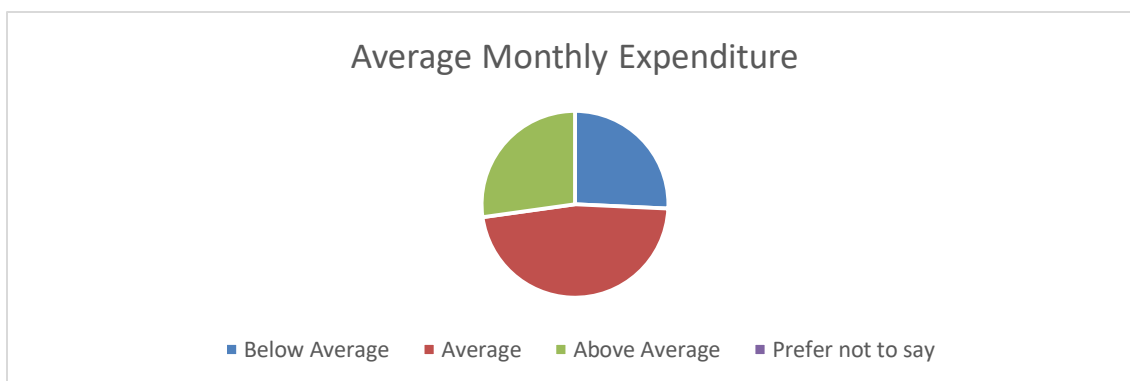


Figure 9

## 4.2) Utility Analysis

Partworth utilities (also known as attribute importance scores and level values, or simply as conjoint analysis utilities) are numerical scores that measure how much each feature is valued by the consumer. The corresponding utility is the perceived gain of the consumer upon choosing a product with that attribute level.

### Pizza-

For pizza, a lower price, more quantity, fresh ingredients as well as fully sustainable source of calories are preferred. There is a strong preference for fully sustainably sourced calories as compared to partial equivalents (+0.0578 vs -0.0148), with the ESG variable being the third largest determinant of utility of purchase. However, the marginal utility gain is still the highest for a pizza sourced with fresh ingredients, thus showing the relative importance of the quality attribute. Compared to quality and price, ESG and quantity have an overall lesser effect on utility gain/loss, with quantity only accounting for a third of the utility gain/loss compared to quality. Price is the second largest determinant of utility with a gain of +0.0816 utils for a cheaper pizza. See table 4a for a summary of the part worth results.

Levels	Marginal Utility (Utils)
Intercept	1,498
4.5 euros	0,081
6 euros	-0,081
10 inches	-0,042
12 inches	0,042
Fresh	0,136
Refrigerated	-0,136
(1/3) rd. sustainable	-0,043
(2/3) rd. sustainable	-0,014
(3/3) rd. sustainable	0,057

Table 4a: Part worth table (Pizza)

Table 4b shows the importance of the attributes. The importance of each attribute has been computed relative to the rest. Quality is the most important attribute. Fresh has the largest (positive) impact on total utility whereas refrigerated has the largest (negative) impact. The second most important attribute is price where a lower price adds to total utility. After that comes ESG with fully sustainable giving the highest utility. Quantity is fourth most important with a 12-inch pizza giving more utility than a 10-inch pizza

Attribute	Importance
Price	27,88
Quantity	18,28
Quality	31,93
ESG	21,90

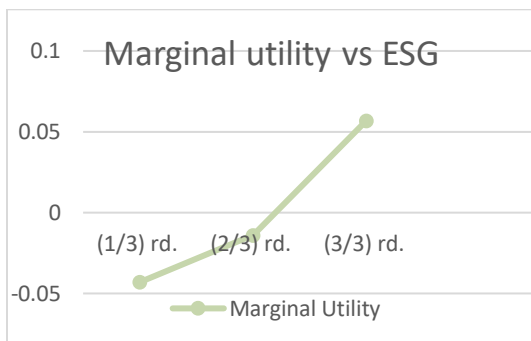
Table 4b: Effect Marginals (pizza)

Utility increase moving from (1/3) rd. sustainable to (2/3) rd. sustainable =  $-0.014 - (-0.043) = 0.029$ .

Utility increase moving from (2/3) rd. sustainable to (3/3) rd. sustainable =  $0.057 - (-0.014) = 0.071$ .

Thus there is a non-linear relationship between ESG and marginal utility (determinant of purchase intention). H5 is accepted (in case of pizza).

See graph 1 for a visual representation.



Graph 1: Marginal utility vs ESG (pizza)

**Ideal product-** Based on the above discussion regarding the utility value associated with each attribute level, as well as the importance of each attribute, an ideal product can be created with contains the optimal combination of attribute levels to maximize consumer utility. The ideal pizza should be cheap (being an FMCG good consumed daily), a larger size, with fresh ingredients and fully sustainably sourced. This hypothetical pizza would maximize consumer utility for a young European customer (similar to the respondents).



## Jacket-

For jacket, a lower price, more quantity (of filling), high durability as well as fully sustainable source of filling are preferred. However, unlike in the case of pizza, here the most important determinant of utility gain is the price variable and not quality. A lower priced jacket yields 0.192 utils of utility gain which is significantly more than the utility gain of a high-quality jacket which yields 0.1541 utils of gain. The ESG variable is the second largest contributor to utility gain/loss with 0.1672 utils of gain for a fully sustainable sourced jacket. Quantity of filling has the least effect on total utility with only 0.056 utils of gain for a larger amount of filling. In absolute magnitude, a (1/3) rd. sustainable jacket has the largest (negative) effect on total utility of 0.206 utils. See table 4b for a summary of the part worth results

Levels	Marginal Utility (Utils)
Intercept	1,488
35 euros	0,192
50 euros	-0,192
125 g/sq. m	-0,056
160g/sq. m	0,056
Low	-0,154
Hight	0,154
(1/3) rd. sustainable	-0,206
(2/3) rd. sustainable	-0,038
(3/3) rd. sustainable	0,167

Table 5a: Part worth table (jacket)

Table 5b shows the importance of the attributes. The importance of each attribute has been computed relative to the rest. ESG is the most important attribute. While it doesn't have the largest positive effect on utility, it does have the largest negative effect (-0.206 in case of (1/3) rd. sustainable). The second most important attribute is price with the largest positive impact on total utility of +0.192. The third most important attribute is quality with a high-quality jacket offering 0.382 utils of utility gain over a low-quality jacket. The fourth most important attribute is quantity with more quantity of filling offering more utility than lower quantity of the same.

Attribute	Importance
Price	27,00
Quantity	17,99
Quality	19,13
ESG	35,88

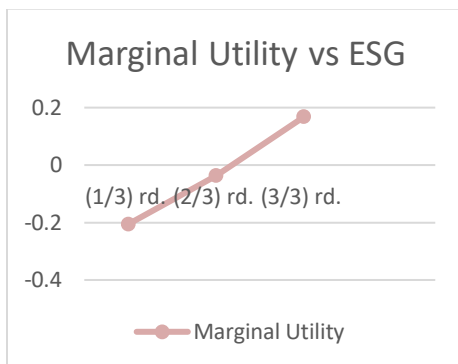
Table 5b: Effect Marginals (jacket)

Utility increase moving from (1/3) rd. sustainable to (2/3) rd. sustainable =  $-0.038 - (-0.206) = 0.168$ .

Utility increase moving from (2/3) rd. sustainable to (3/3) rd. sustainable =  $0.167 - (-0.038) = 0.205$ .

Thus there is a non-linear relationship between ESG and marginal utility (determinant of purchase intention). H5 is accepted (in case of jacket).

See graph 2 for a visual representation.



Graph 2: Marginal Utility vs ESG (jacket)

Ideal product- Based on the above discussion regarding the utility value associated with each attribute level, as well as the importance of each attribute, an ideal product can be created with contains the optimal combination of attribute levels to maximize consumer utility. A cheaper, warmer jacket with high durability and fully sustainably sourced filling would be the ideal jacket. This hypothetical jacket would maximize consumer utility for a young European customer (similar to the respondents).

### 4.3) Significance of the predictor variables and their relationship with the dependant variable (purchase intention)

#### Pizza-

Attribute	Chi squared	Significance
Price	117.08	<0.0001*
Quantity	110.37	<0.0001*
Quality	222.85	<0.0001*
ESG	22.65	<0.0001*

Table 6a: Likelihood ratio test (pizza); \*= significant at 99% level of significance.

Price, quantity, quality and ESG are all statistically significant (P-value < 0.0001). The confidence interval used is 99% (by default). We conclude that price, quantity, quality and ESG have a significant impact on purchase intention. Thus, H1, H2, H3 and H4 are all accepted for the pizza category.

#### Jacket-

Attribute	Chi squared	Significance
Price	80.74	<0.0001*
Quantity	0.79	0.3713
Quality	24.46	<0.0001*
ESG	36.01	<0.0001*

Table 6b: Likelihood ratio test (jacket); \*= significant at 99% level of significance.

Price, quality and ESG are statistically significant (P-value < 0.0001). Quantity (P-value > 0.01) is not significant. The confidence interval used is 99% (by default). We conclude that price, quality and ESG have a significant impact on purchase intention. Thus, H1, H2 and H4 are accepted for the pizza category. H3 (Quantity has a significant effect on purchase intention) is rejected. This result is in line with that of the effect marginals table (5b) where quantity is shown to have the lowest attribute importance among the four attributes.

#### **4.4) Contrasting the results obtained for the two different product classes (consumable vs. durable)**

The P-value of the Wilcoxon Signed Rank Test = 0.766.

(Compared pairs of data from table 4a and 5a).

P-value = 0.766 is greater than the chosen significance level  $\alpha = 0.01$ . However, since  $N=9$  in this case, it's not large enough for the distribution of the Wilcoxon  $W$  statistic to form a normal distribution; the P-value by itself is not accurate enough. We also consider the  $W$  value.

$W$  value = 19.5 The value of  $W$  is 19.5. The critical value for  $W$  at  $N = 9$  ( $p < .01$ ) is 1. The result is not significant at  $p < .01$ .

We can conclude that the part worth utilities for pizza is not significantly different from the part worth utilities for jacket with a p-value = 0.766.

This means that the respondent's utility gain/loss across the attribute levels for both product categories – pizza (consumable) and jacket (durable) are not significantly different. Customers purchase intentions are thus equally affected by similar attribute levels for two different product categories.

## Chapter 5 Conclusion

The goal of the research was primarily to understand the relative importance of the ESG attribute (and its varying levels) with respect to more functional attributes such as price, quantity, and quality. The secondary goal of the paper was to compare the results obtained in objective 1 for two product categories – consumable (represented by pizza) and durable (represented by jacket). The first part of this chapter will summarize the key findings of these two research questions. In the second part of this chapter, the limitations of this research and suggestions for future research will be discussed.

### 5.1) Research questions

Hypothesis	Result	
	Pizza	Down jackets
H1	Supported	Supported
H2	Supported	Supported
H3	Supported	<b>Not supported</b>
H4	Supported	Supported
H5	Supported	Supported

Table 7: Summary of results

The primary goal of this research paper is - To calculate the importance of ESG branding to customers.

Based on the results of the conjoint study in chapter 4, we can now answer this question.

In the case of pizza, all attributes, namely- price, quality, quantity and ESG have a significant effect on purchase intention. Quality is the most important attribute followed by price. Since pizza is a consumable and frequently purchased type of commodity, this is expected.

In the case of jackets, price, quality, and quantity attributes are significant; quantity does not have a statistically significant impact on purchase intention. This is in line with the attribute importance results- ESG is the most important attribute followed by price, quantity is least

important.

We also observe that, in case of both pizza and jackets, a fully ESG product, offers the higher marginal utility to the consumer. There is increasing returns to utility from a higher level of ESG in a product. This is shown in the result of H5. This is in line with Zero price theory in behavioural economics- if customers had to pay no premium (price difference=0) between two products which only differ in the level of sustainability in the product, the customer values the higher sustainable product to a much greater extent. Thus, there is a nonlinear, increasing returns to scale relationship between customers' valuation towards a product vs the level of sustainability in the product.

The secondary goal of this research paper is- To compare the results of question 1 for two different product categories – consumable goods (pizza) vs. durable goods (down jacket). We find that the part worth utilities of attribute levels for the two different product categories do not differ significantly from each other. Customers purchase intentions are thus equally affected by similar attribute levels for two different product categories. This means that the respondent's utility gain/loss across the attribute levels for both product categories – pizza (consumable) and jacket (durable) are not significantly different.

## **5.2) Implications for managers**

The relevance and purpose of this study is to offer suggestions to manufacturing firms and marketers for the purpose of new product development and creating bespoke marketing strategies respectively. Manufacturing firms would like to know which attributes matter the most to consumers to increase their sales and profitability, whereas marketers would like to know preferred attributes to better understand their customer base and thus create points of differentiation between their products and that of their competitors. In the case of both pizzas and jackets, fully sustainable sources are strongly preferred by the consumer base. Thus, firms should change their product line up and gradually move away from partially sustainable products to fully sustainable alternatives. In the case of pizzas, customers pay a lot of attention to quality (of ingredients) and price attributes, and in case of jackets, ESG and price are the important attributes. Marketing campaigns designed should focus on these attributes if they want to attract a similar consumer base to the ones that are akin to this thesis' respondents.

### **5.3) Limitations and scope for future research**

Concerning this research paper, several limitations exist currently, which can be taken up and explored in further research. Firstly, since the paper uses primary data sourced through online distribution, a limited number of responses could be gathered. Since the survey was distributed among student groups most respondents were of age <30 (this is not a realistic portrayal of society as the median age in Europe is 43.9 years (38)), expanding the set of respondents, and including a well-diversified portfolio of respondents (age, sex, education, monthly expenditure) would improve external validity of the research. The demographic section could also be expanded by questions such as past purchase behaviour (improves internal validity) and questions on preconceived attribute preferences (allows usage of Bayesian D efficient designs). Expanding the reach of the questionnaire to beyond Western Europe would allow a comparison of consumer preferences across different ethnicities and nationalities. Secondly, by means of a pilot study, the list of attributes could be better targeted and expanded. Brand and country of manufacture are possible attributes worth examination. More levels could be added to current research, an understanding of the varying levels of ESG and its impact on purchase behaviour has been expanded based on this research but can be further examined by including more levels or using it as a continuous variable. With a higher number of respondents, interactions between attributes (freshness of ingredients and sustainably sourced ingredients) as well as moderating variables could be examined. By expanding the number of choice sets offered to respondents at a time, a more realistic portrayal of a market can be achieved. Finally, pizza have been considered as representative of the consumable product category whereas jackets have been considered as representative of the durable product category. This approach is overly simplistic and using multiple items instead of one would lead to better insights obtained from the conjoint analysis.

Using these measures, more information can be gathered about consumer preferences which allow for more specific data to be used by firms and marketers to create targeted product offering for their diversified customer base.

## Bibliography –

- 1) *What are the ten biggest global challenges?* (2020, February 5). World Economic Forum. Retrieved July 16, 2022, from <https://www.weforum.org/agenda/2016/01/what-are-the-10-biggest-global-challenges/>
- 2) Corporate Finance Institute. (2022, May 6). *ESG (Environmental, Social and Governance)*. Retrieved June 20, 2022, from <https://corporatefinanceinstitute.com/resources/knowledge/other/esg-environmental-social-governance>
- 3) Alareeni, B. A., & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate Governance: The International Journal of Business in Society*, 20(7), 1409–1428. <https://doi.org/10.1108/cg-06-2020-0258>
- 4) GSI Alliance. (2020). *GLOBAL SUSTAINABLE INVESTMENT REVIEW 2020*. <http://www.gsi-alliance.org>
- 5) *Top Things to Know About Sustainable Innovation at Nike*. (2016, May 11). Nike News. Retrieved June 8, 2022, from <https://news.nike.com/news/sustainable-innovation>
- 6) *Sustainable Materials*. (n.d.). Nike.Com. Retrieved June 8, 2022, from <https://www.nike.com/in/sustainability/materials>
- 7) *ENVIRONMENTAL LABELLING*. (n.d.). <https://Sustainability.Decathlon.Com>. Retrieved June 8, 2022, from <https://sustainability.decathlon.com/environmental-labelling>
- 8) *Pizza Box Recycling*. (2021, March 11). Media.Dominos.Com. Retrieved June 8, 2022, from <https://media.dominos.com/stories/pizza-box-recycling/>



- 9) *Responsible Sourcing*. (n.d.). <https://Corporate.Mcdonalds.Com/>. Retrieved June 8, 2022, from <https://corporate.mcdonalds.com/corpmcd/our-purpose-and-impact/food-quality-and-sourcing/responsible-sourcing.html>
- 10) *Stan Horaczek, everything you need to know about winter jacket tech*. (2021, May 18). Popular Science. Retrieved June 8, 2022, from <https://www.popsci.com/winter-jacket-guide/>
- 11) S. Mendis, *Global Status Report on Noncommunicable Diseases 2014*, World Health Organization, Geneva (2014)  
[https://wiki.cancer.org.au/policy/Citation:World\\_Health\\_Organization\\_2014\\_2#:~:text=World%20Health%20Organization.,report-2014%2Fen%2F](https://wiki.cancer.org.au/policy/Citation:World_Health_Organization_2014_2#:~:text=World%20Health%20Organization.,report-2014%2Fen%2F).
- 12) J. Lakerveld, J.D. Mackenbach, H. Rutter, J. Brug, *Obesogenic environment and obesogenic behaviours*  
<https://researchportal.bath.ac.uk/en/publications/obesogenic-environment-and-obesogenic-behaviours>
- 13) Ansu-Mensah, P. *Green product awareness effect on green purchase intentions of university students’: an emerging market’s perspective*. *Futur Bus J* 7, 48 (2021).  
<https://doi.org/10.1186/s43093-021-00094-5>
- 14) Kianpour, K., & M. A. (2012). *Importance of Price for Buying Environmentally Friendly Products*. *Journal of Economics and Behavioral Studies*, 4(6), 371–375.  
<https://doi.org/10.22610/jeb.s.v4i6.337>
- 15) H. Iwanow, M.G. McEachern, A. Jeffrey *The influence of ethical trading policies on consumer apparel purchase decisions*, *Int. J. Retail Distrib. Manag.*, 33 (2005), pp. 371-387

- 16) T. Jägel, K. Keeling, A. Reppel, T. Gruber, Individual values, and motivational complexities in ethical clothing consumption: a means-end approach, *J. Market. Manag.*, 28 (2012), pp. 373-396
- 17) K. Niinimäki, Eco-clothing, consumer identity and ideology, *Sustain. Dev.*, 18 (2010), pp. 150-162
- 18) Franchisee, M. (2016, April 27). Study Says Consumers Want More from Pizza. Franchising.Com. Retrieved June 22, 2022, from [https://www.franchising.com/articles/study\\_says\\_consumers\\_want\\_more\\_from\\_pizza.html](https://www.franchising.com/articles/study_says_consumers_want_more_from_pizza.html)
- 19) Vermeer, W. M., Steenhuis, I. H. M., & Seidell, J. C. (2009). Portion size: a qualitative study of consumers' attitudes toward point-of-purchase interventions aimed at portion size. *Health Education Research*, 25(1), 109–120.  
<https://doi.org/10.1093/her/cyp051>
- 20) Zlatevska, N., Dubelaar, C., & Holden, S. S. (2014). Sizing up the Effect of Portion Size on Consumption: A Meta-Analytic Review. *Journal of Marketing*, 78(3), 140–154.  
<https://doi.org/10.1509/jm.12.0303>
- 21) Simon Brach, Gianfranco Walsh, Deirdre Shaw, Sustainable consumption and third-party certification labels: Consumers' perceptions and reactions, *European Management Journal*, Volume 36, Issue 2, 2018, Pages 254-265,ISSN 0263-2373  
<https://doi.org/10.1016/j.emj.2017.03.005>.  
(<https://www.sciencedirect.com/science/article/pii/S0263237317300506>)
- 22) Mehta, D. (2013, October). Trends in packaging: numbers. Retrieved from Trendland:  
<https://trendland.com/trends-in-packaging-numbers/>

- 23) Basten, U., Biele, G., Heekeren, H. R., & Fiebach, C. J. (2010). How the brain integrates costs and benefits during decision making. *Proceedings of the National Academy of Sciences*, 107(50), 21767–21772. <https://doi.org/10.1073/pnas.0908104107>
- 24) Shampanier, Kristina & Mazar, Nina. (2007). Zero as a Special Price: The True Value of Free Products. *Marketing Science*. 26. 742-757. 10.1287/mksc.1060.0254.
- 25) Hossain, Mehdi T. & Saini, Ritesh, 2015. "Free indulgences: Enhanced zero-price effect for hedonic options," *International Journal of Research in Marketing*, Elsevier, vol. 32(4), pages 457-460.
- 26) Keller, Kevin & Lehmann, Donald. (2006). Brands and Branding: Research Findings and Future Priorities. *Marketing Science*. 25. 740-759. 10.1287/mksc.1050.0153.
- 27) Hughner, R. S., McDonagh, P., Prothero, A., Shultz, C. J., & Stanton, J. (2007). Who are organic food consumers? A compilation and review of why people purchase organic food. *Journal of Consumer Behaviour*, 6(2–3), 94–110. <https://doi.org/10.1002/cb.210>
- 28) Witek, Lucyna. (2020). Green Marketing: The Environmentally Friendly Attributes of Products and Decision to Purchase. *Folia Oeconomica Stetinensia*. 20. 451-467. 10.2478/fofi-2020-0059.
- 29) Manuela, V. Z., Manuel, P. R., Murgado-Armenteros Eva, M., & José, T. R. F. (2013). The Influence of the Term ‘Organic’ on Organic Food Purchasing Behavior. *Procedia - Social and Behavioral Sciences*, 81, 660–671. <https://doi.org/10.1016/j.sbspro.2013.06.493>
- 30) Chen, A. Lobo, Organic food products in China: determinants of consumers’ purchase intentions, *The International Review of Retail, Distribution and Consumer Research*, 22 (3) (2012), pp. 293-314

- 31) Cerjak, Marija & Mesic, Zeljka & Kopic, Marko & Kovačić, Damir & Markovina, Jerko. (2010). What Motivates Consumers to Buy Organic Food: Comparison of Croatia, Bosnia Herzegovina, and Slovenia. *Journal of Food Products Marketing*. 16. 278-292. 10.1080/10454446.2010.484745.
- 32) Devinney, Timothy & Auger, P & Eckhardt, Giana. (2010). The Myth of the Ethical Consumer.
- 33) Rokka, Joonas & Uusitalo, Liisa. (2008). Preference for green packaging in consumer product choices – Do consumers care?. *International Journal of Consumer Studies*. 32. 516 - 525. 10.1111/j.1470-6431.2008.00710.x.
- 34) Piwońska, Kalina & Urbańska, Michalina & Pilarska, Eliza & Miniszewski, Maciej & Staniszewski, Jakub & Kryszak, Łukasz. (2021). Managing sustainable consumption of durable goods -A systematic literature review. *Management*. 25. 73-90. 10.2478/manment-2019-0074.
- 35) di Vita, G., de Salvo, G., Bracco, S., Gulisano, G., & D'Amico, M. (2016). Future Market of Pizza: Which Attributes Do They Matter? *Agris On-Line Papers in Economics and Informatics*, 8(4), 59–71. <https://doi.org/10.7160/aol.2016.080406>
- 36) *Americans prefer shopping in grocery stores to buying online*. (2019, January 29). [Https://Www.Supermarketnews.Com](https://www.supermarketnews.com). Retrieved June 12, 2022, from <https://www.supermarketnews.com/consumer-trends/americans-prefer-shopping-grocery-stores-buying-online>

- 37) Haws, K. L., Winterich, K. P., & Naylor, R. W. (2014). Seeing the world through GREEN-tinted glasses: Green consumption values and responses to environmentally friendly products. *Journal of Consumer Psychology*, 24(3), 336–354.  
<https://doi.org/10.1016/j.jcps.2013.11.002>
- 38) Griskevicius, V., Tybur, J. M., & van den Bergh, B. (2010). Going green to be seen: Status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology*, 98(3), 392–404. <https://doi.org/10.1037/a0017346>
- 39) Johnson R, Orme B. *Getting the most from CBC*. Sequim: Sawtooth Software Research Paper Series, Sawtooth Software; 2003.
- 40) Green, P., & Srinivasan, V. (1978, September). Conjoint analysis in consumer research: Issues and outlook. *Journal of Consumer Research*, vol 5, pp 103-123
- 41) Fader, P. S., & Hardie, B. G. S. (1996). Modeling Consumer Choice among SKUs. *Journal of Marketing Research*, 33(4), 442. <https://doi.org/10.2307/3152215>
- 42) John Paul Helveston (2022). cbcTools: Tools For Designing Conjoint Survey Experiments
- 43) Zwerina, Klaus & Huber, Joel & Kuhfeld, Warren. (2000). A General Method for Constructing Efficient Choice Designs.
- 44) Eurostat. (2021, October 13). *Are you younger or older than the median age in your region?* Retrieved July 18, 2022, from [https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20211013-2#:text=In%202020%2C%20the%20median%20age,years%20\(from%2038.4%20years\)](https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20211013-2#:text=In%202020%2C%20the%20median%20age,years%20(from%2038.4%20years)).

# Appendix 1

## Questionnaire

Dear participant, welcome!

Thank you for taking part in this survey. This study is part of my Economics and Business Master's thesis at Erasmus University Rotterdam. Your answers will be completely anonymous and will only be used for academic purposes. Please answer the questions as truthfully as you can. The survey will take around 5 minutes to complete. Please feel free to reach out to me at [558773ss@student.eur.nl](mailto:558773ss@student.eur.nl) for any questions or suggestions you might have. You will also receive a code for SurveySwap.io after completing this survey.

By starting the survey, you indicate that you have read all information above, and you agree to participate in this online survey. Moreover, you also have a chance to win a Amazon.com gift card worth €25!

- Yes, I consent and wish to proceed.
- No, I do not wish to proceed.

### PART - I

The first part of this survey consists of a few choice questions in which two pizzas with their attributes are shown. Please read the attributes below carefully.

Price: This indicates the price in euros (€).

Quantity: This indicates the size of the pizza (in inches).

Quality: This indicates the level of freshness of the pizza toppings. Either fresh or refrigerated.

ESG (sustainable): This indicates the percentage of calories in the pizza that come from sustainable sources. Either (1/3rd) sustainable, (2/3rd) sustainable or fully sustainable.

- I understand.

1) Please rank the options according to your preference.

- a) Pizza A: 6 euros, 10 inches, refrigerated toppings used, (2/3rd) sustainable
- b) Pizza B: 4.5 euros, 12 inches, fresh toppings used, (2/3rd) sustainable

2) Please rank the options according to your preference.

- a) Pizza A: 6 euros, 10 inches, fresh toppings used, (2/3rd) sustainable
- b) Pizza B: 4.5 euros, 10 inches, refrigerated toppings used, (1/3rd) sustainable

3) Please rank the options according to your preference.

- a) Pizza A: 4.5 euros, 12 inches. fresh toppings used, (1/3rd) sustainable
- b) Pizza B: 6 euros, 10 inches, refrigerated toppings used, fully sustainable

4) Please rank the options according to your preference.

- a) Pizza A: 6 euros, 10 inches, refrigerated toppings used, (2/3rd) sustainable
- b) Pizza B: 4.5 euros, 12 inches, fresh toppings used, fully sustainable

5) Please rank the options according to your preference.

- a) Pizza A: 6 euros, 12 inches, fresh toppings used, fully sustainable
- b) Pizza B: 4.5 euros, 10 inches, refrigerated toppings used, fully sustainable

6) Please rank the options according to your preference.

- a) This is an attention check. Please rank this option as second.
- b) This is an attention check. Please rank this option as first.

7) Please rank the options according to your preference.

- a) Pizza A: 6 euros, 12 inches, refrigerated toppings used, (2/3rd) sustainable
- b) Pizza B: 4.5 euros, 10 inches, fresh toppings used, (1/3rd) sustainable

## PART 2

The second part of this survey consists of a few choice questions in which two down jackets with their attributes are shown. Please read the attributes below carefully.

Price: This indicates the price in euros (€).

Quantity: This indicates the quantity of down used in the jacket - more down = more warmth (in g/ sq m).

Quality: This indicates the durability of the jackets (high durability jackets are more than twice as durable as low durability jackets).

ESG (sustainable): This indicates the percentage of filling in the jacket that come from sustainable sources. Either (1/3rd) sustainable, (2/3rd) sustainable or fully sustainable.

1) Please rank the options according to your preference.

- a) Jacket A: 35 euros, 125 g / sq m, low durability, fully sustainable
- b) Jacket B: 50 euros, 160 g / sq m, low durability, fully sustainable

2) Please rank the options according to your preference.

- a) Jacket A: 50 euros, 160 g / sq m, high durability, (2/3rd) sustainable
- b) Jacket B: 50 euros, 160 g / sq m, low durability, fully sustainable



3) Please rank the options according to your preference.

- a) Jacket A: 50 euros, 125 g / sq m, high durability, (1/3rd) sustainable
- b) Jacket B: 50 euros, 160 g / sq m, high durability, fully sustainable

4) Please rank the options according to your preference.

- a) Jacket A: 50 euros, 160 g / sq m, low durability, fully sustainable
- b) Jacket B: 35 euros, 125 g / sq m, high durability, (2/3rd) sustainable

5) Please rank the options according to your preference.

- a) Jacket A: 50 euros, 125 g / sq m, high durability, (2/3rd) sustainable
- b) Jacket B: 35 euros, 125 g / sq m, high durability, (1/3rd) sustainable

6) Please rank the options according to your preference.

- a) Jacket A: 50 euros, 125 g / sq m, low durability, fully sustainable
- b) Jacket B: 35 euros, 125 g / sq m, low durability, (2/3rd) sustainable

### PART 3

The final part of this survey consists of a few demographic questions. These will be treated confidentially and will be used for research purposes only.

1) What is your age?

Ans:

2) What is your gender?

- a) Male
- b) Female
- c) Nonbinary/ third gender
- d) Prefer not to say

3) What is your highest level of education? If you are a student, please indicate the education you are currently following:

- a) Elementary school (basisschool)
- b) Highschool (middelbareschool)
- c) Community College (MBO)
- d) Higher professional education (HBO)
- e) University Bachelor (WO Bachelor)
- f) University Master (WO Master)
- g) Research Master/ PhD/Doctorate

4) What is your monthly total expenditure? (Average is approx. 1000 euros a month. Source- <https://www.eur.nl/en/education/practical-matters/financial-matters/costs-living-nl>.)

- a) Below average
- b) Average
- c) Above average
- d) Prefer not to say

5) The following code gives you credits that can be used to get free research participants at SurveySwap.io. Go to: <https://surveyswap.io/sr/JYCF-50OI-L94H>  
Or, alternatively, enter the code manually: JYCF-50OI-L94H

If you wish to participate in the lottery, please enter your email address below:

## Appendix 2

### R Code

#### 1) Code used for designing profiles –

```
install.packages("remotes")
remotes : : install_github("jhelvy/cbcTools")
remotes::install_github("jhelvy/cbcTools")
library(cbcTools)
profiles <- cbc_profiles()
profiles <- cbc_profiles(price = seq(4.5,6),quantity = c(10,12),quality = c('fresh',
'refrigerated'), ESG = c(33,66,100)); profiles
> design <- cbc_design(profiles = profiles, n_resp = 1, n_alts = 2, n_q = 6);
design
profiles <- cbc_profiles(price = seq(35,50),quantity = c(125,160),quality = c('low',
'high'), ESG = c(33,66,100)); profiles
> design <- cbc_design(profiles = profiles, n_resp = 1, n_alts = 2, n_q = 6);
design
```

#### 2) Code used for data analysis (with explanation) –

*First the 3 parts of data we need from their respective excel files-*

```
library(readxl)
Preferences_Pizza <- read_excel("Preferences_Pizza.xlsx")
```

```
View(Preferences_Pizza)
```

```
library(readxl)
```

```
Profiles_Pizza <- read_excel("Profiles_Pizza.xlsx")
```

```
View(Profiles_Pizza)
```

```
library(readxl)
```

```
Levels_Pizza <- read_excel("Levels_Pizza.xlsx")
```

```
View(Levels_Pizza)
```

*Call upon library(conjoint)-*

```
library(conjoint)
```

```
print(head(Preferences_Pizza))
```

```
print(Levels_Pizza)
```

```
print(Profiles_Pizza)
```

```
Pizzalevelsdf <- as.data.frame(Levels_Pizza); Pizzalevelsdf
```

```
class(Pizzalevelsdf)
```

```
Pizzaprefdf <- as.data.frame(Preferences_Pizza); Pizzaprefdf
```

```
class(Pizzapref)
```

```
Pizzaprofdf <- as.data.frame(Profiles_Pizza); Pizzaprofdf
```

```
class(Pizzaprofdf)
```

*See the data-*

```
print(head(Preferences_Pizza))
```

```
print(Levels_Pizza)
```

```
print(Profiles_Pizza)
```

*Convert the three important parts of data, to data frames-*

```
Pizzalevelsdf <- as.data.frame(Levels_Pizza); Pizzalevelsdf
```

```
class(Pizzalevelsdf)
```

```
Pizzaprefdf <- as.data.frame(Preferences_Pizza); Pizzaprefdf
```

```
class(Pizzapref)
```

```
Pizzaprofdf <- as.data.frame(Profiles_Pizza); Pizzaprofdf
```

```
class(Pizzaprofdf)
```

*Now we calculate the Part Utilities-*

```
partutilities_Pizza = caPartUtilities(y = Pizzaprefdf, x = Pizzaprofdf, z =  
Pizzalevelsdf)
```

```
print(head(partutilities_Pizza))
```

*And we calculate the Total Utilities-*

```
totalutilities_Pizza = caTotalUtilities(y = Pizzaprefdf, x = Pizzaprofdf);  
print(head(totalutilities_Pizza))
```

*#Determining the relative importance of features (for the respondent No. 45)-*

```
importance45_Pizza = calmpotence(y = Pizzaprefdf[45,], x = Pizzaprofdf);  
print(importance45_Pizza)
```

*#Determining the most important preference measurement results for respondent  
(for e.g.) No. 45-*

```
conjoint45_Pizza = Conjoint(Pizzaprefdf[45,],Pizzaprofdf, Pizzalevelsdf);  
conjoint45_Pizza
```

*#And now the summary of the most important preference measurement results in  
the cross-section of respondents-*

```
conjoint_Pizza = Conjoint(Pizzaprefdf, Pizzaprofdf, Pizzalevelsdf); conjoint_Pizza
```

*Now we repeat the same exercise for Jacket data-*

```
library(readxl)
```

```
Preferences_Jacket <- read_excel("Preferences_Jacket.xlsx")
```

```
View(Preferences_Jacket)
```

```
library(readxl)
```

```
Profiles_Jacket <- read_excel("Profiles_Jacket.xlsx")
```

```
View(Profiles_Jacket)
```

```
library(readxl)
```

```
Levels_Jacket <- read_excel("Levels_Jacket.xlsx")
```

```
View(Levels_Jacket)
```

```
library(conjoint)
```

*See the data-*

```
print(head(Preferences_Jacket))
```

```
print(Levels_Jacket)
```

```
print(Profiles_Jacket)
```

*Convert the three important parts of data to data frames-*

```
Jacketlevelsdf <- as.data.frame(Levels_Jacket); Jacketlevelsdf
```

```
class(Jacketlevelsdf)
```

```
Jacketprefdf <- as.data.frame(Preferences_Jacket); Jacketprefdf
```

```
class(Jacketprefdf)
```

```
Jacketprofdf <- as.data.frame(Profiles_Jacket); Jacketprofdf
```

```
class(Jacketprofdf)
```

*Now we calculate the Part Utilities-*

```
partutilities_Jacket = caPartUtilities(y = Jacketprefdf, x = Jacketprofdf, z =  
Jacketlevelsdf)
```

```
print(head(partutilities_Jacket))
```

*#And we calculate the Total Utilities-*

```
totalutilities_Jacket = caTotalUtilities(y = Jacketprefdf, x = Jacketprofdf);  
print(head(totalutilities_Jacket))
```

*#Determining the relative importance of features (for the respondent No. 45)-*

```
importance45_Jacket = caImportance(y = Jacketprefdf[45,], x = Jacketprofdf);  
print(importance45_Jacket)
```

*#Determining the most important preference measurement results for respondent  
(for e.g.) No. 45-*

```
conjoint45_Jacket = Conjoint(Jacketprefdf[45,],Jacketprofdf, Jacketlevelsdf);  
conjoint45_Jacket
```

*#And now the summary of the most important preference measurement results in  
the cross-section of respondents-*

```
conjoint_Jacket = Conjoint(Jacketprefdf, Jacketprofdf, Jacketlevelsdf);  
conjoint_Jacket
```