

The background of the entire page is a light gray image featuring numerous rolls and individual sheets of white toilet paper. The rolls are stacked and arranged in a way that creates a sense of depth and abundance. Some sheets are pulled out from the rolls, showing the embossed patterns on the paper. The overall aesthetic is clean and minimalist.

# **MOTIVATING CUSTOMERS IN THE B2B AND B2C MARKETS TO BUY SUSTAINABLE TOILET PAPER**

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# Motivating customers in the B2B and B2C markets to buy sustainable toilet paper

## *Colophon*

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## SUMMARY

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22.000 kilometres of toilet paper is flushed down the toilet per day in the Netherlands. This has a huge environmental impact; around 270.000 trees are cut down each day worldwide and a lot of energy, water, chemicals, and other pollutants are required in the process of making the paper. Resulting in the pulp and paper industry being the fourth largest greenhouse gas emitter. Next to that, scholars barely did any research on toilet paper, its sustainability, and the attributes that customers regard important.

Therefore, this research aims to give insight in how customers in the business-to-business and in the business-to-consumer markets in the Netherlands can be motivated to buy more sustainable variants of toilet paper. To answer this question, several sub-questions were formulated. First is examined what motivators can stimulate customers to buy green products in both markets. In the B2B sector, the motivators investigated are profitability, legal compliance, ethical concerns and it being the norm in the market. In the B2C sector the theory of planned behaviour was used, in which the following motivators are established: ethical concern, social pressure and perceived effectiveness. Next to that, the role of ecolabels is investigated, since ecolabels are the best tool for customers to distinguish sustainable products from its less sustainable counterparts. But there was also investigated what sustainable features of the paper are most important as to see whether these have been incorporated in these ecolabels. There was also examined what not-sustainable attributes are important for toilet paper, since if the paper does not possess these qualities, they can possibly act as barriers for customers to buy sustainable variants. This was followed by a sub-question combining sustainability, comfort, and price as to investigate for once and for all, which of these determines a customer's choice the most. Last of all, the role of demographic factors like age and gender were investigated.

Two surveys were conducted to investigate how respondents felt about these matters, one in the B2B sector and one in the B2C sector. These surveys were drafted on the basis of literature, a document analysis and expert interviews. First a set of demographics questions were asked in both surveys followed by questions on all sub-questions addressed above. Most of these questions made use of a Likert scale and the results were analysed with Stata.

The results on all categories of questions in these surveys portray that customers in the B2B sector attach more value to the sustainability of the toilet paper than customers in the B2C sector. The results show that the respondents in both sectors found ethical concerns to be the most important motivator, followed by acting environmentally friendly to be the norm in the B2B market and feeling their purchase was effective in the B2C market. The results also show that the respondents from the B2B sector view ecolabels to be important tools in identifying sustainable products and do heavily rely on them, while the respondents in the B2C sector ascribe significant less value to them. In both sectors confusion on ecolabels is present, as respondents were not able to name any ecolabels for toilet paper or did not know what environmental matters these ecolabels aim to address. For the sustainable attributes, the usage of as few chemicals as possible and cutting down as few trees as possible were most important according to the respondents across both sectors. For the not-sustainability related attributes was found that respondents across both sectors thought that the paper dissolving easily and it being soft were the most important. Therefore, these attributes can be regarded as most important barriers for customers not to buy sustainable toilet paper. Last of all, the results indicate that comfort seems to be more important to the respondents in the B2C sector, where sustainability is the most important attribute according to the respondents in the B2B sector. In relations to demographic factors, no reliable results were found.

However, this research does have its limitations; not enough participants did partake in both surveys in order to be able to generalize these findings over the whole population and it is possible these participants have been biased. Next to that, on many of the topics addressed in this research, none or barely any research has been done before. Therefore, this study should merely be regarded as an explorative research into the toilet paper market and further research into this market is highly recommended in order to enhance sustainable purchases further.

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# 1 INTRODUCTION

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## 1.1 PROBLEM INDICATION

Every Dutch citizen produces 500 kg of waste per year. One-sixth of this, 80 kg, is paper. Paper is cheap and available in large quantities, it is therefore used in many different products that we use on a daily basis, such as books, newspaper, magazines, copying- and printing paper, tissues and packages (Milieucentraal, 2019; van Dis, 2018). 18 percent (14.3 kg) of our paper waste consists of toilet paper (De Standaard, 2007). On average, a Dutch citizen uses 8.6 sheets of toilet paper per toilet visit, which means together we flush 22.000 kilometres of toilet paper down the toilet per day (De Jong, 2016; Van Synghel, 2018).

This large amount of toilet paper that we use on a daily basis has a huge environmental impact. Around 270.000 trees are cut down each day worldwide to provide us our toilet paper (The Good Roll, 2020), resulting in deforestation all over the world. And next to that, a lot of energy, water, chemicals and other pollutants are required to transform these trees into toilet paper. Sun et al. (2018) state that the pulp and paper industry contributes to 5.7% of the total industrial energy use and emitting 9% of the total greenhouse gas emissions emitted by all manufacturing industries. Making it the industry being fourth largest greenhouse gas emitter. So that means that a lot of greenhouse gasses are being emitted in the paper making process, but due to the deforestation it causes, there are less trees to capture the carbon dioxide released by it (Smith, 2011; EPN, 2014).

What also contributes to the environmental impact of toilet paper, is the fact that toilet paper is used only once, whereas other types of paper are easier to use multiple times and/or are recycled (e.g. books and newspapers). Toilet paper ends up in our sewage system, where it cannot be recycled and needs to resolve into the water. Therefore, toilet paper has the most harming effect on the environment compared to all other types of paper (Brondell, 2018).

Over the years several companies have tried to develop different types of toilet paper with a lower impact on the environment. They did this for example by making toilet paper out of recycled paper or using wood originating from sustainably managed forests. Other solutions that have been implemented are the decreased usage of energy, chemicals, or water to diminish the resources needed and thereby lower the environmental burden. Lastly, the manufacturers lowered the environmental impact of the output of the production process in such a way that the less greenhouse gasses were emitted, or the water used would end up less contaminated (Defra, 2012).

Despite the growing range of more sustainable types of toilet paper, a lot of customers still tend to buy the traditional types of toilet paper instead of the more sustainable variants. The main reason for this is that customers attach importance to other functional attributes of the product (Joshi & Rahman, 2015). For toilet paper these attributes could for example be the softness of the paper, its price, or its solubility in water. Meaning that if a sustainable variant is too expensive or not soft enough, a lot of customers may not be willing to buy it. That means that these features can be experienced by customers as barriers for buying sustainable variants. Examining them makes it possible to incorporate these factors in the sustainable variants where possible so these might be sold more. Therefore, this research aims to get insight in how customers can be persuaded to buy sustainable types of toilet paper, while at the same time delving into the importance of other functional attributes. This with as goal to eventually change customer behaviour and buy more sustainable variants of toilet paper.

Toilet paper is sold in two different markets: the business-to-business (B2B) market and the business-to-consumer (B2C) market. Both markets each have their own unique characteristics and implications, meaning that customers' motivations for (not) buying sustainable products are different. In the B2B market a shift has been seen in the last decade as a result of governmental and customer pressures. Businesses are increasingly motivated to be a responsible corporate citizen and therefore also buy sustainable products (Haleem et al, 2014; Currin, 2012). But on the other hand, changing the mindset of individual consumers has proven to be more difficult. This has been ascribed due to a gap in consumers expressed concern for the environment and their actions. Another reason that has been mentioned, is due to lack in consumers' trust in green characteristics (Joshi & Rahman, 2015). To understand the different features and implications of both markets in more detail, will be looked at those markets separately. This allows for analysing the factors that shaped these markets and for determining the conditions under which these motivators can best be deployed in both markets. Subsequently the insights gained could help improve green consumption across these markets.

## 1.2 RESEARCH OBJECTIVE & RESEARCH QUESTIONS

The aim of this research is to get more insight in how customers in the business-to-business and in the business-to-consumer markets in the Netherlands can be motivated to buy more sustainable variants of toilet paper with all the factors having an influence on this. This will be investigated empirically by conducting two surveys, one distributed in the B2B sector and one in the B2C sector. In these surveys will first be looked at motivational factors for customers in both markets to buy green products. Ecolabels are the best tool for customers to distinguish sustainable products from its less sustainable counterparts. Therefore, their role in the buying process will be investigated next. But this also raises the questions as to what sustainable attributes are important to customers and whether this is in line with the ecolabels. The other not-sustainability related attributes customers perceive to be important are investigated next followed by combining all these attributes in one question as to test which one is most important. Last of all, the influence of demographic factors like gender, age, branch for the B2B sector and income for the B2C sector will be studied. Therefore, this master thesis pursues the following research question and sub-questions:

What factors influence buying behaviour in the B2B and B2C  
markets *for sustainable toilet paper*?

Sub-questions:

1. What motivates businesses to adopt environmentally friendly practices?
2. What motivates consumers to purchase green products?
3. What influence do ecolabels have on buying behaviour for toilet paper in both sectors?
4. What sustainable attributes of toilet paper are important in both sectors?
5. What not-sustainability-related attributes of toilet paper are important in both sectors?
6. In what order are sustainability, comfort and price ranked as determinants for buying behaviour of toilet paper?
7. What demographics factors have an influence on buying behaviour for toilet paper in both sectors?

### **1.3 SCIENTIFIC RELEVANCE**

This research combines a lot of different aspects. It is about motivators for making sustainable purchases, the role of ecolabels herein, the importance of sustainable attributes and not-sustainability related attributes when purchasing toilet paper, and the influence of demographic factors in this buying decision across both the B2B and B2C markets. Therefore, these aspects will be discussed one by one in this section and gaps in the literature will be identified for each of them. Therefore, this is explorative research contributing to the scientific knowledge on all of these topics, in an effort to lay a foundation for further research on these topics.

#### **1.3.1 Motivators in the B2B sector**

A significant amount of research has been written on motivational factors for customers to buy green products in the B2B market. The groundwork on this topic was laid in the 90's (e.g. Dillon & Fischer, 1992; Lawrence & Morell, 1995; Winn, 1995). They identified motivators like regulatory compliance, competitive advantage, stakeholder pressures, ethical concerns and critical events. After this, numerous articles were written that elaborated on this research by conducting empirical research (Bansal & Roth, 2000; Currin, 2011; Hahn & Scheermesser, 2006; Okereke, 2007; Sharma et al, 1999). These articles found factors that motivated business to go green to be competitiveness or profit, ethical consideration, legal compliance, and desire to prevent risk of business loss. Thus, fairly in line with results found in earlier work. The only articles mentioning the last motivator taken into account in this research, namely complying with the norm, have been written more recently by Trujillo-Barrera et al (2016) and Haleem et al (2014). Therefore, can be argued that the biggest body of research on this topic has been executed quite some time ago and lacks recent developments in society since awareness of climate related issues has emerged significantly over the last decades. Due to this the market and also motivators for businesses to buy sustainable products have changed. Next to that, most research has been executed in Europe and North-America: Bansal & Roth (2000) conducted research in the UK, Currin (2011) in the US, Hahn & Scheermesser (2006) in Germany, Sharma et al (1999) in Canada and Okereke (2007) in the UK. The only research conducted in the Netherlands, was executed by Trujillo Barrera et al (2016). So, some research has been executed on motivators that play a role in the B2B market in the Netherlands for customers to buy green products, however one study is not regarded to be sufficient. Thus, is argued here that the research executed on this topic is unsatisfactory at this point and new research needs to be executed to get a better understanding of recent motivators for businesses in the Netherlands to buy sustainable products.

#### **1.3.2 Motivators in the B2C sector**

In the B2C market, the biggest body of research on motivators for buying sustainable products has been conducted recently. However, the biggest part of this research has been executed in Asia, for example by Geng et al (2016), Chen & Hung (2016), Joshi & Rahman (2017; 2019), Kianpour et al (2014) and Takahashi et al (2018). Nevertheless, research on sustainable purchase behaviour in the B2C market has also been executed in Europe: Cerri et al (2017) did research in Italy, Tanner & Kast (2003) in Switzerland, Ruiz de Maya et al (2011) compared eight different European countries, and Liobikiene et al (2016) across all EU countries. This means that no research on the motivations for customers in the B2C market to buy green products has been executed in the Netherlands specifically. Next to that inhabitants across Europe make very different choices in their purchases, as Liobikiene et al (2016) found themselves. The degree to which inhabitants consider environmental problems to be important differs. At this point, there is no empirical research executed on green purchasing behaviour in the B2C sector in the Netherlands, and therefore there is a gap in the literature here as well.

### **1.3.3 Ecolabels**

Numerous articles have been written on the application of eco labels in relation to sustainable products. The topics differ greatly; for example on the history and future of ecolabels (e.g. Iraldo et al, 2020, Prieto-Sandoval et al, 2016; Horne, 2009) or how to increase sales for products with an ecolabel (Rex & Baumann, 2006). Also, an extensive body of research focuses on the shortcomings and therefore credibility of ecolabels (Catska & Corbett, 2014; Van Amstel et al, 2007; Sharma & Kushwaha, 2019; Nilson et al, 2003; Moon et al, 2016; Miller & Bush, 2014). Next to that, quite a number of studies focus on specific labels and its effectiveness (Van Amstel et al, 2007; Gertz, 2005).

This research has been executed on a wide range of ecolabeled products; for example on furniture (Cai et al, 2017), clothing (Rutten, 2022), cars (Codagnone et al, 2016), and quite an amount on food and agriculture (Delmas, 2010; Van Amstel et al, 2007; Nilson et al, 2003; Miller & Bush, 2014). Even two articles were found on ecolabels in relation to toilet paper (Bjorner, Hansen & Russel, 2003; Brouhle & Kahnna, 2005).

The biggest body of research has been executed in European countries (Codagnone et al, 2016; Thøgersen, 2000; Nilson et al, 2003; Marette et al, 2012; Gertz, 2005). But also some research was executed in Asian countries, namely in Malaysia (Chekima et al, 2015), China (Cai et al, 2017), and India (Sharma & Kushwaha, 2019). There were two studies found that focused on ecolabels in the Dutch market in particular, namely two studies performed by Van Amstel et al, 2007; 2006.

However, all this research is executed in B2C markets. To the best of the authors knowledge, no research has been executed about the use of ecolabels in the B2B market to enhance green purchases here. The only two articles that can somewhat attribute to this are written from a business perspective on whether or not to apply for ecolabels (Sharma & Kushwaha, 2019; Bruce & Laroiya, 2006). However, this is not the same as examining what effects ecolabels have on the number of sales of products in the B2B market. This while ecolabels may play a significant role for companies to distinguish sustainable products from their less sustainable counterparts when they opt to engage in sustainable procurement. Therefore, there is a literature gap on the use of ecolabels in B2B markets and this thesis will contribute to the research on this topic.

### **1.3.4 Sustainable attributes & not-sustainability related attributes**

Quite some research has been done into sustainable products, however, barely any of this research has been applied on the topic of toilet paper. To the best of the researcher's knowledge, the only articles written on this topic are written by Kishino, Hanyu, Yamashita & Hayashi (1998, 1999 & 2000) and revolve around customers choice of toilet paper made from virgin versus recycled paper in Japan. One could argue that this research has been executed quite some time ago and the importance of sustainability and sustainable products has emerged since then. This research has also been carried out in a different demographic area where other cultural norms and values apply than in the region this research addresses and customers are therefore likely to make different choices in these areas. Therefore, it seems that no scientific research whatsoever has been carried out on what sustainability and not-sustainability related attributes customers find important features of toilet paper. However, it is useful to get insights into important sustainable attributes of toilet paper, as to see whether these are in fact incorporated in the ecolabels. And it is important to take into account the not-sustainability related attributes influencing the decision for buying a particular type, as they can be a barrier to buy more sustainable variants. Therefore, there is a major gap in the literature on toilet paper, its sustainability, and important features.

### **1.3.5 Sustainable purchases in relation to demographic factors**

A remarkable amount of literature has been dedicated to the relation between demographic factors like gender, income or age, and the purchasing of sustainable products. These studies have been performed in biggest range of countries found in this research so far. Also in quite a number in European countries, for example by Tanner & Kast (2003); Papastefanou, 2021; Brouhle & Khanna, 2005; Schlör et al, 2009; Sovacool et al, 2021 and many more. Some even investigated the relationship between demographics and ecolabels (e.g., Papastefanou, 2021; Sewwandi & Dinesha; 2022; Esparon et al, 2013; Brouhle & Khanna, 2005; Cai et al, 2017; D'Souza et al, 2006). Therefore, would be argued here that there is no gap in the literature regarding customers in the B2C sector in relation to demographic factors influencing sustainable purchases. However, barely any research has been written investigating demographic factors of firms in relation to sustainable purchases. While it can be very useful to get insight in what type of companies are more likely to buy sustainable products or what type of companies require more effort to persuade. So, there is a gap in the literature regarding demographic factors for green purchases in the B2B sector.

### **1.3.6 Comparison of the B2B and B2C sector**

To the best of the researcher's knowledge there is no research comparing the B2B and B2C market in regard to stimulating sustainable purchases. This while it may be fruitful to compare the two. The biggest motivators or barriers found in both markets can provide necessary knowledge on similarities and differences between these markets. It may also point out practices found common in one market to be out of the ordinary in the other market, as to reveal matters perhaps taken for granted or not standing out at first to be observed more easily. It also gives rise to the ability to test whether lessons learned and best practices in one sector can be deployed fruitfully in the other market. This to see whether cross-fertilization has positive effects on the purchases of sustainable products in the subsequent market as well. Next to that, comparing both sectors lead to new conceptual insights since barely research has been done comparing these markets, making this an innovative study. This study will therefore make a first attempt in closing this research gap on comparing the B2B and B2C markets in regard to sustainable purchasing.

## **1.4 SOCIETAL RELEVANCE**

In 2015, the Sustainable Development goals were set by the United Nations (UN). As the United Nations put it themselves: "The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice. The Netherlands is one of the member states of the UN, and therefore also has to strive for reaching these goals.

This research contributes to two of these goals. First of all, to goal 12, responsible consumption and production. Targets set for this goal are for example sustainable management and use of natural resources, responsible management of chemicals and waste and reducing waste generation (UN, 2021). This research has as topic to investigate how customer's' behaviour could be changed so that toilet paper can be consumed more sustainably. If more sustainable variants of toilet paper would be bought, it would mean that less trees would have to be cut down, less chemicals would have to be used in the production process and toilet paper would be made out of recycled paper more often, creating less waste. Next to that, the researcher is hopeful that the results found in this research can be applied to other markets and will give insights into not only how to motivate customers to buy more sustainable toilet paper, but also other green products. If the results found here could be applied to other products as well, this research would contribute to achieving goal 12 even more.

The other goal that could benefit from this research is goal 15, life on land. One of the targets of this goal is about deforestation. Deforestation, damages ecosystems, leads to loss of biodiversity and can even lead to desertification. If all the toilet paper consumed could be produced in a more environmentally friendly way, by for example making toilet paper out of recycled paper or by the usage of toilet paper consisting out of fewer layers of paper on top of each other, that would mean less trees would have to be cut down, and therefore less deforestation could be accomplished.

Therefore, this research is primarily relevant for national policy makers, as insights from this study could be incorporated in policy to stimulate sustainable purchases further. Different implementations could be thought of. For example, insights in motivators across both sectors, reveal sensitivities of customers that can be anticipated upon. But also, insights on the role ecolabels play on purchasing behaviour in both sectors would allow to embed these ecolabels more efficiently in policy. For example, by using them in educating customers, ensuring ecolabels become more transparent or making them more apparent. Also, insights in what demographic factors have an influence on sustainable purchases allows campaigns to be targeted more effectively. All of this would contribute to achieving goal 12 and 15.

## 2 LITERATURE REVIEW & THEORETICAL FRAMEWORK

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In this part the theoretical underpinning of this research will be laid. In this chapter the literature review will provide background knowledge on what sustainability is and when a product can be regarded as sustainable. Subsequently, a historical overview on how the (toilet) paper sector has evolved over the years will be given. After that, the analytical framework will provide insight into the motivational factors found in the literature to persuade customers in both the B2B and the B2C markets to buy green products. The literature streams that have been used to identify the motivators in both the B2B and B2C markets will be discussed accordingly. Lastly the two conceptual models stemming from the motivators found for both sectors.

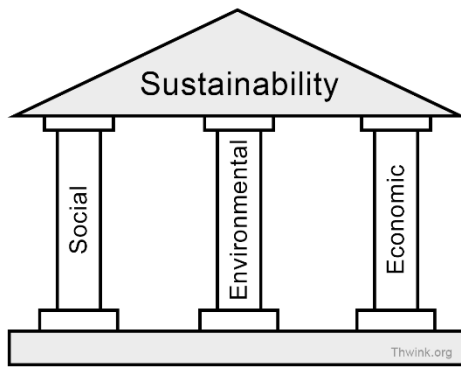
### 2.1 LITERATURE REVIEW

#### 2.1.1 Sustainability

Sustainability does not have one definition that is universally agreed upon. Overall, most people acknowledge that we need to take care of our planet and look after preserving our environment. But there are a lot of different opinions on how to do this and what exactly needs to be preserved (Morelli, 2011).

It has often been argued that sustainability as a concept became prominent by the Limits to Growth report and the Our common Future report. The Limits to Growth report was published in 1972 by the Club of Rome. This report claimed that the natural resources mankind uses would be exhausted within one or two generations. This was of course viewed as a problem and was reason to be worry. As a reaction, the Our common future report (also called the Brundtland report) was published in 1987. This report subsequently introduced the term sustainable development and provided some hope again. Sustainable development was described as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Our Common Future, 1987). So, term was introduced to show that we could still develop our economy, but make sure we do not run out of resources at the same time (Kuhlman & Farrington, 2010).

However, ever since the term was coined, there has been a lot of discussion on how sustainable development could be achieved. The main debate herein is about what is called weak versus strong sustainability. Weak sustainability assumes that “natural capital and manufactured capital are essentially substitutable and considers that there are no essential differences between the kinds of well-being they generate” (Pelenc et al, 2015). Meaning that the man-made resources can replace the natural resources we depleted, eventually it is about the non-declining sum of resources. So bluntly stated, we can deplete all natural resources and generate as much waste and emissions as we like, as long as we produce other resources for future generations. On the other side is strong sustainability. Supporters of strong sustainability believe that natural resources are “a set of complex systems consisting of evolving biotic and abiotic elements that interact in ways that determine the ecosystem’s capacity to provide human society directly and/or indirectly with a wide array of functions and services” (Pelenc et al, 2015). So, they don’t believe that natural resources can be substituted with man-made resources and that we have to consider carefully which resources we use now, in order for future generations to also have resources left and to survive (Pelenc et al, 2015; Barua & Khataniar, 2015; Kuhlman & Farrington, 2010).



*Figure 1 The three pillars of Sustainable Development*

Next to this, sustainability is often described as having three pillars, people, planet profit, meaning that environmental, social and economic factors that should be taken into consideration. The idea behind this, stems from the Triple Bottom Line concept that was introduced by Elkington in 1994. The idea is that if one of the three pillars is weak or not taken into account, sustainable development cannot be reached. So economic profitability, social responsibility and environmental conservation are all essential factors. The environmental pillar is about living within the means of our natural resources. Meaning we should consume resources at a sustainable rate and reduce

waste and emissions. The social pillar is about preserving social well-being, ensuring healthy and liveable communities with equal opportunities for everyone. The economic pillar is about profit. It is about maintaining or improving the standard of living to satisfy people's needs. Economic growth is necessary to ensure stability and welfare. Eventually, all of these pillars are interdependent, we can't reach sustainable development without taking all pillars into consideration (Waas et al, 2011; Muralikrishna & Manickam, 2017; Kuhlman & Farrington, 2010)

### **2.1.2 Sustainable products**

However, in this thesis will be looked at the sustainability of a certain product, namely of toilet paper. One could therefore wonder what it is exactly that makes a certain product more sustainable than another one. A tool commonly used to answer this question and determine which products are more sustainable than their counterparts, is a life cycle assessment (LCA). In such an assessment, the environmental impact of all steps in the products lifecycle are calculated, from extraction and processing of the raw materials to manufacturing, transportation, distribution, use, reuse, maintenance, recycling, and finally exposal. For each of these steps the input and output are calculated. Input can for example be the resources used to make the product: like crude resources, but also the energy used in the process and the water required. Output can be the amount of greenhouse gasses released into the air, the chemical waste that potentially harms the environment or other waste generated. Furthermore, it is important how long the product can be used, its lifespan. And ultimately after the product has been used, whether the product can be reused, refurbished, or recycled also determines how sustainable it is.

However, this makes performing an LCA a lengthy and time-consuming process. It's a simplified model of the real world. System boundaries need to be defined and assumptions need to be made. For example, on the exact lifespan of the product, the disposal process or on ways of transport etc. Also, a lot of data is necessary to be able to conduct an LCA, if in any of the steps the data is poor or insufficient, this will affect the reliability of the outcomes. Therefore, LCA's are regarded to be quite subjective tools. It should be kept in mind that LCA's, nor any other tool can calculate the exact environmental impact a product has (Ashby, 2013; de Bruijn et al, 2004; Kirkels, 2013).

### **2.1.3 Ecolabels**

However, since customers simply cannot undertake an LCA themselves for every product they buy, ecolabels have become important tools for customers to be able to distinguish sustainable products from less sustainable variants. These ecolabels are a form of de-regulated environmental protection. Certification is a voluntary step companies can undertake on top of regulation like permits and taxes. Customers can subsequently choose whether to buy these products and reduce the environmental effects of their purchases (Bjorner, Hansen & Russel, 2004; Gertz, 2005). are certification schemes managed by third

parties operating between the manufacturers or retailers and the customers. These labels are mostly issued by governmental bodies or private third parties to products when they comply to the established set of criteria that often concern the lifecycle of the product (Rusko & Koraus, 2013; van Amstel et al, 2006).

Nevertheless, ecolabels have also suffered substantial critique over the years. First of all, the certification bodies all have different criteria that a product has to comply to, because the interpretation of what sustainable practices should entail differs. But the problem here is that these criteria are most often not clearly communicated towards customers. Often the labelling schemes do also not take into all steps the product goes through in its life cycle, but instead focus on a limited part of its cycle. Next to that, it is unclear how certification bodies execute their audits, how often, and how thoroughly. Customers also have no insight in what penalties are given or sanctions taken, if any, by the certification bodies when a product would fail to comply to the criteria (van Amstel, 2006; Nilson et al, 2003; Horne, 2009; Miller & Bush, 2014)

Next to that, some scholars (e.g. Taufique et al, 2017; Langer et al, 2007; Moon et al, 2017) argue that the large amount of labels in the market now a days leads to confusion among customers. This great number of labels could lead to an information overload for the customers by which the customers do not know what environmental criteria to focus on. This in combination with the ambiguity of the criteria set by certification bodies, has led to reduced perceived credibility and sometimes even distrust in the labels among customers (Taufique et al, 2017; Langer et al, 2007; Moon et al, 2017; Cai et al, 2017).

Considering that ecolabels are the only source of information that customers rely on for distinguishing sustainable products from their less sustainable counterparts, this is a problem. If customers do not understand these labels or distrust them, they are not effective, and the objective of these labels is not achieved. Clear communication and promotion towards the customers are therefore vital in order for them to understand and value what these ecolabels stand for and to encourage sustainable consumption (Rusko & Koraus, 2013; Taufique et al, 2017; Iraldo et al, 2020).

#### **2.1.4 Brief history of the (toilet) paper industry and its environmental impact.**

Since its development, paper has been an essential part of human life. The development of papyrus is often seen as the first step towards paper. This happened in Egypt, where papyrus was created presumably somewhere between 3700 and 3200 BC. However, it was in China where the first real paper was made out of wood fibres.

In China in 105 AC, the paper making process was invented by Cai Lun. It was also in China that paper was reportedly first used for sanitary purposes in the 9<sup>th</sup> century. This was paper that had been used for other purposes before. About 800 years later that the first paper was made with the sole purpose of usage after a toilet visit. This was reportedly ordered by the Chinese Emperor, so it was a luxury product, were only the royals had access to (Needham & Tsien, 1985; Rogers, 2017).

In the meantime in the West, it took a while before paper was being used. Therefore, cleaning oneself after a toilet visit was all about improvisation; grass, moss, leaves, hay, wool or even stone and clay were all materials that were used (Rogers, 2017). In 1282 the paper mill was invented in Spain and in 1440 the printing press was invented, but it was only during the Industrial Revolution, that mass production of books became possible (Smith, 2011; Hunter, 1970). This resulted in the rise of availability of discarded reading material, which in its turn could also be used after a toilet visit. It was also in the 18<sup>th</sup> century that flushable toilets made its rise. (Smith, 2011; Boxed, 2018).

Eventually, the birth of modern toilet paper as we know it is mostly ascribed to a New York businessman called Joseph Gayetty in 1857. He began selling sheets of manila hemp infused with aloe with his name printed on it in containers looking like our modern tissue boxes. He sold it as medicated paper. However, using discarded paper was a cheaper alternative to Gayetty's paper, meaning selling his product posed quite a challenge. In 1890, it were the brothers Scott who marketed the first toilet paper on a roll. By negotiating trade deals with local hotels and shops, they managed to do a better job than Gayetty, but still struggled to sell their paper to a wider population (Rogers, 2017).

Due to the still ongoing industrial revolution and the population growth in cities, there was also an increasing demand for paper that did not clog the narrow pipes, resulting in a sharp rise of toilet paper usage in the early twentieth century. In 1942 Two-ply toilet paper was introduced for ultimate comfort (Rogers, 2017).

So, the process of (toilet) paper making has evolved in different parts of the world over centuries, eventually leading to the paper industry as we know it today. However, rapid technological changes, expanding economies, globalisation and the affordability of paper in the last centuries, led to an alarming increase in paper usage. Due to a growing world population and expanding economy in developing countries, the demand for paper is expected to rise even further (Smith, 2011).

This increase in paper usage is also accompanied by its inevitable environmental damage (Smith, 2011). Historically, (toilet) paper making has been a wasteful process; it contributes to land, water and air pollution. First of all, there is the deforestation issue. Globally over 15 billion trees are cut down each year for our consumption of paper and other wood-products (Crowther et al., 2015). But next to this, a lot of water is needed to clean and prepare the pulp, that ends up being contaminated afterwards. Worldwide, the pulp- and paper industry is the fifth largest consumer of energy, accounting for 4% of the world's energy use. Harmful gasses are emitted, like methane, nitrogen oxides, sulphur oxides, and carbon dioxide. And last of all, a variety of chemicals are also involved in the manufacturing process, like chlorine to bleach the paper and make it feel softer (Green America's, Brondell, 2018).

Therefore, the need to decrease the impact of (toilet) paper on the environment is high. On a positive note, the pulp- and paper industry is already making progress in the right direction. Technological enhancement and more effective production methods already have decreased the environmental impact quite a bit. Still, there is enough room left for improvement to ensure a sustainable industry.

## **2.2 ANALYTICAL FRAMEWORK**

### **2.2.1 Motivators in the B2B sector**

In line with the growing awareness of the importance of sustainability in the last decades, a lot has also changed for business and the necessity for them to act environmentally friendly. Companies feel the increasing pressure to also take the environment into consideration when establishing their business goals and business models. A lot of companies' initial reaction to this pressure was greenwashing their products, meaning they led the consumer to believe their products were green, while in fact they were not as sustainable as portrayed. However, over the last few years, some scandals have surfaced about these kinds of practices. This led to the public being more critical towards claims on sustainability. Eventually, companies didn't want to be the next one whose name to be connected to a big scandal, so they had to shift their mindset. This shift was mainly from being reactive to being proactive (Earley, 2017).

So, the market has changed, but one could still wonder what it is exactly that drives companies to shift their mindset and adopt environmentally friendly behaviour. In the literature, most articles refer to three different factors that motivate businesses to adopt environmentally friendly practice. Currin (2011), Paulraj (2009), Okerke (2007) and Bansal & Roth (2000) for example found the following factors: complying with laws and regulations, ethical concerns, and gaining an advantage that will result in increased profitability. However, these articles are somewhat older and as said, a lot has changed over the last decade. Therefore, Trujillo-Barrera et al (2016) and Haleem, Boer & Farooq (2014) have observed another factor playing a role in today's markets, namely pressure to comply with the norm set by other companies. All factors will be explained in more detail below.

#### **2.2.1.1 Profitability**

In the literature, this motivation is referred to as the most prevailing for companies. Companies can increase their profit by adopting environmentally friendly behaviour in several ways. For example, by adopting such behaviour, a company can distinguish itself from their competitors, increase its reputation and subsequently gain a competitive advantage and market share. Or a company can streamline its production process whereby both environmental impacts and costs for inputs and waste disposal are reduced. Another reason can be to reduce risks in the long run and therefore remain profitable over time (Paulraj, 2009; Okerke, 2007).

#### **2.2.1.2 Legislative/regulatory compliance**

The most obvious reasons to adopt environmentally friendly behaviour may as well be because new regulations and laws are enforced onto the market, to make sure companies also take the environment into consideration in their business models. Often considerable fines and legal costs force companies to obey these new regulations or legislation (Paulraj, 2009; Okerke, 2007).

#### **2.2.1.3 Ethical concerns**

When adopting environmentally friendly behaviour for ethical concerns, a company thinks that this is the right thing to do. In this case a company acts out of a sense of responsibility or philanthropy. One could therefore say such a company thinks it is highly important to live up to their morals and protect our environment and ecosystems (Paulraj, 2009; Okerke, 2007).

#### **2.2.1.4 Complying with the norm**

Trujillo-Barrera et al state in their article (2016): "Sustainable practices have become a new norm in business in response to societal and governmental demands, along with increasing consumer awareness." Meaning that there are also quite some companies that just try to keep up with market demands and just follow such a new norm. They simply imitate competing companies in their sustainable practices. This was also found in research conducted by Haleem, Boer and Farooq (2014); "environmental and social pressures have significant influence on the efforts companies put into the implementation of internal as well as external CSR practices".

### **2.2.2 Theoretical background B2B market**

Several matters need to be addressed here first. First of all, the theoretical foundations for the B2B and B2C sectors differ. To the best of the researcher's knowledge there are no articles written on comparing motivators or sustainability for that matter across both sectors. In the current body is focused on either one of the markets, while as explained in section 1.4.6 it can also prove to be very fruitful to compare both sectors. However, motivators to act environmentally friendly in both sectors differ significantly as firms and

individuals are driven by very distinct motivators. In general, businesses are more likely to make more rational and strategic choices., while customers in the B2C sector on the other hand are more likely to make more irrational and emotional choices. Legislative compliance or gaining a competitive advantage is for example not something that would motivate customers in the B2C sector. Therefore, the theoretical foundation for this part of this research will be discussed separately per sector.

Next to that needs to be mentioned here that in section 2.2.1 motivators for firms to act environmentally friendly are discussed. This is not about sustainable procurement in particular, since barely any literature can be found on motivators for sustainable procurement. Therefore, is chosen to focus on any literature explaining motivators for adopting any environmentally friendly practices in the B2B sector.

The relatively small amount of research on this topic, resulted in no specific theory being deemed suitable for analysing motivators to adopt sustainable practices in the B2B sector. Theories not used in this research but demonstrating resemblance to this study include organizational theory and institutional theory. Organizational theory is about studying the structure of an organization, the people in it and its environment, as to how it can be altered to improve efficiency and profit (Chron, 2022). This does not suit this research since no organizations are studied in detail. Institutional theory on the other hand studies institutions as product of social pressure. Or as Berthod (2016) describes it: "Institutions understood as taken-for-granted beliefs, rules, and norms, shape the creation and spreading of organizational forms, design features, and practices." This does portray some resemblance with the last motivator investigated for the B2B sector, as this also concerns social pressure, however this is not the focus of this research. Therefore, this study builds on no theory in specific, but on fields of management literature and Corporate Social Responsibility (CSR) in which these motivators have been discussed.

### **2.2.3 Motivators in the B2C sector**

It has often been said that consumers increasingly take environmental concerns into consideration in their purchases (International Trade Centre European Commission, 2019). They altered their buying behaviour and make more sustainable choices. However, that the number of sustainable products purchased has increased, does not mean solely sustainable products are sold now; there is still a lot of room for improvement. According to a study conducted by ABNAMRO (2018) only 16 percent of the Dutch population is aware of the problems related to climate change and has altered his or her lifestyle completely to diminish their effect on it. While on the other hand; 8 percent is not aware of the problem and does not alter his or her lifestyle at all. 19 percent is aware of the problem, but still does not change his or her lifestyle. And the biggest chunk, namely 58 percent is aware of the problem and had changed his or her lifestyle slightly (ABNAMRO, 2018). So, one could say that some changes in purchasing behaviour have been made by consumers, but eventually more progress can be made to further reduce the impact these products have on our environment.

The problem that can be witnessed here, namely that most consumers (77 percent) are aware of climate change but have not or have only slightly altered their buying behaviour, has also been observed by scholars. They have given this problem a name; the attitude-behaviour gap. This gap has been described the following: "discrepancy or gap between consumers' expressed favourable attitudes and actual purchasing practices" (Joshi & Rahman, 2015, p. 2). Meaning that consumers express their concern for the environment, but they do not act accordingly in order to change something about it (Joshi & Rahman, 2015; 2019; Horne, 2009).

Therefore, this research analyses motivators for consumers in the B2C market to purchase more sustainable products. Which can be deployed in an attempt to overcome this attitude-behaviour gap. A number of factors have been identified in the literature that have proven to enhance consumers' motivation to buy green products. The factors that were found most often by scholars include: environmental concern or environmental responsibility (Chen & Hung, 2016; Joshi & Rahman, 2015; 2019; Kianpour et al, 2014), perceived control or perceived effectiveness (Chen & Hung, 2016; Joshi & Rahman, 2015; 2019; Kianpour et al, 2014, Ruiz de Maya et al, 2011), and subjective norms or influence by reference groups (Joshi & Rahman, 2015; Kianpour et al, 2014; Liobikiene et al, 2014; Ruiz de Maya et al, 2011). Next to that, there are a number of factors that were found in only one single article: compliance to laws & regulations (Kianpour et al, 2014), the importance of other functional attributes (Joshi & Rahman, 2015), confidence in green products (Liobikiene et al, 2016), and perceived marketplace influence (Joshi & Rahman, 2019). In this research is chosen to only incorporate the motivators that were named more than once by the scholars. The remaining three factors named will be described in more detail below.

#### **2.2.3.1 Ethical concerns**

Just as in the B2B sector, when experiencing ethical concerns, a consumer will buy a sustainable product out of concern for the environment. He or she thinks this is the right thing to do and feels responsible to protect our planet. These consumers want to limit the impact their purchasing behaviour has on our environment and ecosystems. This in its turn is influenced by the customers' level of knowledge on environmental issues (Joshi & Rahman, 2015; 2019; Kianpour et al, 2014).

#### **2.2.3.2 Social Pressure**

Also, comparable as in the B2B sector, consumers can feel there is some kind of norm for green purchasing behaviour. Herein they experience social pressure and will therefore opt to buy sustainable products. For consumers, this pressure most often comes from perceived socially desired behaviour from the consumers' friends, family, or peers (Joshi & Rahman, 2015). Consumers feel they must comply with what is socially acceptable and to live up to the expectations the people around them have (Joshi & Rahman, 2015; Kianpour et al, 2014; Liobikiene et al, 2016; Ruiz de Maya et al, 2011).

#### **2.2.3.3 Perceived consumer effectiveness**

Perceived consumer effectiveness or perceived control refers to the extent to which consumers believe their purchase will help solve a problem. Or in this case, the degree to which their purchase will contribute to a more sustainable world. As Joshi and Rahman (2019) have stated: "Studies have demonstrated that individuals believing that their actions bring advancement in society are more cooperative and think less about their personal gain". Joshi and Rahman also found that, on the other hand, lack of trust in ethical and green claims of products can be key barriers for consumers to adopt green purchasing behaviour. So, consumers need to feel they make a difference with their purchase, that their efforts matter and will bring about a positive, fruitful change (Kianpour et al, 2014; Joshi & Rahman, 2015; 2019).

#### **2.2.4 Theoretical background B2C market**

This part of the research is based on the theory of planned behaviour (TPB) as developed by Ajzen (1991). The TPB is a theory often implemented in the field of psychology to understand and predict behaviour. The TPB argues that a customer's attitude and social norms, together with the customer's perceived control shapes intention. The more favourable someone's attitude and social norms, and the greater someone's perceived control, the stronger its intentions should be. The stronger the intention, the more likely it is that behaviour will follow (Ajzen, 1991; 2020; Bosnjak et al, 2020). The prequel of

the TPB is the theory of reasoned action. However, in this theory perceived control was not taken into account as predictor of intentions. Therefore, the TPA was improved based on new insights gained by Ajzen.

Theories not deemed fitting for this study are the following: the norm activation model and related theories and the social practice theory. The norm activation model (NAM) is also a theory rooted in psychology. It studies the circumstances under which personal norms are activated. It argues that awareness of the consequences together with acceptance of personal responsibility activate personal norm and therefore behaviour (Park & Ha, 2014; Schwartz, 1977). The value-belief-norm theory is a theory that elaborated on the NAM by adding values prior to awareness (Stern et al, 1999). Both theories are not used in this study, since in this research is looked beyond just personal norms. Other types of norms, namely social norm and subjective norm are also considered. This to investigate how all these norms influence buying behaviour.

Social practices theory studies how individuals interact with the world around them over time. It states that everyday actions of individuals (practices) shape social structures and vice versa (Shove, 2009, Bourdieu, 1990). So, this is a theory routed in sociology, while the TPB stems from psychology. In this research is focused on behavioural change not on societal change. However, these theories are not mutually exclusive but can reinforce each other. There is argued here that both insights in behaviour on an individual level and studying social structures are vital elements in enhancing sustainable purchases, as psychology and sociology both offer valuable insights. Therefore, in this study is looked at the factors influencing buying decisions on an individual level and future research would be recommended to look at how this can be implemented on a social systems level.

## **2.3 CONCEPTUAL MODEL**

From the motivational factors found in chapter 2.2.1 and 2.2.2, conceptual models can be derived. These models are shown below. First a model will be given for the business-to-business market, after which a model will follow for the business-to-consumer market.

Hence, this is an explorative study into what might motivate customers to buy more sustainable variants of toilet paper. This means that these models are a simplified version of reality. There are a lot of social phenomena and processes that influence customers' behaviour. Human behaviour is complex and is shaped and determined by a lot of factors. However, delving into these phenomena further does not lie within the boundaries of this research and are therefore not taken into account here.

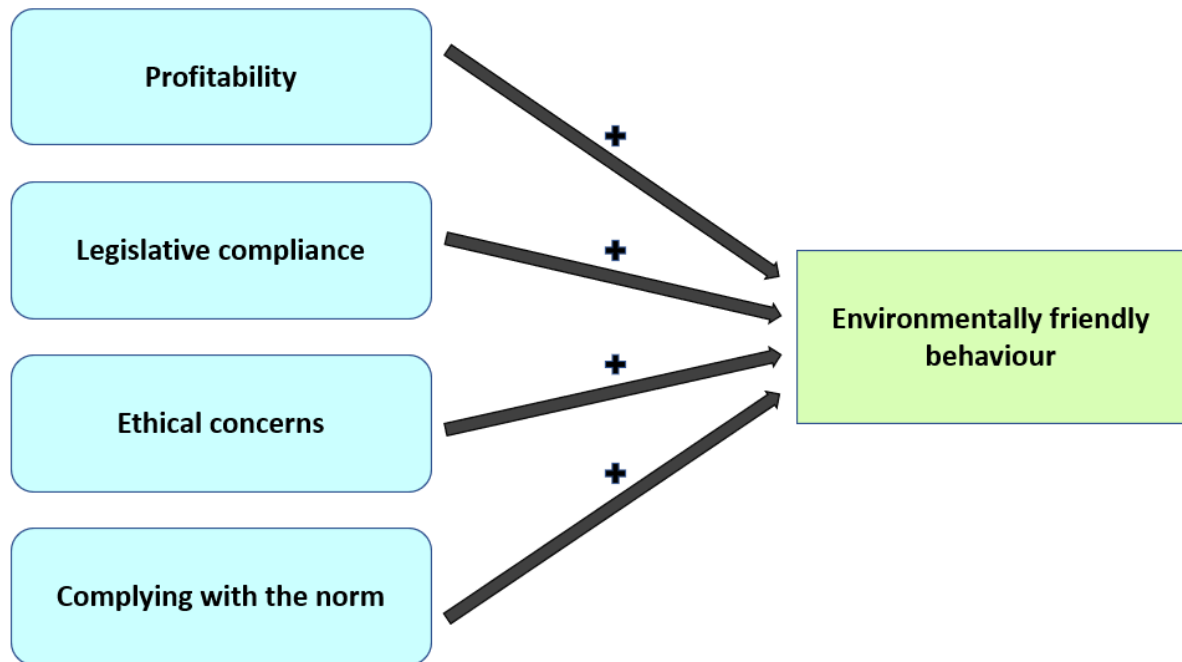


Figure 2 B2B market conceptual model

This conceptual model shows the four motivational factors found for businesses to adopt environmentally friendly behaviour as described in the literature in chapter 2.2.1. The literature describes that a business' drive for profitability, their obligation to comply with the law, their ethical concerns or their need to comply with the norm, can all be factors that can positively influence their decision to adopt environmentally friendly practices. Whether these factors actually have a positive influence and how big of an influence on customers behaviour for buying toilet paper in the Netherlands will be tested in the survey conducted in the B2B sector.

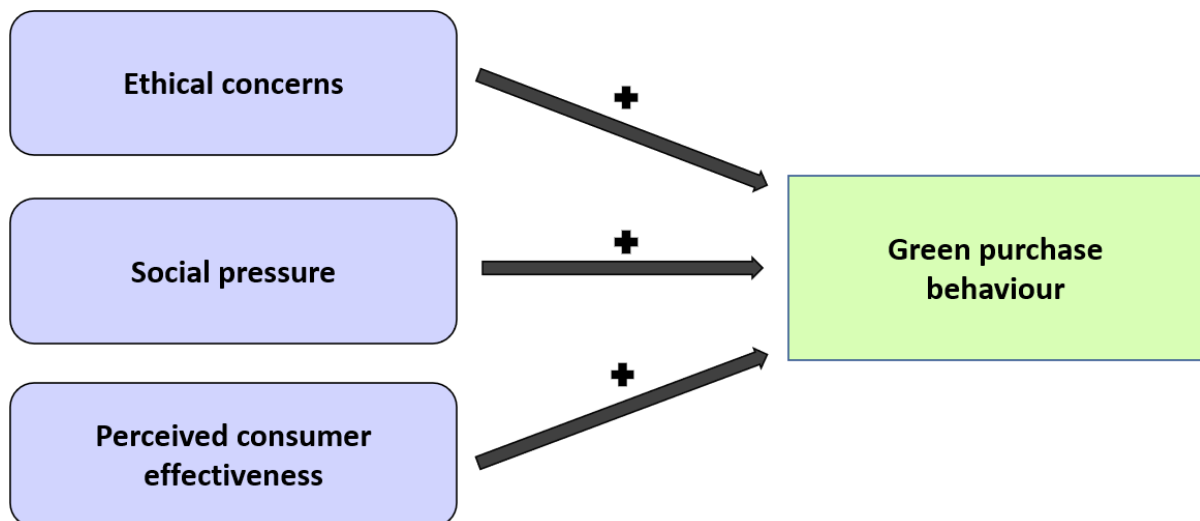


Figure 3 B2C conceptual model

This conceptual model shows the three motivational factors found that can drive consumers to buy green products as described in chapter 2.2.2. The theory of planned behaviour names consumers' ethical concerns, the pressure he or she perceived from others around him or her, and the perceived effectiveness of a purchase as important drivers for consumer to switch to green purchasing behaviour. Again, whether these factors actually influence consumer choices for buying sustainable products and to what degree will be tested in the survey held in the B2C market.

### 3 METHODOLOGY

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This chapter portrays the methodological choices made in this research. First will be elaborated on the researcher's paradigm, ontology and epistemology, as it says something about the way the researcher views the world and therefore this influences the research. After that, the case study will be introduced and will be explained what research strategy has been used for this research. Then will be elaborated upon the research methods chosen, the data collection and data analysis. Last of all will be discussed how reliability and validity have been ensured within the research.

#### 3.1 RESEARCH PARADIGM

Every research is influenced by the position of the researcher, by the researcher's paradigm. A paradigm is one's set of basic beliefs. Or as Guba and Lincoln (1994) also describe it; "It represents a worldview that defines, for its holder, the nature of the world, the individual's place in it, and the range of possible relationships to that world and its parts". A research's paradigm is closely related to the chosen research methods. There are two essential questions that underlie one's paradigm, namely the ontology and epistemology (Guba & Lincoln, 1994; Van Thiel, 2014; Levers, 2013; Kivunja & Kuyini, 2017).

This research relies on a post positivist paradigm. When adhering to this paradigm, the researcher believes that reality does exist, but is imperfectly apprehendable, it can only be apprehended as closely as possible. In this paradigm, the researcher is an observer, rather than a creator or participant (Guba & Lincoln, 1994; Levers, 2013; Kivunja & Kuyini, 2017).

##### 3.1.1 Ontology

The ontology raises questions about the nature of reality and of the human being in the world. Related to post positivism is the ontology critical realism. Advocates of post positivism believe that research can only make an approximation to reality, because human intellectual mechanisms are flawed, and phenomena are out of our control by nature. (Guba & Lincoln, 1994; Levers, 2013; Kivunja & Kuyini, 2017). For this research, this can be for example be observed in the mere existence of the attitude-behaviour gap as described in chapter 2.2.2. By this gap, people express their concern for the environment, but somehow do not seem to change their behaviour and make more environmentally friendly choices. This displays the complexity of the human intellect and the unpredictability of their behaviour. This research attempts to make suggestions as to how customers might be persuaded to buy more sustainable types of toilet paper, but that does not mean that the suggestion here will hold the "truth". It is unlikely that the outcomes of this research can explain all customer behaviour on this topic and therefore it is also unlikely that all customers will change their behaviour accordingly. It is a mere attempt to come closer to the truth but does not contain the ultimate reality.

##### 3.1.2 Epistemology

The epistemology is about understanding how we know what we know. It is about believing whether knowledge is something which can be acquired or should be personally experienced. The post positivist paradigm is linked to modified dualist/objectivist epistemology. When adhering to this epistemology, the researcher is an observer, but believes it is impossible for him/her not to influence the research. Any claims about reality need therefore to be utterly critically examined, for example by checking if the findings fit with pre-existing knowledge (Guba & Lincoln, 1994; Levers, 2013; Kivunja & Kuyini, 2017). In this research, this is done by using multiple sources of information, as to examine as many viewpoints as possible and collecting the "realities" formulated by all

participants in these. Since this is an explorative study, this means that there is no real pre-existing knowledge to compare it to, therefore further research is recommended in order to get as close to the truth as possible.

## **3.2 CASE STUDY & RESEARCH STRATEGY**

### **3.2.1 Research strategy**

The research strategy portrays the approach to the research, the guidelines under which the study has been executed. In this case, a mixed-methods approach has been used. Quantitative methods have been used in this research by conducting two written questionnaires, one in the B2B sector and one in the B2C sector. A survey allows for data collection on a large scale and means that the data can be generalized more easily. However, on the other hand, it also means that the data gathered is of a more superficial nature, since respondents in a survey are barely or not able to communicate any underlying ideas or arguments (Van Thiel, 2014; Bryman, 2012)

However, in order to draft this survey sufficiently, prior to its distribution, qualitative sources were studied as well. Expert interviews were held, and a document analysis was executed. This diminishes the disadvantages of conducting a survey to some extent, as the experts in their interviews can express some of the underlying thoughts of respondents. They can serve as a spokesperson so to say. Therefore, the biggest advantage of such a mixed methods approach is that data triangulation is ensured. It provides a better understanding of the problems encountered and allows for more complete evidence (Van Thiel, 2014; Bryman, 2012; Emerald publishing, 2021).

Next to that, this study can be regarded to have a comparative design. In this design, two contrasting cases are studies by using almost similar methods (Bryman, 2012). In this research, the B2B sector in the Netherlands and the B2B sector in the Netherlands are examined. Studying multiple cases results in being able to compare their similarities and differences as to better understood the underlying social phenomena, it allows for analysing the retrieved data within and across situations. However, the researcher does have to bear in mind that the differences observed between the cases may not solely be ascribed to the different characteristics of the cases (Bryman, 2012; Gustafson, 2017; Yin, 2003).

### **3.2.2 Case selection - Vendor for B2B sector**

In order to get insight into the business to business market (B2B), a part of this research has been executed at Vendor. Vendor is a Dutch company specialised in washroom hygiene. They develop and produce products like hand towel dispensers, toilet roll dispensers, soap dispensers, air freshener systems, female sanitary disposal bins and toilet seat cleaners. But most of all, they also produce and sell toilet paper. Their goal is to always offer their customers quality products, excellent service and a fresh toilet, or as their mission states: making a happy moment out of every washroom visit (Vendor producten, 2019; Vendor doel, 2019). However, they also believe that in order to make this a truly happy moment, the happiness of our environment and future generations should be taken into account as well. Therefore, they think it is important to try to diminish the impact a washroom visit has on the environment (Vendor MVO, 2019).

Vendor is a business to business company, meaning that their customers are other companies, not individual consumers. They have an extensive and diverse set of customers, who are divided over seven branches, namely: automotive, food, (higher) education, industry, logistics, business services and recreation (Vendor branches, 2019). Every branch and every business has an unique set of wishes and demands for how to

ensure their hygiene. Vendor tries to distinguish itself from its competitors by taking care of their wishes and demands by offering excellent service, personal contact and taking the extra step for their customers.

What makes Vendor interesting for this case study, is that they are one of the leading companies in the Dutch toilet hygiene sector when it comes to sustainability. They already consider sustainability important for over several decades and are always looking for ways to make their products even more environmentally friendly (Vendor MVO, 2019). This is also why it's interesting to study Vendor, their customers and their toilet paper in particular; to see how one of the leading players in sustainability in The Netherlands is doing and to study how future improvements can be made in the (toilet) paper industry.

### **3.3 RESEARCH METHODS, DATA COLLECTION & DATA ANALYSIS**

#### **3.3.1 Survey B2B market**

##### **3.3.1.1 Goal of the survey**

To analyse the customers' behaviour and choices in the B2B sector, a survey was designed (N=74). The goal of this survey is twofold. First of all, to test whether the motivational factors named in the literature will also be reported by the participating businesses and what proportion of the respondents feels motivated by what factors. Important questions herein are: do businesses think sustainability is important? Why do they think this is (not) the case? What motivates them to act sustainably?

The second purpose of the survey is to come up with a complete list of attributes that businesses find important about toilet paper and to rank these attributes in terms of their importance to the customers. These attributes can be divided into two groups. First of all, the attributes related to sustainability. The question on this topic were asked to get insight into what characteristics the paper needs to possess in order for the customer to view the paper as sustainable. Examples of these attributes are: the toilet paper need to be produced in a CO<sub>2</sub> neutral manner, it should be produced with as few chemicals as possible or the toilet paper needs to be made from recycled paper. In relation to this, the customers were also asked about their feelings towards ecolabels, by which they were asked to indicate how important it is that a type of toilet paper contains a certain ecolabel. As discussed in chapter 2.1.2, these ecolabels can be an indication on how a type of paper performs in terms of eco-friendliness. This means that customers do not have to dive into the specifics of the sustainable toilet paper themselves, since the ecolabel has already done that for them.

The second group of attributes is not-sustainability related. The questions herein are for example about the price, softness, whiteness, and solubility of the paper. As explained before, these attributes can function as barriers for customers to buy sustainable toilet paper and should therefore be analysed. By asking about them in the survey, these attributes can become known and where possible, can be built into sustainable types of toilet paper. Hereby the barriers for buying sustainable variants of toilet paper will be reduced.

### **3.3.1.2 Survey layout**

To get insights into the goals named above, the survey was divided into seven categories. These categories are:

1. Demographics
2. Motivation for sustainability
3. Importance of ecolabels
4. Importance of sustainable attributes
5. Importance of not-sustainability-related attributes
6. Set of questions that combines different elements
7. Open questions to check if any attributes were left out.

These categories in its turn were divided into a number of sub-questions. The complete list of questions can be found in appendix 1.

First of all, the respondents were asked a set of demographic questions. These include their gender, age, the sector they work in, whether they are responsible for choices concerning facilities within their company and whether their company is a client from Vendor. This is mainly to get acquainted with the respondents and get a better understanding of them and their company by their background characteristics.

Categories two up to five are categories related to the motivators, ecolabels, the sustainability related attributes and the not-sustainability-related attributes. Most of the questions in these categories were asked with the usage of a Likert-scale. Likert scales are often used in social sciences to measure opinions (van Thiel, 2014). Participants were asked to rank to what extent they agree to a statement. Therefore, for all attributes, the statement *attribute x* is important has been given, after which the respondent answered based on the Likert scale. The following scale was used herein: strongly agree, agree, neutral, disagree, strongly disagree. In order to process the data retrieved, these answers have been numbered 1 to 5, by which 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

However, since it is possible that for example, the respondents thought that multiple attributes are equally important within categories 2 till 5, these categories have been closed off with a ranking question. Herein the respondent was asked to rank the attributes named in the prior questions by importance to them. This allows for always being able to determine an order as to what attributes the respondents consider to be the most important, even if they would rate them to be equally important in the previous questions.

Furthermore, at the end of the survey, a number of questions were asked that combined categories 2 till 5. Examples of questions asked are whether the respondent felt it is more important to buy cheap toilet paper, comfortable toilet paper or sustainable toilet paper. Other questions asked the respondent if he or she would be willing to pay more for sustainable/comfortable toilet paper, and if so, how much more. Last of all, an open question was asked to make sure all attributes the respondents consider in their choice for a certain type of paper had been named in the survey.

### **3.3.1.3 Drafting the survey**

To determine the questions, several sources were used. First of all, the questions in the category on motivators for sustainable purchases are based on the theory on motivational factors as described in chapter 2.2.1. The questions on sustainable attributes are based on the information provided in chapter 2.1.2 and involve the steps that are taken in the life cycle of the product and the importance of sustainability throughout these steps. Both the categories about ecolabels and the not-sustainability related attributes are based on sources within Vendor.

Vendor proved to be a fruitful source of information, as they already acquired a lot of knowledge over the years on what attributes their customers find important when choosing the type of toilet paper they would like to buy. Two sources of information within Vendor were used. First of all, a document analysis was executed at Vendor. Internal documents were analysed to get a first idea about what attributes customers find important. These files were handed to the researcher by Vendor employees. Examples of documents that played a role are a list stating the most common ecolabels customers have asked for, documents containing numbers on what types of paper were sold most or several documents containing clients' requirements that Vendor's toilet paper needed to meet.

Next to that, four expert interviews were conducted with Vendor employees. Explorative expert interviews can be a powerful tool to get fast access to a new field and learn a large amount of information on a topic in a short amount of time (Van Audenhove, 2007). These experts provided some first insights into the B2B markets' buying behaviour on toilet paper. These interviewed experts were all employees who work closely with Vendor's (future) customers. These employees had the following job titles: sector manager, sales manager, and tender manager. So, these interviewees were experts in the field of their customers' needs, wishes and behaviour.

Semi-structured interviews were held by which several themes were kept in mind that should be discussed with the interviewees. The exact questions were not pre-determined or asked in a certain order. Where possible these interviews were recorded, or extensive notes were taken when this was not possible. Afterwards these interviews have been transcribed and coded. Deductive coding was applied here since these interviewees only served as getting some first insights into the B2B market and as input to design the survey. Therefore, the focus for analysing the interviews laid on looking for important attributes of the toilet paper as reported by the interviewees as well as for uncovering the importance and types of ecolabels.

Important aspects of the toilet paper as found in the interviews and the document analysis therefore include: the price, its solubility, its strength, and the softness of the paper, which is mainly determined by the number of layers it consist of. For the ecolabels, the cradle-to-cradle certificate arose multiple times. According to the Vendor employees, this is an ecolabel very often sought for by clients in the B2B market and is the most highly praised ecolabel in the market. The Vendor employees claim this is mainly due to good marketing from the manufacturer of this paper. This company picks up clients used paper and claims to process this into toilet paper supplied to the customers. Other ecolabels that arose in this research are the FSC label, EU ecolabel and Nordic ecolabel.

A number of other striking remarks came up during these interviews that should be kept in mind for this research. First of all, there is a big difference in the B2B markets for toilet paper in the Netherlands and Belgium. The demand for sustainable toilet paper seems to be significantly less in Belgium. In only about 25% of the tenders is asked for sustainable toilet paper in Belgium. This number is way higher in the Netherlands. This stresses the need to solely stick to the B2B and B2C markets for toilet paper in the Netherlands, since these markets can be completely different in other countries, as is already the case with a neighbouring country here. Next to that, one of the interviewees stated that she believes Vendor's toilet paper is not sustainable at all. Lastly, two interviewees mentioned that clients do not understand whether the toilet paper they buy is actually sustainable. They attach value to ecolabels because this is supposed to say something about the sustainability of the paper, but they do not really know nor understand which type of paper is sustainable in what way.

### 3.3.1.4 Sampling

This research targets the Dutch business to business market for toilet paper, therefore all companies buying toilet paper on the Dutch market are suitable to answer the survey. Preferably the employee within the company who is responsible for buying the toilet paper has answered the survey. However, since it is hard to reach this target audience, employees who were not responsible for these kind of decisions within their company also answered the survey. These employees may not make the final decisions, but they do know the position of their company on sustainability and will have an opinion on what type of toilet paper their company should buy. Therefore, convenience sampling was used in this case, which is a form of non-probability sampling. This means that the sample is drawn from the part of the population that was most easy to reach or contact.

To reach the target audience, several steps have been taken. First of all, the survey was shared on Vendor's LinkedIn page to target Vendors customers and ask them to fill in the questionnaire. Next to this, the survey was distributed among members of FMN, a Dutch network of facility managers (a facility manager is someone who takes care of the efficient and effective delivery of support services for the organizations that he/she serves). This to also get insight in other companies that buy toilet paper but are not customers of Vendor. This to avoid biases in the data and to aim for a representative sample.

### 3.3.1.5 Analysing results

The data retrieved in this survey have been analysed using Excel and Stata. Excel was used to conduct descriptive research. Outcomes on mean, standard deviation, and skewness were determined for the individual variables. Stata was used to conduct correlation research, to look for relations between the variables and the significance of these relations. Stata was used because the researcher is more familiar with it than for example with SPSS or R, which are other programmes often used for data analysis. Next to that in Stata commands need to be typed out, allowing for more options when analysing data than in SPSS, but arguably less complicated and more user friendly than working with R.

Excel was used to calculate the mean, the standard deviation and the skewness for all questions that were asked with the Likert scale. The goal herein is to determine the order in which the respondents ranked all attributes on importance to them. For the questions that did not use a Likert scale, the percentages of respondents that gave a certain answer have been calculated. And for the ranking question, total scores were calculated with Excel.

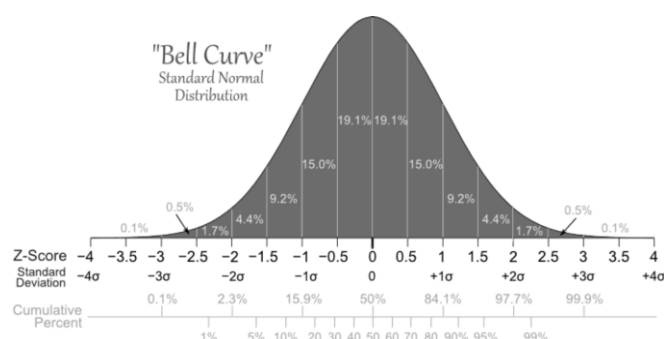


Figure 4 Normal Distribution (Snijders, 2016)

Saunders et al, 2019)

When conducting statistical research, the ideal is to have a normal distribution. This is shaped like a bell-curve. However, in practice, the distribution can take on any kind of shape. To determine what the distribution looks like for the answered provided by the respondents in this research, the mean, standard deviation and the skewness need to be calculated. These measure the centre, spread and shape of the distribution. (Snijders, 2016; van Thiel, 2014;

The mean is the is another word for the average; it is the sum of all scores, divided by the number of respondents. It represents the average value of all the answers the respondents gave (van Thiel, 2014; Snijders, 2016; Saunders et al, 2019). Since the Likert scale has been used, the value can range between one and five. The closer to five, the more important the respondents regard the matter named in the question. The attribute with the highest mean therefore scores first place in the ranking that will be complied by the respondents.

The standard deviation says something about the spread around the mean of the answers the respondents gave. It measures the distances between the mean and 33% of the answers above and below the mean. If the standard deviation is low, that means that the answers the respondents gave are quite close to each other. Whereas the standard deviation is higher, the answers are more divergent and opinions among respondents vary more (Rumsey, 2016; Snijders, 2016; Van Thiel, 2014; Saunders et al, 2019).

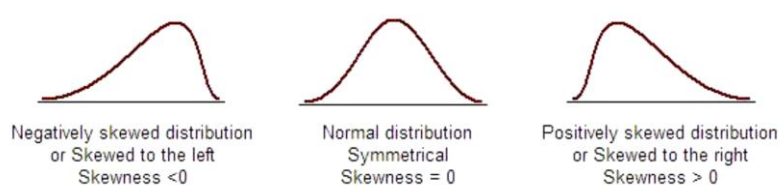


Figure 5 Skewness (Snijders, 2016)

Skewness is a measure of asymmetry; it portrays the extent to which the deviation differs from a normal distribution. It says something about where the mass of the answers provided is concentrated. If

the distribution shows a bunching to the left and a tail to right, that means the data is positively skewed. Also, the other way around; if the answers show a bunching to the right and a long tail to the left, the data is negatively skewed. So negatively skewed means that more than half of the respondents thought that the attribute is more than average important. And positively skewed means the top of the distribution is on the left and therefore most respondents think that the attribute is less important than average. The further away from 0, the more the distribution is skewed (Snijders, 2016; Van Thiel, 2014; Saunders et al, 2019).

When executing statistical research one of the main goals is to look for relations between the variables. Knowing for example that there would be a relation between the age of the respondents and buying sustainable toilet paper would be very insightful information. Therefore, Stata was used. In statistical research, there always is a hypothesis that is being tested, a  $H_0$ . The hypothesis always makes some kind of statement about the equality of the values of a variable across another variable. This hypothesis can either be supported or rejected. However, the goal in statistical research is also for the relations found to be generalizable over the whole population. It would be nice to know that a relation between variables in this sample of the population was not rejected, but it would be much more valuable to know whether these results would hold for the whole population. That is why the significance is calculated as well. It determines whether the results found in the sample are expected to also hold for the whole population. In this research an alpha of 0.05 will be used. This is the alpha used most often by researchers. It means that the probability of rejecting the hypothesis when it is actually true is 5%. That implies that if the significance is below 0.05, the relation will be regarded to be statistically significant (Snijders, 2016).

There are different types of variables, namely categorical variables, interval variables and ordinal variables. Categorical variables are variables with multiple categories without intrinsic ordering. Ordinal variables have multiple categories that have an intrinsic order. And Interval variables have an intrinsic order by which the intervals are evenly spaced.

Below in table 1 an overview is provided stating what type of variable corresponds to the questions asked in the survey. Officially Likert scales are ordinal variables, but when analysing these kinds of research Likert scales are often treated as interval variables, because this makes it a lot easier to run tests with them (Snijders, 2016).

<i>Variable</i>	<i>Kind of variable</i>
<b>Gender</b>	Categorical variable with 2 categories
<b>Age</b>	Interval variable
<b>Branche</b>	Categorical variable
<b>Customer</b>	Categorical variable with 2 categories
<b>All variables using likert scale</b>	Interval variable
<b>Ranking</b>	Categorical variable

*Table 1 types of variables B2B sector*

When looking for relations between variables different tests have to be executed, it is not possible to use the same tests for every combination of two variables; the type of tests required to execute differs for every combination of two kinds of variables. In this research the t-test,  $\chi^2$ , annova and correlation were used. In table 2 an overview is provided for what type of tests corresponds to what type of variables. Many of these tests make assumptions, for example about the distribution of the sample, its variance, or cell count. If these assumptions are not met, one is actually not allowed to run the test in its form, since the outcomes are not reliable. Therefore, the results can also not be generalized over the whole population (Snijders, 2016; Acock, 2012; Howitt & Cramer, 2011).

<i>Test</i>	<i>Variable 1</i>	<i>Variable 2</i>
<b>T-test</b>	Categorical variable with 2 categories	Interval variable
<b>Chi<sup>2</sup></b>	Categorical variable	Categorical variable
<b>Correlation</b>	Interval variable	Interval variable
<b>Annova</b>	Categorical variable	Interval variable

*Table 2 types of tests*

The t-test compares the means of two groups, it examines whether there is a statically significant difference between these two means. It says something about how likely it is that both groups are from the same distribution, about the likelihood of the results occurring by chance. This is for example very useful when comparing the means of an interval variable across men versus women. However, there are some assumptions to consider when conducting a t-test. It assumes that the interval variables are distributed normally in both groups and that the interval variables have the same variance in both groups (Snijders, 2016; Acock, 2012; Howitt & Cramer, 2011).

A Chi2 test checks if observed frequencies of more categories match expected frequencies. It will tell us if certain combinations of the categories occur more frequently than we would expect by chance. Therefore, it looks for patterns and relations in the data. A Chi2 test assumes normality through the distribution. That is often achieved with a large enough sample therefore requires the cell counts are not to be too small. As a rule of thumb, a cell count of higher than 5 is often suggested (Snijders, 2016; Acock, 2012; Howitt & Cramer, 2011).

Correlation and regression tests are used to calculate if there is a relation between two interval variables. Checking for a bivariate correlation is done by calculating the correlation coefficient, also called  $\rho$  or  $r$ . The correlation coefficient displays the strength of the relationship between the two variables. It measures whether when the value of the first variable changes, the other variable changes in a specific direction with it. The coefficient can range between -1 and 1. The further away from 0, the stronger the

relationship. In psychological research, typically a coefficient of around  $\pm 0.1$  is regarded to be small, of around  $\pm 0.3$  to be medium and around  $\pm 0.5$  to be large. However, something to be noted here is that if a sample is large enough, any size correlation coefficient however small, will end up to be statistically significant (Snijders, 2016; Acock, 2012; Howitt & Cramer, 2011).

Annova stands for analysis of variance. It is mostly used in experimental research, however it can also be used with survey data. A one-way annova is used in this research, since only one independent variable is used. When executing an annova test, one checks whether there is a significant difference across the interval variable between the categories of the categorical variable. It analyses the differences between the means of more than two groups. Therefore, just like the t-test, Annova assumes normal distribution across each category of the categorical variable (Snijders, 2016; Acock, 2012; Howitt & Cramer, 2011).

There must be noted here that for all combinations of variables or variants of variables combining questions one can run tests looking for significant relations. However, this would mean the number of tests that can possibly be run is almost endless. For example, with about 40 questions asked in this survey (excluding the control questions), one could run  $40!$  tests, so  $8.16 \times 10^{47}$ . Running so many tests is simply not possible for this research. Therefore, a selection of tests has been executed by the researcher. This research focuses on looking for possible relations between variables like age, gender, branch, versus the importance of sustainability, price, or comfort according to the respondents. Therefore, possible relations between these variables were tested extensively. In this research was first looked for relations between the demographic variables and the most important attributes of the toilet paper as considered in this research. This includes the sustainability of the paper, the possession of an ecolabel, the softness of the paper, and the price. Because it would be too time consuming to look for relations between every single attribute on sustainability, the answers provided to the questions on sustainable attributes were merged into one variable. After that was looked for relations among the most important attributes.

### **3.3.2 Survey B2C market**

#### **3.3.2.1 Goal of the survey**

To analyse the customers' behaviour and choices in the B2C sector, a survey was designed (N=153). Again, the goal of the survey is twofold; to test whether the motivational factors found in the literature will also be as regarded as important factors for their sustainable behaviour by the customers themselves and to come up with a complete list of attributes, ranked in order of importance. Same as in the survey held in the B2B market, both sustainable attributes and not-sustainability-related attributes will be investigated.

#### **3.3.2.2 Survey Layout**

As with the survey for the B2B sector, the questions the survey for the B2C were divided into a number of categories. Most of these categories in the surveys are the same, however, there is a difference in the category on ecolabels. Prior to the distribution of the survey, it became clear that it was highly likely that customers in the B2C market attach much less value to ecolabels than customers in the B2B market. Therefore, instead of nine questions on ecolabels, only two questions have been asked in this survey. Namely to rank the importance of ecolabels on the Likert scale and to name the ecolabels they knew of, as to test their knowledge on these labels. These two questions were integrated in the category on importance of sustainable attributes.

This results in the following categories:

1. Demographics
2. Motivation for sustainability
3. Importance of sustainable attributes
4. Importance of not-sustainability-related attributes
5. Set of questions that combines different elements
6. Open questions to check if any attributes were left out.

Again, these categories were divided into a number of sub-questions. The complete list of questions can be found in appendix 2.

The demographic set of questions in the survey for the B2C market concerned questions about gender, age, household size, household income, the store where the respondents buy toilet paper and whether the respondents buy sustainable toilet paper. Again, these questions are meant to get acquainted with the respondents and get insight in their background characteristics to understand them better.

The questions in categories two till four remained the same as in the survey provided to the B2B sector, whit as exceptions the motivators that the respondents were asked about and the part on ecolabels as mentioned before. These questions were meant to get insight into the main goals of the survey; the respondents' motivators for sustainable choices and the importance of both sustainability related attributes and the not-sustainability related attributes. These questions were also asked with the use of a Likert-scale.

As well as with the other survey, a set of combination questions were asked in the survey and the survey was closed off with an open question on whether the respondent felt any attributes were missing.

### **3.3.2.3 Survey design**

For consistency and comparability purposes the questionnaire distributed in the B2C sector was mostly the same as in the B2B sector. However, the questions on motivational factors differ naturally since the theory described different motivators for both the B2B and B2C sector. The questions on motivational factors in this survey were based on the literature as described in chapter 2.2.3. The questions in the survey on the other categories remained the same, expect for the questions on ecolabels as explained before.

As with the survey for the B2B sector, a number of experts were asked beforehand to give some first insights into the market. Unfortunately, only one of these parties was willing to disclose their insights, namely supermarket chain Jumbo. They provided two striking pieces of information to be taken into account for this research. First of all, they were willing to share information on the numbers of sales of sustainable variants of toilet paper. Jumbo declared that only 0.4% of the total sales of toilet papers could be ascribed to sustainable variants (taking into account toilet paper from the good roll and Jumbo's eco toilet paper). Next to that, they disclosed an important insight into ecolabels. They declared that not a lot of customers look at ecolabels, since customers do not feel that ecolabels and their meaning are clear to them. Both insights are deemed to very relevant for this research and will be beard in mind to come back upon later on in this research.

### **3.3.2.4 Sampling**

The target audience for this survey are all individual customers living in the Netherlands that buy toilet paper. That means that most of the Dutch population is suitable to answer this survey, perhaps only kids or elderly or other individuals that do not buy toilet paper themselves are not targeted by this survey.

At first, the researcher intended to ask consumers in the supermarkets to answer the survey. However, due to the outbreak of the COVID-19 virus, this became an unethical manner of executing research at that point in time. Therefore, the researcher has chosen to distribute this survey online. It was shared on the researchers' personal social media platforms, namely on Facebook and LinkedIn and it has been sent to contacts of the researcher via WhatsApp. Hereby, several acquaintances of the researcher also shared the survey within their own personal networks to increase the number of respondents. In this process, the researcher did her utmost best to get a diverse set of respondents, to avoid biases in the data from not having differences in age, gender, income, background, or ethnicity of the respondents to develop a representative sample. Therefore, convenience sampling was used here as well; no specific group was targeted in particular.

### 3.3.2.5 Analysing results

As with the survey for the B2B sector, the data retrieved has been analysed using Excel and Stata. Excel was used to calculate the mean, standard deviation and the skewness. As well as percentages were calculated with Excel and total scores were calculated in order to draw some conclusions on the ranking question. Stata was used as well to make calculations on the relations between variables. The same tests were used to run this analysis: namely the t-test,  $\chi^2$ , correlation and annova. Below in table x an overview can be found as to which question correspond with what type of variable. Again, a limited number of tests have been run here, since it is impossible to run every single test that could be executed. First was checked for any relations between the most important attributes of the paper and the demographic variables. After that was looked for relations among the most important attributes.

<i>Variable</i>	<i>Kind of variable</i>
<b>Gender</b>	<i>Categorical variable with 2 categories</i>
<b>Age</b>	<i>Interval</i>
<b>Household size</b>	<i>Interval</i>
<b>Income</b>	<i>Interval</i>
<b>Store</b>	<i>Categorical</i>
<b>All variables using likert scale</b>	<i>Interval</i>

*Table 3 types of variables B2C sector*

## 3.4 RELIABILITY AND VALIDITY

Reliability is about whether a study can be repeated and would show the same results. The researcher would have to ask himself questions like; whether he explained all procedures in enough detail, whether he has been biased and whether he presented the research transparently (Bryman, 2012; Howitt & Cramer, 2011). To ensure this in this research, the steps taken, and the results have been presented as transparent as possible to maximize the reliability to the fullest extent.

On the other hand, is validity. Validity can be divided into two subcategories namely, internal- and external validity. Internal validity looks at whether the conclusions drawn appears to be valid and whether a test did measure what it was intended to measure. One way to ensure internal validity is by data triangulation. Data triangulation is using several methods to study the same phenomenon. When the methods used show the same results, the outcomes are more credible. (Bryman, 2012; Howitt & Cramer, 2011). In this research, data triangulation is ensured by using literature, documents, expert interviews, and surveys as information sources.

External validity is about whether the results of the study can be generalized. It is concerned with the replicability in other situations or settings. To ensure the results are as generalizable as possible, several measures have been taken. For the B2B sector, distributing the survey among customers and non-customers of Vendor ensures more reliable outcomes. And for the B2C sector the survey was shared among different social media platforms whereby the researcher will do her utmost best to avoid biases in the data from not having differences in age, gender, income, background or ethnicity of the respondent. However, due to time constraints and the limitations of this research, both surveys did not attract enough respondents in order for the results to be generalizable over the whole population. Therefore, the results of the survey are not statistically valid and will not represent the whole population.

## 4 RESULTS

In this chapter the results of the surveys distributed in both the B2B sector and the B2C sector are portrayed. The results found in the B2B sector will be shown first, followed by the B2C sector. For both sectors, the results will be discussed per category of questions, namely: demographics, motivational factors, ecolabels (only for B2B sector), sustainable attributes, not-sustainability-related attributes, combination questions and final question.

### 4.1 RESULTS B2B MARKET

#### 4.1.1 Overview respondents

<b>Number of respondents</b>	N=74				
<b>Gender</b>	Male - 53%			Female - 47%	
<b>Age</b>	20-29 - 11%	30-39 - 31%	40-49 - 24%	50-59 - 31%	60-69 - 3%
<b>Branche</b>	Automotive - 4%	Food - 4%	Education - 7%		Industry - 14%
	Logistics - 3%	Leisure - 5%		Business services - 64%	
<b>Responsible for decision about facilities</b>	Yes - 56%			No - 44%	
<b>Vendor customer</b>	Yes - 18%	No - 60%		Do not know - 21%	

Table 4 overview respondents B2B sector

Table 4 gives an overview of the respondents to the survey distributed in the B2B sector. The results displayed in table X show that 74 people responded to the survey. They seem to be almost evenly spread across gender; 53 percent of them is male and 47 percent is female. Most respondents fall in the age groups of 30-39, 40-49 and 50-59, by which 30-39 and 50-59 account for more than 30% each and 40-49 for 24%. 14% of the respondents is below 30 or above 59. By far most of the respondents work in business services, namely 64%. The second largest group work in industry, 14%. The other branches mentioned, automotive, food, education, logistics and leisure, each account for around 5% of the branches the respondents work in. A little more than half of the respondents is responsible for decisions within their company concerning its facilities. Only 18% of the respondents indicated that the company they work at is a client of Vendor. 60% is not a customer of Vendor and 21% does not know whether the company they work for buys toilet paper from Vendor.

#### 4.1.2 Results motivational factors

	Mean	Standard Deviation	Skewness
6. Sustainability is important for your company	4.11	0.91	-1.26
8. Sustainability is important for your company because it is legally required.	2.34	0.97	0.27
9. Sustainability is important for your company because it is the right thing to do.	4.36	0.69	-1.90
10. Sustainability is important for your company because more profit can be obtained with it.	2.81	1.13	-0.02
11. Sustainability is important for your company because it became the norm within the market.	3.31	0.94	-0.77

Table 5 results motivational factors B2B sector

Table 5 shows the answers provided to the questionnaire on the category motivational factors. This category was about what the respondents' company motivates to act sustainable. Insights in these motivational factors will help in determining how customers can be stimulated even more to buy sustainable variants of toilet paper.

The mean for the first questions in this category is quite high, so a lot of respondents think that sustainability is important to their company. The skewness on this also stands out; it is a relatively high number. This means that the distribution is highly skewed to the left, and therefore the biggest part of the sample thought that this is more than average important. These two factors together indicate that the sample does think sustainability is important for their company.

They reported that the factor motivating them the most to act sustainable is “because it is the right thing to do”. The standard deviation on this motivator is also low in comparison, meaning that the opinions on this matter differ less than for other questions. And last of all, this factor is negatively skewed with quite a high number. So, one could say that doing the right thing is very important to the respondents.

The second biggest motivator when looking at the means is “because it became the norm in the market”. The mean on this motivator is slightly lower, but this factor still scored quite high in comparison. The standard deviation and the skewness are average in comparisons to the other questions.

The respondents ranked “profit” as their third motivator to act environmentally friendly. However, the standard deviation on this matter is the highest in comparison to the other questions in this category and the skewness is the closest to zero. This means that the opinions on this matter differ a lot.

The factor on “legally required” scores the lowest according to the sample. This is also the only motivator that got a negative skewness, so the mass of the answers provided is on the right side. This means that the sample thought this motivator is less important than average.

#### 4.1.3 Results ecolabels

	Mean	Standard Deviation	Skewness
13. It is important that toilet paper has an ecolabel.	3.40	1.13	-0.60
15. It is important that the wood chips used to make toilet paper come from sustainably managed forests.	4.43	0.81	-1.75
16. It is important that toilet paper is produced in an environmentally friendly manner.	4.58	0.52	-0.63
17. It is important that toilet paper is completely biodegradable.	4.55	0.60	-1.00
18. It is important that toilet paper has a cradle-to-cradle label.	3.66	0.84	-0.39
19. It is important that toilet paper has an FSC label.	3.74	0.92	-0.75
20. It is important that toilet paper has an EU ecolabel.	3.55	0.85	-0.38
21. It is important that toilet paper has a Nordic swan label.	3.30	0.81	0.21

Table 6 results ecolabels B2B sector

Table 6 shows the results for the answered provided to the category ecolabels. For the first questions “it is important that toilet paper has an ecolabel”, the standard deviations is already quite high. This means that the opinions on this subject differ a lot.

After that, question 15 till 17 score relatively the same. And the numbers for the specific ecolabels in questions 18 till 21 are relatively close to each other. Questions 15 till 17 asked after matters that are directly linked to the ecolabels. So, the FSC label is about sustainably managed forest. The cradle-to-cradle label is about biodegradable toilet paper. And the EU ecolabel and the Nordic swan ecolabel are both about toilet paper being produced in an environmentally friendly manner. However, the scores on the matters addressed by the ecolabels (so the scores on questions 15 till 17) are a lot higher than the scores for the actual ecolabels.

When ranking the answers to question 15 till 17, even though the scores are quite close together, one could say that from these matters addressed by ecolabels, respondents found the EU ecolabel and the Nordic swan ecolabel the most important, followed by the cradle-to-cradle label and last of all the FSC label. What must be said here is that especially for questions 15, but also for questions 17 the distribution is highly skewed to the left. Meaning that the mass of the sample thought that the matters addressed in these questions are more than average important.

However, when the respondents were asked to rank these labels in direct questions (in questions 18 till 21), again the scores are quite close, but they would rank the FSC label first, followed by cradle-to-cradle label, then EU ecolabel and Nordic swan ecolabel last. So, they ranked the labels in a different order then they ranked the importance of the different environmental impacts these ecolabels are aiming to diminish.

As mentioned in chapter 3.3.1.2, all question categories were closed off with a ranking question. The answers provided to the ranking questions were looked at here, due to the conflicting nature of the answers to the questions above. However, when looking at the sum of the ranks of the ecolabels, the outcome to the ranking question does not provide more clarity in this case. In this ranking question, The FSC label scored the lowest, meaning that this could be regarded as the most important label. The FSC label was followed by the EU ecolabel and the cradle-to-cradle label after that. Nordic swan ecolabel scored the highest and is therefore regarded to be the least important ecolabel.

#### 4.1.4 Results sustainable attributes

	Mean	Standard Deviation	Skewness
23. <i>It is important that toilet paper is produced in a CO<sub>2</sub> neutral manner.</i>	4.23	0.63	-0.22
24. <i>It is important that toilet paper is produced with green energy.</i>	3.97	0.70	0.04
25. <i>It is important that as little power as possible is used to make toilet paper.</i>	4.26	0.64	-0.29
26. <i>It is important that as little water as possible is used to make toilet paper.</i>	4.26	0.70	-0.65
27. <i>It is important that as few chemicals as possible are used to make toilet paper.</i>	4.55	0.55	-0.72
28. <i>It is important to minimize greenhouse gasses emissions in the toilet paper production process.</i>	4.47	0.55	-0.39
29. <i>It is important to minimize CO<sub>2</sub> emission in the toilet paper production process.</i>	4.39	0.54	-0.08
30. <i>It is important that as few trees as possible are cut down to make toilet papier</i>	4.55	0.58	-0.88
31. <i>It is important that toilet paper is made from recycled paper.</i>	4.41	0.62	-0.53

Table 7 results sustainable attributes B2B sector

This table displays the results for the questions asked on sustainable attributes. There are two things that stand out from these results; they are relatively close together in terms of means and standard deviation, and that these means are relatively high and standard deviation low. This would mean that the respondents think sustainable attributes are important for toilet paper.

The highest means are ascribed to the usages of as few chemicals as possible and for cutting as few trees as possible. These two attributes also are the most skewed to the left. That means that the mass of the answers provided is a concentrated on the right side. So, the respondents believe that these factors are more important than average.

Relatively close to these two attributes are the attributes on minimizing greenhouse gasses and on making toilet paper out of recycled paper. These two attributes are skewed to the left, but less than the two attributes named earlier.

The mean of the following sustainable attribute is again quite close, but the skewness is closer to zero. This attribute is on minimizing CO<sub>2</sub> emissions in the production process. This means that the distribution is closer to a normal distribution and the mass of the answers provided barely lies on the left side.

The next three attributes all scored a mean in the 4.20's: namely production in a CO<sub>2</sub> neutral manner, production with as little power as possible and production with as little water as possible. The standard deviation for these questions is a little higher than for the other questions. This means that the opinions are slightly more divided on these topics in comparison to the other questions. The skewness indicates that all three are still slightly skewed to the left.

The sustainable attribute that scored to lowest in its mean is the attribute on using green energy in the production process. This attributes also has the highest standard deviation and is the closest to having a normal distribution. So, it has the lowest average, but opinions also differ the most on this matter.

Since the results provided here are relatively close together, the ranking questions was looked at again for this category of questions. This again provides different answers. Ranked first and second, with almost the same score are CO<sub>2</sub> neutral production and the usage of as less chemicals as possible. The usage of less chemicals also scored highest in terms of its mean, but CO<sub>2</sub> neutral production scored relatively lower. In the ranking question, these are followed by the usage of as little water as possible and as few trees as possible being cut. By which in this turn the first scored very high in terms of its mean and the latter scored lower. Place 5 and 6 are ascribed to the attributes on minimizing energy usage and made out of recycled paper. Minimizing energy usage scored 7<sup>th</sup> in terms of means and made out of recycled paper scored fourth. The attributes that scored the lowest in the ranking question were the usage of green energy, CO<sub>2</sub> emissions and last of all minimizing greenhouse gas emissions. The green energy attribute also scored the lowest in the results above, but CO<sub>2</sub> and greenhouse gas emissions scored relatively higher.

#### 4.1.5 Results other functional attributes

	Mean	Standard Deviation	Skewness
33. <i>It is important that toilet paper is not too expensive</i>	3.43	0.88	-1.57
34. <i>It is important that the company where you buy your toilet paper provides good customer service.</i>	3.76	0.82	-0.85
35. <i>It is important that toilet paper is soft</i>	3.89	0.68	-0.14
36. <i>It is important that toilet paper consist out of multiple layers</i>	3.72	0.82	-0.79
37. <i>It is important that toilet paper is strong</i>	3.36	1.15	-1.45
38. <i>It is important that toilet paper dissolves easily</i>	4.09	0.80	-1.15
39. <i>It is important that toilet paper is white</i>	2.28	0.93	0.13

Table 8 results not-sustainability related attributes B2B sector

Table 8 shows the mean, standard deviation, and skewness of the answers that the respondents gave to the category of questions on not-sustainability-related attributes. What stands out immediately is the lowest mean in the row. The question “it is important that toilet paper is white” scored only a 2.28 on average. One could therefore say that the respondents do not feel it is very important that the toilet paper is white.

However, what they do feel is important, is that the paper dissolves easily. The mean on this question is the highest. The answers are also fairly left skewed. This means that the mass of the answers provided lies on the right side.

Ranked second, third and fourth in terms of mean are; whether the paper needs to be soft, good service is provided and if it consists out of multiple layers. The number of layers often determines how soft the paper is, so these two questions are intertwined. The standard deviation on these three questions is also quite average, meaning that the respondents agreed to a certain extent on the importance of these attributes. In comparison to the other questions here, both are relatively left skewed. So, the mass of the answers on these questions are concentrated on the left side.

Next up are the price and how strong the paper is. Their means are quite close, but the standard deviation on the strength of the paper is a lot higher. That means that opinions on this matter differ more among the respondents.

Overall, one can say from this that solubility of the paper is the most important attribute in this category according to the respondents. And the whiteness of the paper is by far the least important attribute. All the other attributes differ less in mean and are in between these two attributes.

#### 4.1.6 Results combination questions

7.1.6 Results combination questions				
41. What do you think is more important, comfortable, or sustainable toilet paper?	Comfortable - 28%		Sustainable - 72%	
42. What do you think is more important, cheap, or comfortable toilet paper?	Cheap - 19%		Comfortable - 81%	
43. What do you think is more important, cheap, or sustainable toilet paper?	Cheap - 11%		Sustainable - 89%	
44. Are you willing to pay more for sustainable toilet paper?	No - 9%	Yes, 10% - 39%	Yes, 20% - 34%	Yes, 30% - 8%
	Yes, 40% - 3%	Yes, 50% - 7%	Yes, more than 50% - 0%	
Average	Yes, 18%			
45. Are you willing to pay more for comfortable toilet paper?	No - 20%	Yes, 10% - 36%	Yes, 20% - 30%	Yes, 30% - 4%
	Yes, 40% - 3%	Yes, 50% - 7%	Yes, more than 50% - 0%	
Average	Yes, 15%			

Table 9 results combination questions B2B sector

In table 9, the results of the combination questions are displayed. In the first question was asked, whether the respondents felt was more important, comfortable toilet paper or sustainable toilet paper. Most of them, 72%, said sustainable toilet paper. In the second questions for this category, the same was asked, only on cheap versus comfortable toilet paper. The majority, 81% chose for comfortable paper. The third question here compared cheap and sustainable toilet paper. Here, only 11% said cheap paper is more important to them. This together means that one could say from this that the respondents do not feel it is very important that toilet paper is cheap when compared to the other two factors. They do feel that comfortable toilet paper is significantly more important over cheap paper, but they ranked sustainability as the most important characteristic.

This could also be seen in the last two questions. On average, the respondents were willing to pay 15% more for comfortable toilet paper, and 18% more for sustainable toilet paper. So, the differences here are quite small, but in favour of sustainable forms of paper.

#### 4.1.7 Results overlooked attributes

Concerning the overlooked attributes there are a couple of characteristics of the paper the respondents felt were left out. These came back multiple times in the open question asked in this survey.

First of all, the packaging of the paper was mentioned several times. When toilet paper is wrapped in plastic, this could also be regarded as damaging to the environment. Next to that the distance the paper needed to travel to reach the customer was also mentioned as a factor that needs to be taken into consideration by some of the respondents. However,

this research is about the paper itself, other factors that are not directly characteristics of the paper or about motivators have not been considered. These could unfortunately not be taken into account because they are outside the scope of this research and do not contribute to answering the questions that were sought to answers in this research.

Another attribute that was mentioned several times is the smell of the paper. Some types of toilet paper are perfumed. This is a characteristic of the paper; however, this attribute was not mentioned in any of the document examined at Vendor or by any of the experts. Therefore, when designing this survey, the researcher was not aware that this attribute perhaps should have been included in this research. However, it is also highly possible that the respondents here referred to the smell of the toilet area. But again, this is not a direct attribute of the paper, but more of its environment and can therefore not be taken into account in this research.

#### 4.1.8 Results demographic factors

Stata was used to check for any significant relations between variables. A large number of tests have been executed. However, only the cases in which a significant relation was found are mentioned here, since a lot of tests has been done with as goal to find significant relations. When no significant relations are found, this is less interesting. Nevertheless, all tests executed have been added in appendix 3.

Two significant relations were found here. The first one between age and the combined sustainability coefficient. For this last variable the average scores the respondents gave to the sustainable attributes (question 23 till 31) were calculated. This to get an average of the importance placed on the sustainability of the toilet paper by the respondents. The

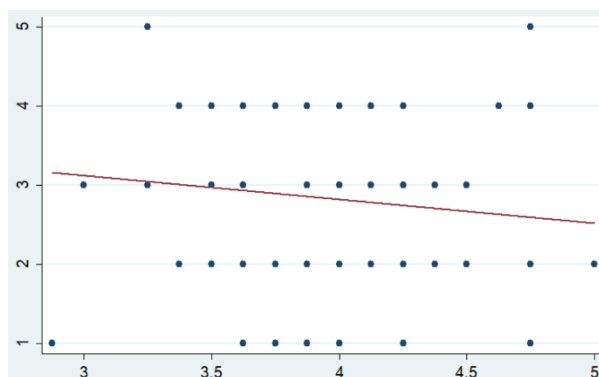


Figure 6 scatterplot aged-combined sustainability B2B

significant correlation found here equals -0.25, this indicates that the higher a respondents' age, the less important they found the combined sustainable attributes of the toilet paper to be. This could also be deducted from the scatterplot in figure 6. On the vertical axes, the age categories (1-20-29; 2-30-39; 3-40-49; 4-50-59; 5-60-69) are portrayed. On the horizontal axes, the mean score given to the sustainable attributes (1-5) can be seen. The correlation is the extent to which a straight

line fits the scatterplot. The correlation of -0.25 means that the correlation was medium to low. This could also be deducted from the scatterplot since the dots are fairly spread out, not close to the established line.

The second significant relation was found between the variable combining question 41 till 43 and branch. For each of these questions 41-43 respondents had to choose between two of the following elements: comfort, price, and sustainability. When combining the answers to these questions, one can create a ranking from 1 to 3 and thereby see which one of these elements are most to least important according to the respondents. The variable created here therefore portrays six different rankings. The significant score found here means that equal distribution across the columns is rejected. This means that respondents in the different branches rank the three elements (comfort, price, or sustainability) in a different order and thereby attach more importance to different elements. For example, it seems that the respondents in the automotive sector value comfort more than average and in the food sector sustainability seems to be valued more than average.

## 4.2 RESULTS B2C MARKET

### 4.2.1 Overview respondents

<b>Number of respondents</b>	N=153				
<b>Gender</b>	Male - 33%			Female - 68%	
<b>Age</b>	Below 20 - 1%	20-29 - 49%	30-39 - 20%	40-49 - 12%	
	50-59 - 9%		60-69 - 8%	Over 69 - 1%	
<b>Household size</b>	1 - 20%	2 - 42%	3 - 12%	4 - 13%	More than 4 - 13%
<b>Household gross income per year</b>	Below 28 500 - 20%		28 501 - 66 800 - 32%		66 801 - 87 800 - 12%
	Over 87 800 - 14%		I don't know - 11%		I'd rather not say - 20%
<b>Buys toilet paper</b>	Yes - 95%			No - 5%	
<b>Store were respondents buy toilet paper</b>	Albert Heijn - 37%	Jumbo - 15%	ALDI or LIDL - 26%	A Superunie supermarket - 7%	Other - 15%
<b>Respondent buys sustainable toilet paper</b>	Never - 19%		Sometimes - 27%		Regularly - 8%
	Often - 9%		Always - 7%		I do not know - 30%

Table 10 overview respondents B2C sector

This table gives an overview on the respondents to the survey distributed in the B2C sector. The results displayed in table 6 show that 153 people responded to the survey. 33 percent of them is male and 68 percent is female. Furthermore, almost half of the respondents are between the ages of 20 till 29. The second largest age group is from 30 till 39, accounting for 20 percent. The age groups 40-49, 50-59 and 60-69, each account for around 10% of the respondents. Only one respondent is below 20 years old and only two above 69. Most of the respondents live in small households, they live alone or with one other person. However, still almost 40 percent of the respondents lives in a household with 3 or more people. Most of the respondents, 52%, declared that their household incomes is below average in the Netherlands. 26% of the respondents have indicated that their income is above average and around 30 percent does not know or does not want to share the height of their income. Almost all respondents buy toilet paper for their household on a regular basis. Most of them buy this toilet paper at Albert Heijn, followed by ALDI or LIDL, and Jumbo. Last of all in this category was asked whether the respondents buy sustainable toilet paper. A little less than half answered never or sometimes. 26% Answered regularly, often or always. And 30% didn't knew.

### 4.2.2 Results motivational factors

	Mean	Standard Deviation	Skewness
7. Sustainability is important	3.95	0.92	-1.22
8. Sustainability is important because it is the right thing to do.	4.03	0.92	-1.45
9. Sustainability is important because the people in your surrounding think so.	2.27	0.93	0.30
10. It is important that when you buy a sustainable product, you feel you contribute to solving climate related issues.	3.50	0.87	-0.62

Table 11 results motivational factors B2C sector

Table 11 displays the results for the questions asked on what motivates consumers to buy sustainable products. Ethical concerns is the most important motivator for the respondents. The motivator that ranks second according to the respondents is perceived effectiveness. When they buy a sustainable product, they feel that they contribute to a more sustainable world. The mean, standard deviation and skewness are all slightly lower than the motivator ranked first. This all consistently points at the motivator being somewhat less important to the respondents. The motivator with the lowest mean in this list is the one about social pressure. This motivator even scored less than average and has a positive skewness. The later means that the mass of the answers lies on the left side.

### 4.2.3 Results sustainable attributes

	Mean	Standard Deviation	Skewness
15. <i>It is important that toilet paper is made from recycled paper.</i>	3.73	0.84	-0.42
16. <i>It is important that as few trees as possible are cut down to make toilet paper</i>	4.28	0.73	-1.11
17. <i>It is important to minimize greenhouse gasses emissions in the toilet paper production process.</i>	4.21	0.75	-1.60
18. <i>It is important to minimize CO<sub>2</sub> emission in the toilet paper production process.</i>	4.15	0.78	-1.43
19. <i>It is important that toilet paper is produced in a CO<sub>2</sub> neutral manner.</i>	3.88	0.85	-0.50
20. <i>It is important that as little power as possible is used to make toilet paper.</i>	3.88	0.93	-0.70
21. <i>It is important that toilet paper is produced with green energy.</i>	3.81	0.96	-0.75
22. <i>It is important that as little water as possible is used to make toilet paper.</i>	4.08	0.80	-1.00
23. <i>It is important that as few chemicals as possible are used to make toilet paper.</i>	4.17	0.83	-1.22
24. <i>It is important that toilet paper has an ecolabel</i>	No - 60%		Yes - 40%
25. <i>Which label is important for toilet paper? % that answered with a specific label.</i>	13% Of all respondents		24% That said yes to question 24

Table 12 results sustainable attributes B2C sector

In table 12, the mean, standard deviation and skewness for the attributes related to sustainability are portrayed. All sustainable attributes score high in terms of importance to the respondents. The means are quite high, standard deviation is about the same for all attributes and all attributes are left skewed.

The two attributes that score the highest means are the ones on cutting of as few trees as possible and minimizing greenhouse gas emissions. But those attributes are also highly left skewed, by which the second one is the most left skewed out of all questions asked in this survey. From that, one can say that the respondents indeed find these two attributes important.

The next three that are quite close to each in their respective means are; using as few chemicals as possible, minimizing CO<sub>2</sub> emissions and using as little water as possible. Especially the second one here scores high in terms of being skewed to the left, but the

other two are still also relatively left skewed. Again, together with the mean, this does portray the concern of the respondents for these attributes.

The next two attributes in the ranking scored the same mean. These are CO<sub>2</sub> neutral production and using as little power as possible in the production process. And the two attributes that are ranked last are production using green energy and making toilet paper out of recycled paper. For all four, the answers became less skewed to the left, also indicating the declining importance to the respondents. However, for all these questions, the standard deviation also became slightly higher, indicating that the answers among respondents differ more.

Because all the means here lie close together again for the sustainable attributes, the ranking question was checked here as well. However, the answers here are quite consistent. All attributes were ranked in the same order in terms of their means in comparison to the ranking question, except for one. The odd one out here, is the attribute on using recycled paper to make toilet paper. In terms of mean, it scored last, but in the ranking question this attribute scored 5<sup>th</sup> place, pushing all the attributes from place 5 till 8 in terms of their means one place lower in the ranking question.

Last of all in this category of questions, the answers provided to the questions on the ecolabels should be discussed here, as the ecolabels were merged into this category in the survey for the B2C sector. To the question: “It is important that toilet paper has an ecolabel”, 60% of the respondents answered “no” and 40% answered “yes”. The question that followed asked for the respondents which ecolabel they found important. However only 24% of the respondents that answered yes to the previous question named a specific label as answer to this question.

#### 4.2.4 Results other functional attributes

	Mean	Standard Deviation	Skewness
27. It is important that toilet paper is not too expensive	4.00	0.80	-0.95
28. It is important that toilet paper is soft	4.03	0.88	-0.95
29. It is important that toilet paper consist out of multiple layers	3.78	0.93	-0.66
30. It is important that toilet paper is strong	4.18	0.76	-1.34
31. It is important that toilet paper dissolves easily	4.38	0.70	-1.26
32. It is important that toilet paper is white	2.08	1.01	0.71

Table 13 results not-sustainability related attributes B2C sector

Table 13 shows the results for the answers provided by the respondents to the questions on the not-sustainability related attributes. What stands out here is, is that almost all means are quite high, except for one, namely whether the toilet paper is white. This is also the only attribute in this table that is right skewed. Another interesting observation from this table is, when making a ranking of the attributes in terms of means, the standard deviation consistently goes up per place in the ranking and the skewness for almost all attributes becomes higher alongside.

The attribute that is ranked first here by the respondents is the easy dissolvment of the paper in water. The standard deviation is low, and the distribution is fairly left skewed for this question. All this indicates that the respondents find this an important attribute for toilet paper. This is understandable since their sewage system could get clogged otherwise.

Next in line is that the toilet paper should be strong. This distribution for this attribute is even more skewed towards the left. So, the mass of the answers provided by the respondents lies even further to the right side. One could therefore say this attribute is certainly viewed as important by the respondents.

Third and fourth in terms of means are the toilet paper being soft and it not being too expensive. The standard deviation for both questions lies close together and the skewness is the same. It can be argued therefore that these two attributes are regarded as equally important by the respondents.

Ranked fifth is the toilet paper consists out of multiple layers. Again, its mean is getting lower, standard deviation is going slightly up and the skewness is getting higher in comparison to the attributes named before. The softness of the paper is determined by the number of layers, so these two attributes are interlinked. The paper being soft did get a higher mean from the respondents, but the differences are still quite small.

As mentioned, the last attribute, whether the toilet paper is white is the only attribute of which the mean is outstandingly low in this list. It is right skewed, but the standard deviation is also slightly higher than for the attributes. This means that the opinions also differ more on for this attribute.

#### 4.2.5 Results combination questions

7.2.9 Results combination questions				
46. What do you think is more important, comfortable, or sustainable toilet paper?	Comfortable - 63%		Sustainable - 38%	
47. What do you think is more important, cheap, or comfortable toilet paper?	Cheap - 25%		Comfortable - 75%	
48. What do you think is more important, cheap, or sustainable toilet paper?	Cheap - 41%		Sustainable - 59%	
49. Are you willing to pay more for sustainable toilet paper?	No - 11%	Yes, 10% - 39%	Yes, 20% - 32%	Yes, 30% - 11%
	Yes, 40% - 0%	Yes, 50% - 5%	Yes, more than 50% - 2%	
Average	Yes, 17%			
50. Are you willing to pay more for comfortable toilet paper?	No - 1%	Yes, 10% - 36%	Yes, 20% - 27%	Yes, 30% - 10%
	Yes, 40% - 5%	Yes, 50% - 3%	Yes, more than 50% - 3%	
Average	Yes, 17%			

Table 14 results combination questions B2C sector

In table 14, the results of the answers provided by the participants to the combination questions are shown. As with the questionnaire for the B2B sector, the first question that was asked in this category was whether the respondents felt that sustainable or comfortable toilet paper is more important. However, the answers are very different. In this case, 63% of the respondents chose for comfortable paper over sustainable paper. For the second question here, the majority, 75%, of the respondents chose for cheap paper instead of comfortable toilet paper. In the third question the respondents had to choose between cheap and sustainable paper. For this question the answers were closer together; 59% chose for sustainable toilet paper and 41% for cheap paper. The answers to these questions indicate that the respondents feel that the comfort of the paper is the most important aspect out of these three elements, followed by sustainability. They seem to care the least about the price of the paper.

Nevertheless, the answers provided to the last two questions in this category have slightly different outcomes. The answers here indicate that the respondents are on average willing to pay 17% more for sustainable toilet paper and also the same percentage for comfortable toilet paper.

#### **4.2.6 Results overlooked attributes**

Several aspects that were also named in the open question by the respondents in the questionnaire for the B2B sector were named again in this survey. For example, the packaging of the paper and the smell were named again. However, as explained before these aspects lie outside the scope of this research.

But there was one other attribute that was also named by the respondents several times as answer to what attributes were missing in the questionnaire. Some of them expressed that they also find it important that the type of toilet paper is easy to buy and/or available in large packs. However, this is also not a direct characteristic of the paper and therefore lies outside of the scope of this research.

#### **4.2.7 Results demographics factors**

For the B2C sector, only one significant relation was found when testing the demographic variables versus the variables on the most important attributes of the toilet paper. This significant relation was found for the ranking deducted from the answers given to question 35 till 37 and the age of the respondents. As described in part 4.1.7, this first variable portrays six different rankings of the elements comfort, price, and sustainability. The relation found here indicates that respondents across the different age groups ranked the three elements (comfort, price, or sustainability) in a different order and thereby attached more importance to different elements.

Next to that, two significant relations were found between variables not related to demographics, among the variables that portrayed the most important attributes of the toilet paper. A correlation of -0.20 was found between the variable on the price of the paper and the paper having an ecolabel. This indicates that respondents that attach greater importance to the costs of the paper attach lesser value to the paper having an ecolabel and the other way around. The correlation of -0.2 means that this correlation is medium to low. The second significant correlation was of 0.21 found between the importance of the price and it being soft among the respondents. This indicates that the respondents considered the price of the paper to be equally important to the softness of the toilet paper. The correlation of 0.21 means that this correlation is also medium to low. All tests executed have been added in appendix 4.

### 4.3 RESULTS DIFFERENCES BETWEEN THE B2B AND B2C SECTORS

The answers provided to the survey and in the B2B market and B2C market were merged and checked for any significant differences between the sectors in Stata. However, no significant differences were found whatsoever between any of the answers provided by the respondents in the B2B and B2C sector. All tests executed have been added in appendix 5. Below table 15 portrays an overview of all the results found in both sectors.

	B2B	B2C
<b>Motivators</b>	<ol style="list-style-type: none"> <li>1. Ethical concerns</li> <li>2. Norm in the market</li> <li>3. Profit</li> </ol>	<ol style="list-style-type: none"> <li>1. Ethical concerns</li> <li>2. Perceived effectiveness</li> </ol>
<b>Ecolabels</b>	55% says it is important. Confusion present.	40% says it is important. Confusion present.
<b>Sustainable attributes</b>	<ol style="list-style-type: none"> <li>1. Minimizing chemical use</li> <li>2. Cutting less tress</li> <li>3. Minimizing GHG emissions</li> <li>4. Using recycled paper</li> <li>5. Minimizing CO2 emissions</li> <li>6. CO2 neutral</li> <li>7. Minimizing power usage</li> <li>8. Minimizing water usage</li> <li>9. Green energy usage</li> </ol>	<ol style="list-style-type: none"> <li>1. Cutting less tress</li> <li>2. Minimizing GHG emissions</li> <li>3. Minimizing chemical use</li> <li>4. Minimizing CO2 emissions</li> <li>5. Minimizing water usage</li> <li>6. CO2 neutral</li> <li>7. Minimizing power usage</li> <li>8. Green energy usage</li> <li>9. Using recycled paper</li> </ol>
<b>Not-sustainability related attributes</b>	<ol style="list-style-type: none"> <li>1. Solubility</li> <li>2. Softness</li> <li>3. Good service</li> <li>4. Multiple layers</li> <li>5. Price</li> <li>6. Strong</li> <li>7. White</li> </ol>	<ol style="list-style-type: none"> <li>1. Solubility</li> <li>2. Strong</li> <li>3. Softness</li> <li>4. Price</li> <li>5. Multiple layers</li> <li>6. White</li> </ol>
<b>Combination questions</b>	<ol style="list-style-type: none"> <li>1. Sustainability</li> <li>2. Comfort</li> <li>3. Price</li> </ol>	<ol style="list-style-type: none"> <li>1. Comfort</li> <li>2. Sustainability</li> <li>3. Price</li> </ol>

Table 15 overview results B2B and B2C sector

## 5 DISCUSSION

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In this chapter first of all will be elaborated upon how the results found in the previous chapter could be interpreted and will be compared to the current body of literature. Hereby the sub-questions in this research will be answered. This is followed by the limitations encountered in this research in combination with recommendations for future research. Last of all, a conclusion will be drawn.

### 5.1.1 Motivators in the B2B sector

The first sub-question asked in this research was the following: What motivates businesses to adopt environmentally friendly practices? Four main motivational factors for businesses were found in the literature. These were profitability, legislative/regulatory compliance, ethical concerns and complying with the norm. The respondents reported that their company's main motivation to act environmentally friendly was out of ethical concerns. This motivator was followed by it being the norm in the market. They did report that profit also plays a small role. but legal requirement on the other hand was below average important to their companies.

These results may seem surprising to some people, since increasing profit is often regarded to be the top priority for companies. This was also found by Trujillo-Barrera et al (2014). They found that economic rewards in the form of profit increase motivates business, as opposite to social and personal rewards. However, Currin (2012) found that the countries investigated in developed countries found social responsibility to be the biggest driver, followed by gaining some type of business-related advantage and legal compliance to be the least important driver. This is more in line with the outcomes of this research, except that she did not look at the 4<sup>th</sup> motivator investigated in this research; complying to the norm in the market to adopt sustainable practices. Unfortunately, there are only two studies to compare the results found in this study with. In other research was mostly investigated what motivators were present, they were barely ever ranked in order of most to least important to companies. However, some studies (e.g. Okerke (2007) & Bansal & Roth (2000)) did stipulate the coexistence of motivators. They argue that it is rarely the case for a company to portray sustainable behaviour based on only one of the motivators identified. This is not further investigated in this study.

### 5.1.2 Motivators in the B2C sector

The second sub-questions asked was: what motivates consumers to purchase green products? The following three motivators were found in the theory of planned behaviour: ethical concerns, social pressure and perceived effectiveness. The respondents to this survey reported that ethical concerns and perceived effectiveness did motivate them to make more sustainable purchases. However, they expressed that they do not feel that social pressure influences their decisions on buying sustainable products.

In the B2C sector, the same holds as in the B2B sector; In most literature is examined whether there is a significant positive relation between certain motivators and the customer's attitude towards green purchasing. Only a limited number of studies has ranked motivators for buying green products from most to least important to customers. There are five studies found by which a ranking of these motivators could be deducted. However, these studies have diverging outcomes. For example, Ruiz de Maya et al (2011) and Joshi & Rahman (2017) found that social pressure was the most important motivator according to their respondents, while in the studies conducted by Vermeir & Verbeke (2008), Chen & Hung (2016) and Geng et al (2017) this turned out to be the least important motivator, as is in line with this study. Perceived effectiveness was ranked high in 4 out of 5 studies, as was also found to be an important motivator in this research. But on the other hand, the importance of ethical concerns as a motivator differs across the

five articles, which was the most important motivator found in this research. Actually, the study performed by Vermeir & Verbeke (2008) found the exact same ranking as found in this research. They even performed their study in a neighbouring country with arguably similar cultural norms and values, namely Belgium.

However, the attitude-behaviour gap should also be discussed in this segment. The TPB argues that sustainable intentions eventually lead to sustainable behaviour. The attitude-behaviour gap definitely portrays that this is not always the case. Despite the fact that the respondents declare sustainability is highly important and that they feel motivated by these factors to buy sustainable products, they do not seem to actually buy a lot of sustainable products. Only 24% of the respondents declared that they regularly, often or always buy sustainable toilet paper. This is in line with the information supermarket chain Jumbo provided, who shared that only 0.4% of their total sales of toilet papers could be ascribed to sustainable variants. And is also in line with the literature found on this topic (e.g. Young et al (2009) who found this market share to be 5%). Therefore, one could conclude that the attitude behaviour-gap is definitely present here, as also observed in numerous other studies (e.g. by Horne (2009), Young et al (2009) & Joshi & Rahman (2015)). So, this should be kept in mind when implementing these motivators in order for consumers to buy more sustainable products. Actually changing consumers' buying behaviour may prove to be more difficult.

### **5.1.3 Ecolabels**

The third sub-question concerned ecolabels. In the B2B sector, the expert interviews already indicated that ecolabels were viewed to be highly important. This was confirmed in the survey, as 55% of the respondents in the B2B sector declared eco labels are important. Next to that, the respondents in the B2B sector were asked to rank specific labels; namely the FSC label, the cradle-to-cradle label, the EU ecolabel, and the Nordic Swan label. This in comparison to the ranking question asked at the end of this segment, led to different outcomes. What can be concluded however is that they find the FSC ecolabel the most important and the Nordic swan label the least important. As mentioned in section 1.4.3, to the best of the researcher's knowledge no other studies have been performed investigating the importance of ecolabels in the B2B market, therefore these results can unfortunately not be compared to other literature.

Due to the indication that ecolabels were considered less important by customers in the B2C sector than in the B2B sector, the questions on ecolabels for the B2C sector were formulated differently in this survey. There were no questions on the importance of specific ecolabels, but the respondents were asked whether they felt it is important that toilet paper has an ecolabel. 40% of them felt an ecolabel is important for toilet paper. As ecolabels are the only tool for customers to distinguish sustainable products from their less sustainable counterparts, this may seem low. Again, to the best of the author's knowledge no other studies have been conducted naming a percentage of respondents who considered ecolabels to be important. Overall, most studies investigate whether ecolabels have a positive effect on sustainable purchasing. This is not further investigated in this research.

However, there seems to be confusion about ecolabels in both sectors. In the B2B sector the matters addressed by the ecolabels score a lot higher than the scores for the actual ecolabels itself. Both were also ranked in diverging orders by the respondents. In the B2C sector only 13% of the respondents was able to name an ecolabel for toilet paper, but 40% did insist they were important, which seems contradicting. However, this is not surprising. A lot of literature on ecolabels criticises the transparency and therefore credibility of ecolabels (Catska & Corbett, 2014; Van Amstel et al, 2007; Sharma & Kushwaha, 2019; Nilson et al, 2003; Miller & Bush, 2014). This in turn is likely to lead to customers

confusion, as discussed by Moon et al (2016) and Langer et al (2007). So, these findings are in line with the literature on this topic.

#### **5.1.4 Sustainable attributes**

The fourth sub-question that was sought an answer to in this research is: what sustainable attributes do customers in both sectors find important when buying toilet paper? In both the B2B and the B2C sector all sustainable attributes were regarded as highly important by the respondents. In the B2B sector, the results found for the questions on the attributes separately and the ranking question were inconsistent. In the B2C sector more consistency was found between the separate questions and the ranking question. However, what could be concluded here is that both sectors found the usage of as few chemicals as possible in the production process and cutting down as few trees as possible to make toilet paper to be the two most important sustainable attributes. Another important attribute seemed to be minimizing greenhouse gas emissions, scoring high on this question in both sectors and the ranking question for the B2C sector, but scoring lower in the ranking question for the B2B sector. Last of all, there was a collective agreement upon using green energy to produce toilet paper being the least important attribute. Striking here was the low score for the question on toilet paper should be made from recycled paper in the B2C sector. This sustainable attribute scored the lowest according to the respondents in this sector, while this may be one of the easiest ways to make sustainable toilet paper more sustainable. This is also the most common sustainable variant of toilet paper found in supermarkets. This thus seems odd, and one could only speculate as to what caused this low score. However, there needs to be stipulated here that all scores are very close together. Therefore, it can be argued that respondents declared sustainability to be important, but perhaps the route to achieving this is less important to them or they simply lack the knowledge to determine the best routes for achieving this.

Overall, the means found for all attributes in this category are somewhat higher in the B2B sector. The highest mean in the B2B sector was 4.55, and in the B2C sector 4.21. The lowest mean in the B2B sector was 3.97, versus 3.73 in the B2C sector. This in combination with bigger importance attached to ecolabels in the B2B sectors seems to indicate that customers in the B2B sector find sustainability more important to a certain degree than the customers in the B2C sector. However, no significant differences were found between the B2B and B2C sectors on sustainable attributes, so there cannot be said for certain that customers in the B2B sector find sustainable attributes more important than customers in the B2C sector. Unfortunately, no previous research was found on the importance of specific sustainable attributes over others in both sectors, and in particular not in relation to toilet paper. So, these results cannot be compared to the current body of literature.

#### **5.1.5 Not-sustainability-related attributes**

The next sub-question asked in this research is the following: what not-sustainability-related attributes do customers in both sectors find important when buying toilet paper? In both sectors, the paper dissolving easily is regarded as the most important attribute. The paper being soft is also regarded to be quite important in both sectors. The other attributes are ranked differently across the two sectors, except for the attribute on the whiteness of the paper. Both sectors regarded this to be the least important attribute, by which this attribute was the only in this category that was viewed to be below average important and had a positive skewness.

As might be expected, in this category of questions, the overall means are somewhat lower in the B2B sector than in the B2C sector. The highest mean in this category in the B2B sector is 4.09, while this was 4.38 in the B2C sector. The lowest mean in the B2B sector is 3.36 and 3.78 in the B2C sector (this is without taking into account the mean on the paper being white, since this deviated a lot from the other attributes). This would

mean that customers in the B2C sector regard not-sustainability-related attributes, and therefore comfort, to be more important than customers in the B2B sector. However, again, this cannot be said for certain as no significant differences were found between both sectors. Again, no previous research on the importance of certain attributes in relation to toilet paper has been found, so these results cannot be compared to existing literature.

#### **5.1.6 Combination questions: comfort, price or sustainability?**

The sixth sub-question is: What attributes do customers in both sectors find most important overall when buying toilet paper? The answer provide to these questions are in line with earlier findings in this research. Out of the three options presented to them, comfortable, sustainable, or cheap toilet paper, the respondents in the B2B sector prefer sustainable toilet paper. While the respondents in the B2C sector prefer comfortable toilet paper. In the B2B sector comfort is ranked second and in the B2C sector, sustainability was ranked second. So, across both sectors, price was deemed the least important attribute according to the respondents. On the other hand, however, when the respondents were asked if they are willing to pay more for either sustainable or comfortable toilet paper, the differences in their willingness to do so are small. Again, no research has been executed on the importance of certain attributes in relation to toilet paper, so there are no studies to compare these results with.

#### **5.1.7 Relations to demographic variables**

The last sub question asked in this study is: What demographics factors have an influence on buying behaviour for toilet paper in both sectors? Several significant relations between variables were found in this research; two in the B2B sector and three in the B2C sector.

In the B2B sector a medium to low corelation was found between age and the combined variable on sustainability, by which the interest in sustainability declined by age. The second significant relation found is between the ranking question and the branch. So, respondents across different branches rank the importance of the sustainability, comfort and price of the toilet paper in a different order. However, the rule of thumb for  $\chi^2$  is that all cell counts should be above five. Unfortunately, this is not the case here, since for about half of the columns, the cell count equals zero and for 93% of the cells, the cell count is below 5. Therefore, the assumption for the  $\chi^2$  is violated and results are deemed not valid.

The first relation found in the B2C sector was between age and the ranking. So again, respondents from different ages ranked sustainability, comfort, and price in other sequences from most to least important. However, annova assumes a normal distribution across all categories of the categorical variable, the ranking in this case. This is not the case for this research, since the number of respondents is too small, the categories are not normally distributed and can also not be altered to have a normal distribution. Therefore, these results are also not valid. On the other hand, for the last two significant relations found, a correlation was performed, which does not make any assumptions about the distribution of the variables. So, these results are valid. A medium to low negative correlation was found between the price of the paper and it having an ecolabel. This indicates that the respondents who think ecolabels are important attach less value to the price of the paper. A medium to low correlation was also found between price and the softness of the paper. Meaning that respondents considered price and softness to be important to the same extent.

Some of these findings are in line with prior research. As discussed, no earlier work has been written on important attributes for toilet paper, so only the relations with

demographic factors can be discussed here. The following relations have been found by other scholars. Younger customers tend to buy more sustainable products (Esparon et al, 2013; Gan et al, 2008; Bui, 2005). This was also found in the B2B sector in this research. The relation between age and ranking in the B2C seems to indicate the same, but unfortunately this result was not valid. Next to that, Females portray more sustainable buying behaviour than males (Brouhle & Khanna, 2005; Chekima et al, 2016; D'Souza et al, 2006; Bui, 2005; Sharma & Trivedi, 2016; Esparon et al, 2013; Sewwandi & Dinesha; 2022). In both sectors in this research no significant differences were found between genders. And customer with a higher education and therefore also higher income tend to buy more sustainable products (Gan et al, 2008; Cai et al, 2017; Chekima et al, 2016; D'Souza et al, 2006; Bui, 2005; Papastefanou, 2021; Sharma & Trivedi, 2016; Sewwandi & Dinesha; 2022). This was only tested in this research in relation to the household income in the B2C sector, but no significant relation was found.

## **5.2 IMPLICATIONS**

### **5.2.1 B2B sector**

In the B2B, sustainability seems to be highly important. This became clear from the expert interviews and in all categories of questions asked in the survey in this market. The biggest motivator herein is ethical concern, followed by following the norm for this in the market. This is valuable information in trying to enhance sustainable purchases in this sector and should be utilize when shaping future policies. Next to that, it seems that this sector heavily relies on ecolabels to distinguish sustainable product form there less sustainable counterparts. However, the answers provided to the survey suggest that there is confusion about what these ecolabels each stand for. Therefore, when trying to get customers to buy more sustainable toilet paper, one should make use of these ecolabels, but hand in hand with educating customers on what these ecolabels denote to and in what way they live up to their promises.

Next to that, the solubility and the softness should be taken into consideration. The respondents declared sustainability to be the most important factor above comfort. However, they are only willing to pay slightly more for either sustainable variants or comfortable variants of paper. Therefore, if choices would need to be made would be recommended to focus on the sustainability of the paper, but if solubility and softness could be incorporated at the same time, sustainable sales would be boosted even further. When focusing on sustainable attributes, the usage of as few chemicals as possible in the production process and cutting down as few trees as possible to make toilet paper are the most important sustainable attributes to be reckoned with.

### **5.2.2 B2C sector**

The B2B sector is a trickier sector. It appears that sill a lot of work can be done in the B2C sector to motivate consumers to buy more sustainable types of toilet paper, since only 24 % of the respondents declared that they regularly, often, or always buy sustainable toilet paper. As they feel motivated by ethical concerns and feeling they contributed to resolving climate related problems, this should be anticipated upon. Perhaps ecolabels can be of some assistance in motivating customers in this sector but should be implemented with caution. Only 40% of the respondents declared ecolabels are important. However, they also do not seem to know a lot about them, thus educating customers on these ecolabels would be a vital first step. Next to that was found that respondents who cared more about ecolabels cared less about paying more for the toilet paper.

Next to that, the customers in this sector seem to attach a lot of value to the comfort related attributes of the paper. Important attributes for them herein are again solubility of the paper and its softness. At the same time, they are hardly willing to pay more for

either sustainable or comfortable types of paper. Therefore, would be recommended that in stimulating customers to buy more sustainable types of paper, these types also take comfort, and price into consideration. If the paper is not comfortable or is too expensive, it is likely that customers in this sector will perceive this as barriers for buying more sustainable variants of paper.

### 5.3 LIMITATIONS

Several limitations were encountered while executing this research. First off all, it is important to mention that not enough people responded to both surveys in order for the results to be generalizable for the whole population. This means that it is uncertain whether the answers provided by the respondents represent the general opinion in the Netherlands.

Next to that, several limitations were encountered while gathering data for the B2C sector. First of all, in search of conducting expert interviews. As with the survey for the B2B sector, a number of experts were asked beforehand to provide first insights into the market. All bigger supermarkets chains that are active in the Netherlands (Albert Heijn, Jumbo and SuperUnie) and all brands selling toilet paper in the Dutch supermarkets (Page, Edet, 100%eco the Good Roll and Satino Black) were approached. Unfortunately, only one of these parties was willing to disclose their insights, namely supermarket chain Jumbo. This means that for the B2C market, the first insights into the market were limited before conducting the survey. Therefore, the survey distributed in this market was almost the same as the survey distributed in the B2B market.

Also, for conducting the survey in the B2C market the researcher intended to ask consumers in the supermarkets to answer the survey. However, due to the outbreak of the COVID-19 virus, this seemed to be an unethical choice since people were asked to come the store alone and only when necessary. They also had to keep 1,5 meters distance from each other. Therefore, the researcher chose to distribute this survey online, but this also results in the respondents to be more likely to be similar. The survey for the B2C market was shared on the researcher's social media pages and among other personal contacts, therefore it is likely that the respondents are more likely to share similar demographics, but also interests with the researcher. This is likely to have led to the biggest portion of respondents being female and in the age group of 20-29. It is also probable that the respondents were more interested in sustainability than average. This since the researcher met a lot of her acquaintances during her studies on sustainability related topics. Due to this, it is likely that the respondents are not a genuine representation of the population.

For the survey distributed in the B2B sector, it is not known whether the same problem also has occurred. It is for example possible that mainly employees who already had an interest in sustainability chose to partake in the survey. Next to that, it was striking that a lot of respondents worked in the business services sector, it is possible that employees in this sector regard sustainability to be more important on average than people working in other sectors. Due to these uncertainties cannot be determined whether the data acquired in this survey is likely to represent the whole population.

## **5.4 RECOMMENDATIONS**

As discussed in section 1.3, several gaps in the literature have been identified. This research made a start in filling these gaps. However, this research should merely be regarded as an explorative study, that is only meant to provide some first insights into the toilet paper sector. More research is necessary to get more insight into this sector, to validate the results found in this research, but also to explore other facets of this market.

### **5.4.1 Motivators in the B2B sector**

In the B2B market, research on motivators for sustainable purchases is outdated and the market has changed since. Sustainability being the norm in the market is a prominent motivator for the respondent. However, almost no research has included this motivator before. Also, barely any research has ranked motivators for firms to adopt environmentally friendly practices. This research therefore provides some first insights, but further research is highly recommended.

### **5.4.2 Motivators in the B2C sector**

In the B2C market five studies were found ranking motivators from most to least important. However, in all these studies the rankings turned out differently. Remarkably, a study performed in Belgium found the same results as found in this research. This makes both results more plausible. However, the existence of only five studies portraying rankings of these motivators all with different outcomes, emphasizes the need for more research on this subject. Next to that should be investigated in what way consumers can be stimulated out of the attitude behaviour gap and actually buy sustainable products.

### **5.4.3 Ecolabels**

Next to that, no studies have investigated the role of ecolabels in the B2B sector. In this study was found that ecolabels are essential for customers in this market to distinguish sustainable products from their less sustainable counterparts. Therefore, more research should be executed studying the contribution of ecolabels in enhancing sustainable purchases in the B2B sector. Furthermore, quite some confusion was encountered in both sectors on what these ecolabels stand for. Therefore, would be recommended to study how this confusion can be diminished.

### **5.4.4 Sustainable attributes & not-sustainability related attributes**

As discussed, no scientific research whatsoever looked at what sustainability and not-sustainability related attributes customers find important features of toilet paper. Even so this is useful information in stimulating sustainable purchases of toilet paper, but it also provides necessary conceptual insights into the toilet paper market.

### **5.4.5 Sustainable purchases in relation to demographic factors**

No studies were found investigating the role of demographic factors in stimulating sustainable purchasing in the B2B market. In this research not enough respondents were found across different types of companies to draw any conclusions on this. Therefore, more research is necessary, especially in the B2B market.

### **5.4.6 Comparison of the B2B and B2C sector**

Comparing the B2B and B2C sectors for sustainable purchasing was not done before. Therefore, more research is necessary comparing these sectors, but also to investigate whether and under what circumstance it would be beneficial to implement results found in one sector in the other sector. Last of all, would be recommended to investigate whether the results found in this research could be deployed to stimulate sustainable purchases across other markets and countries. Demographics areas each have their own cultural norms and values, resulting in different choices made by customers. Therefore, should be tested whether the results found in this research can be beneficial in stimulating sustainable purchases elsewhere.

## 6 CONCLUSION

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This research sought an answer to the question how customers in both the B2B and the B2C sector can be motivated to buy sustainable types of toilet paper. This was investigated by distributing two surveys, one in the B2B sector and one in the B2C sector. The results on all question categories indicate that sustainability is regarded more important in the B2B sector than in the B2C sector; ecolabels and sustainable attributes scored higher in the B2B sector, while not-sustainability related attributes were considered more important by respondents in the B2C sector. The results portray that respondents in both sectors found ethical concerns to be the most important motivator, followed by acting environmentally friendly to be the norm in the B2B market and feeling their purchase was effective in the B2C market. The results also show that the respondents from the B2B sector view ecolabels to be important tools in identifying sustainable products and do heavily rely on them, while the respondents in the B2C sector ascribe significantly less value to them. In both sectors confusion on ecolabels seems to be present. For the sustainable attributes was found in both surveys that usage of as few chemicals as possible and cutting down as few trees as possible were viewed as important by the respondents. For the not-sustainability related attributes was found that respondents across both sectors thought that the paper dissolving easily and it being soft were important attributes. Therefore, these attributes can be regarded as most important barriers for customers not to buy sustainable toilet paper. Last of all, the results indicate that comfort seems to be more important to the respondents in the B2C sector, where sustainability is more important to the respondents in the B2B sector.

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## APPENDICES

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### APPENDIX 1: SURVEY B2B MARKET

Hieronder treft u een aantal vragen over duurzaamheid en toiletpapier aan. De enquête neemt ongeveer 10 minuten van uw tijd in beslag. Er zullen enkele open vragen en een aantal gesloten vragen gesteld worden. Bij een deel van deze gesloten vragen, wordt u gevraagd aan te geven in welke mate u het eens bent met de stelling die wordt gegeven. U kunt hierbij kiezen uit een van de volgende opties: totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens. Daarnaast zijn er ook enkele vragen waarbij u gevraagd wordt aspecten te rangschikken op welke u het belangrijkste vindt. Er volgen nu eerst enkele algemene vragen.

1. Wat is uw geslacht? *Man/vrouw*
2. Hoe oud bent u? *20-29, 30-39, 40-49, 50-59, 60-69*
3. In welke branche werkt u? *Automotive, Food, (hoger) onderwijs, Industrie, Logistiek, Zakelijke dienstverlening, Leisure.*
4. Bent u (mede)verantwoordelijk voor beslissingen omtrent faciliteit binnen uw bedrijf? *Ja/nee.*
5. Is uw bedrijf klant van Vendor? *Ja/ Nee/ Weet ik niet.*

Er volgen nu enkele vragen die gaan over het belang van duurzaamheid binnen uw bedrijf.

6. Duurzaamheid is belangrijk voor uw bedrijf. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
7. Waarom denk u dat duurzaamheid wel/niet belangrijk is voor uw bedrijf? (open vraag) *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
8. Duurzaamheid is belangrijk voor uw bedrijf omdat dat moet van de wet. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
9. Duurzaamheid is belangrijk voor uw bedrijf omdat dat het juiste is om te doen voor de planeet. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
10. Duurzaamheid is belangrijk voor uw bedrijf omdat daarmee meer winst gemaakt kan worden. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
11. Duurzaamheid is belangrijk voor uw bedrijf omdat het norm is geworden in de markt. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
12. Wilt u de volgende motivaties rangschikken op welke het meest bij uw bedrijf past? *Omdat het moet van de wet, omdat het, het juiste is om te doen, om meer winst te maken, omdat het de norm is.*

Er volgen nu enkele vragen die gaan over het belang van ecolabels in relatie tot toiletpapier.

13. Het is belangrijk dat toiletpapier een keurmerk heeft. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.* (indien nee, ga naar vraag 22).
14. Hoeveel keurmerken moet toiletpapier hebben? *Minimaal één, minimaal twee, minimaal drie, minimaal vier.*
15. Het is belangrijk dat de houtsnippers die gebruikt worden om toiletpapier te maken uit verantwoord beheerde bossen komen. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
16. Het is belangrijk dat productie van toiletpapier op een milieuvriendelijke wijze gebeurt. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*

17. Het is belangrijk dat het toiletpapier geheel biologisch afbreekbaar is. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
18. Het is belangrijk dat toiletpapier een cradle-to-cradle keurmerk heeft. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
19. Het is belangrijk dat toiletpapier een FSC-keurmerk heeft. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
20. Het is belangrijk dat toiletpapier een EU Ecolabel heeft. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
21. Het is belangrijk dat toiletpapier een Nordic Swan Ecolabel heeft. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
22. Wilt u de volgende ecolabels rangschikken op hoe belangrijk u vindt dat toiletpapier deze heeft. *Cradle-to-cradle keurmerk, FSC keurmerk, EU Ecolabel, Nordic Ecolabel. (optie: nvt)*

Er volgen nu enkele vragen die gaan over het belang van duurzaamheid in relatie tot toiletpapier.

23. Het is belangrijk dat toiletpapier CO<sub>2</sub> neutraal is geproduceerd. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
24. Het is belangrijk dat toiletpapier wordt gemaakt met groene stroom. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
25. Het is belangrijk dat er zo min mogelijk stroom wordt gebruikt om toiletpapier te maken. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
26. Het is belangrijk dat er zo min mogelijk water wordt gebruikt om toiletpapier te maken. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
27. Het is belangrijk dat er zo min mogelijk chemicaliën worden gebruikt om toiletpapier te maken. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
28. Het is belangrijk dat er zo min mogelijk schadelijke gassen (zoals broeikasgassen) worden uitgestoten om toiletpapier te maken. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
29. Het is belangrijk dat er zo min mogelijk CO<sub>2</sub> wordt uitgestoten om toiletpapier te maken. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
30. Het is belangrijk dat er zo min mogelijk bomen worden gekapt om toiletpapier te maken. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
31. Het is belangrijk dat toiletpapier wordt gemaakt van gerecycled papier. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
32. Wilt u de volgende aspecten rangschikken op hoe belangrijk u vindt dat deze worden meegenomen tijdens de productie van toiletpapier? *CO<sub>2</sub> neutraal geproduceerd, het gebruik van groene stroom, het gebruik van zo min mogelijk stroom, het gebruik van zo min mogelijk water, het gebruik van zo min mogelijk chemicaliën, het uitstoten van zo min mogelijk schadelijke gassen, het uitstoten van zo min mogelijk CO<sub>2</sub>, dat er zo min mogelijk bomen worden gekapt, dat het toiletpapier wordt gemaakt van gerecycled papier.*

Er volgen nu enkele vragen die gaan over het belang van andere aspecten in relatie tot toiletpapier.

33. Het is belangrijk dat toiletpapier niet te duur is. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
34. Het is belangrijk dat het bedrijf waar u toiletpapier inkoopt goede service verleend. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
35. Het is belangrijk dat toiletpapier zacht is. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
36. Het is belangrijk dat toiletpapier bestaat uit meerdere lagen. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*

37. Het is belangrijk dat toiletpapier niet te snel uit elkaar valt. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
38. Het is belangrijk dat toiletpapier goed oplost in water. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
39. Het is belangrijk dat toiletpapier wit is. *totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens.*
40. Wilt u de volgende aspecten rangschikken op hoe belangrijk u ze vindt voor toiletpapier? *Het toiletpapier is niet te duur, er wordt goede service verleend, het toiletpapier is zacht, het toiletpapier bestaat uit meerdere lagen, het toiletpapier valt niet te snel uit elkaar, het toiletpapier lost goed op in water, het toiletpapier is wit.*

Er volgen nu enkele vragen die verschillende aspecten combineren.

41. Wat vindt u belangrijker, duurzaam toiletpapier of comfortabel toiletpapier? *Duurzaam/comfortabel.*
42. Wat vindt u belangrijker, comfortabel toiletpapier of goedkoop toiletpapier? *Comfortabel/ goedkoop.*
43. Wat vindt u belangrijker, goedkoop toiletpapier of duurzaam toiletpapier? *Goedkoop/duurzaam.*
44. Bent u bereid meer te betalen voor duurzamer toiletpapier? En zo ja, hoeveel meer: *10%, 20%, 30%, 40%, 50%, meer dan 50%, nee*
45. Bent u bereid meer te betalen voor comfortabeler toiletpapier? En zo ja, hoeveel meer: *10%, 20%, 30%, 40%, 50%, meer dan 50%, nee*

Er volgen nu nog enkele afsluitende vragen.

46. Zijn er nog andere aspecten die u belangrijk vindt aan toiletpapier die niet genoemd zijn? *(open vraag)*
47. Heeft u nog andere opmerkingen? *(open vraag)*
48. Wilt u kans maken op het VIP- arrangement voor twee personen voor een concert naar keuze in de Ziggo Dome? Vul dan hier uw naam en e-mailadres in. *(open vraag)*

Dank u wel voor uw medewerking!

## APPENDIX 2: SURVEY B2C MARKET

Hieronder treft u een aantal vragen over duurzaamheid en toiletpapier aan. De enquête neemt ongeveer 10 minuten van uw tijd in beslag. Er zullen enkele open vragen en een aantal gesloten vragen gesteld worden. Bij een deel van deze gesloten vragen, wordt u gevraagd aan te geven in welke mate u het eens bent met de stelling die wordt gegeven. U kunt hierbij kiezen uit een van de volgende opties: totaal mee oneens, mee oneens, neutraal, mee eens of totaal mee eens. Daarnaast zijn er ook enkele vragen waarbij u gevraagd wordt aspecten te rangschikken op welke u het belangrijkste vindt. Er volgen nu eerst enkele algemene vragen.

1. Wat is uw geslacht? *Man/vrouw*
2. Hoe oud bent u? *15-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79.*
3. *Hoe groot is uw huishouden? 1 persoon/2 personen/3 personen/ 4 personen/ meer dan 4 personen*
4. Wat is het bruto inkomen van uw huishouden per jaar? *0-28 500 /28 501-66 800/ 66 801-87 800/meer dan 87 800 /Weet ik niet /zeg ik liever niet*
5. Koopt u wel eens toiletpapier voor uw huishouden?
6. In welke winkel koopt u toiletpapier? *Albert Heijn/ Jumbo / Aldi of Lidl / bij een winkel van Superunie (COOP, DEEN, Dirk van den Broek, Dekamarkt, Hoogvliet, Jan Linders, Plus of Spar) / Anders, namelijk:*

Er volgen nu enkele vragen die gaan over het belang van duurzaamheid.

7. Duurzaamheid is belangrijk.
8. Waarom denk u dat duurzaamheid wel/niet belangrijk is? (open vraag)
9. Duurzaamheid is belangrijk omdat dat het juiste is om te doen voor de planeet.
10. Duurzaamheid is belangrijk, omdat de mensen in uw omgeving dat vinden.
11. Het is belangrijk dat als u duurzame producten koopt, u het gevoel heeft bij te dragen aan het oplossen van klimaat gerelateerde problemen
12. U weet veel over klimaat gerelateerde problemen
13. Wilt u de volgende motivaties rangschikken? *Omdat het het juiste is om te doen, omdat mijn omgeving dat vindt, omdat u dan een verschil maakt.*

Er volgen nu enkele vragen die gaan over het belang van duurzaamheid in relatie tot toiletpapier.

14. Koopt u duurzaam toiletpapier? *Nooit/Soms/Regelmatig/Vaak/Altijd/Weet ik niet.*
15. Het is belangrijk dat toiletpapier wordt gemaakt van gerecycled papier.
16. Het is belangrijk dat er zo min mogelijk bomen worden gekapt om toiletpapier te maken.
17. Het is belangrijk dat er zo min mogelijk schadelijke gassen (zoals broeikasgassen) worden uitgestoten om toiletpapier te maken.
18. Het is belangrijk dat er zo min mogelijk CO<sub>2</sub> wordt uitgestoten om toiletpapier te maken.
19. Het is belangrijk dat toiletpapier CO<sub>2</sub> neutraal is geproduceerd.
20. Het is belangrijk dat er zo min mogelijk stroom wordt gebruikt om toiletpapier te maken.
21. Het is belangrijk dat toiletpapier wordt gemaakt met groene stroom.
22. Het is belangrijk dat er zo min mogelijk water wordt gebruikt om toiletpapier te maken.
23. Het is belangrijk dat er zo min mogelijk chemicaliën worden gebruikt om toiletpapier te maken.
24. Wilt u de volgende aspecten rangschikken op hoe belangrijk u vindt dat deze worden meegenomen tijdens de productie van toiletpapier? *CO<sub>2</sub> neutraal geproduceerd, het gebruik van groene stroom, het gebruik van zo min mogelijk*

*stroom, het gebruik van zo min mogelijk water, het gebruik van zo min mogelijk chemicaliën, het uitstoten van zo min mogelijk schadelijke gassen, het uitstoten van zo min mogelijk CO<sub>2</sub>, dat er zo min mogelijk bomen worden gekapt, dat het toiletpapier wordt gemaakt van gerecycled papier.*

25. Het is belangrijk dat toiletpapier een keurmerk heeft. (indien nee, ga naar vraag x).
26. Zo ja, welke keurmerken vindt u dan belangrijk voor toiletpapier?

Er volgen nu enkele vragen die gaan over het belang van andere aspecten in relatie tot toiletpapier.

27. Het is belangrijk dat toiletpapier niet te duur is.
28. Het is belangrijk dat toiletpapier zacht is.
29. Het is belangrijk dat toiletpapier bestaat uit meerdere lagen.
30. Het is belangrijk dat toiletpapier niet te snel uit elkaar valt.
31. Het is belangrijk dat toiletpapier goed oplost in water en dus de riolering niet verstopt.
32. Het is belangrijk dat toiletpapier wit is.
33. Wilt u de volgende aspecten rangschikken op hoe belangrijk u ze vindt voor toiletpapier? *Het toiletpapier is niet te duur, het toiletpapier is zacht, het toiletpapier bestaat uit meerdere lagen, het toiletpapier valt niet te snel uit elkaar, het toiletpapier lost goed op in water, het toiletpapier is wit.*

Er volgen nu enkele vragen die verschillende aspecten combineren.

34. Wat vindt u belangrijker, duurzaam toiletpapier of comfortabel toiletpapier? *Duurzaam/comfortabel.*
35. Wat vindt u belangrijker, comfortabel toiletpapier of goedkoop toiletpapier? *Comfortabel/ goedkoop.*
36. Wat vindt u belangrijker, goedkoop toiletpapier of duurzaam toiletpapier? *Goedkoop/duurzaam.*
37. Bent u bereid meer te betalen voor duurzamer toiletpapier? En zo ja, hoeveel meer: 10%, 20%, 30%, 40%, 50%, *meer dan 50%*, *nee*
38. Bent u bereid meer te betalen voor comfortabeler toiletpapier? En zo ja, hoeveel meer: 10%, 20%, 30%, 40%, 50%, *meer dan 50%*, *nee*

Er volgen nu nog enkele afsluitende vragen.

39. Zijn er nog andere aspecten die u belangrijk vindt aan toiletpapier die niet genoemd zijn? (*open vraag*)
40. Heeft u nog andere opmerkingen? (*open vraag*)

Hartelijk bedankt voor het invullen van deze vragenlijst!

## APPENDIX 3: STATA RESULTS B2B MARKET

### Importing data & creating merged variable on sustainability factors (Q23 till Q31)

```
. import excel "C:\Users\Isabe\Documents\Thesis\Survey B2B\Excel B2B results Stata file 2.xlsx", sheet("ALL")

. alpha S- AA, item gen (sust)

Test scale = mean(unstandardized items)
```

Item	Obs	Sign	item-test correlation	item-rest correlation	average interitem covariance	alpha
S	74	+	0.7315	0.6531	.22651	0.9229
T	74	+	0.6927	0.5945	.2260472	0.9281
U	74	+	0.8391	0.7867	.2148741	0.9142
V	74	+	0.8548	0.8012	.2080248	0.9134
W	74	+	0.8062	0.7547	.2257563	0.9169
X	74	+	0.8401	0.7964	.2226226	0.9144
Y	74	+	0.8704	0.8349	.2209697	0.9124
Z	74	+	0.8100	0.7568	.2233101	0.9165
AA	74	+	0.7467	0.6737	.2260076	0.9215
Test scale					.2215692	0.9263

Looking at the characteristics of the new merged variable om sustainability factors (Q23 till Q31)

```

. sum sust

```

Variable	Obs	Mean	Std. Dev.	Min	Max
sust	74	4.343844	.4890718	3	5

T-test merged variable on sustainability factors (Q23 till Q31) - gender (Q1)

```
. ttest sust, by(A) unequal
```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	39	4.330484	.0828998	.5177092	4.162662	4.498306
1	35	4.35873	.0781153	.4621362	4.199981	4.51748
combined	74	4.343844	.0568534	.4890718	4.230535	4.457153
diff		-.0282459	.1139051		-.2553116	.1988199

```
diff = mean(0) - mean(1)                                     t = -0.2480
Ho: diff = 0          Satterthwaite's degrees of freedom = 71.9989
```

Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(T < t) = 0.4024	Pr( T  >  t ) = 0.8049	Pr(T > t) = 0.5976

Correlation merged variable on sustainability factors (Q23 till Q31) - age (Q2)

```
. pwcorr B sust, sig
```

	B	sust
B	1.0000	
sust	-0.2519 0.0304	1.0000

The Branches and the numbers they correspond with:

```

. oneway sust Branche, tabulate bonferroni

```

T-test merged variable om sustainability factors (Q23 till Q31) - "Bent u (mede)verantwoordelijk voor beslissingen omtrent facilititeit binnen uw bedrijf?" (Q4)

```
. ttest sust, by(D) unequal
```

Two-sample t test with unequal variances

```
diff = mean(0) - mean(1)                                t = 0.7531
Ho: diff = 0                                             Satterthwaite's degrees of freedom = 71.9983

Ha: diff < 0                                             Ha: diff != 0                                         Ha: diff > 0
Pr(T < t) = 0.7731                                       Pr(|T| > |t|) = 0.4539                               Pr(T > t) = 0.2269
```

T-test "Duurzaamheid is belangrijk voor uw bedrijf"(Q6) - Gender (Q1)

```
. ttest F, by(Geslacht) unequal
```

Two-sample t test with unequal variances

```
diff = mean(0) - mean(1)                                t = 1.1272
Ho: diff = 0                                             Satterthwaite's degrees of freedom = 71.9913

Ha: diff < 0                                             Ha: diff != 0                                         Ha: diff > 0
Pr(T < t) = 0.8683                                       Pr(|T| > |t|) = 0.2634                               Pr(T > t) = 0.1317
```

. pwcorr Leeftijd F, sig		
	Leeftijd	F
Leeftijd	1.0000	
F	0.0081 0.9452	1.0000

. oneway F Branche, tabulate bonferroni			
Branche	Summary of 6		Freq.
	Mean	Std. Dev.	
1	3.3333333	2.081666	3
2	5	0	3
3	4.2	.4472136	5
4	4	1.490712	10
5	3.5	.70710678	2
6	4.1276596	.87518995	47
7	3.25	.95742711	4
Total	4.0540541	1.0188886	74

Source	Analysis of Variance			F	Prob > F
	SS	df	MS		
Between groups	7.83307456	6	1.30551243	1.29	0.2751
Within groups	67.9507092	67	1.01418969		
Total	75.7837838	73	1.03813402		

```

t-test F, by(D) unequal

Two-sample t test with unequal variances


```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	33	3.939394	.1737477	.9981043	3.585482	4.293306
1	41	4.146341	.1621539	1.038291	3.818616	4.474067
combined	74	4.054054	.1184434	1.018889	3.817997	4.290111
diff		-.2069475	.2376597		-.6809793	.2670842

```

diff = mean(0) - mean(1)                                t = -0.8708
Ho: diff = 0                                             Satterthwaite's degrees of freedom = 69.7116

Ha: diff < 0                                           Ha: diff != 0                                           Ha: diff > 0
Pr(T < t) = 0.1934                                Pr(|T| > |t|) = 0.3869                                Pr(T > t) = 0.8066

```

```

t.test K, by( Geschlecht) unequal

Two-sample t test with unequal variances

```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	39	3.384615	.1859265	1.161111	3.008227	3.761004
1	35	3.314286	.2081185	1.231246	2.891338	3.737233
combined	74	3.351351	.1379927	1.187058	3.076332	3.62637
diff		.0703297	.2790735		-.4862618	.6269211

```

diff = mean(0) - mean(1)
t = 0.2520
Ho: diff = 0
Satterthwaite's degrees of freedom = 70.0215

Ha: diff < 0
Pr(T < t) = 0.5991

Ha: diff != 0
Pr(|T| > |t|) = 0.8018

Ha: diff > 0
Pr(T > t) = 0.4009

```

## Correlation “Het is belangrijk dat toiletpapier een keurmerkt heeft” (Q13) - Age (Q2)

. pwcorr Leeftijd K, sig

	Leeftijd	K
Leeftijd	1.0000	
K	-.02235 0.0556	1.0000

## Annova “Het is belangrijk dat toiletpapier een keurmerkt heeft” (Q13) - Branche (Q3)

. oneway K Branche, tabulate bonferroni

Branche	Summary of 13			Freq.
	Mean	Std. Dev.		
1	3.3333333	2.081666		3
2	3.6666667	.57735027		3
3	1.6	.89442719		5
4	3.4	.6992059		10
5	2.5	2.1213203		2
6	3.6382979	1.0092083		47
7	2.25	1.7078251		4
Total	3.3513514	1.1870584		74

Source	Analysis of Variance			F	Prob > F
	SS	df	MS		
Between groups	25.8304677	6	4.30507795	3.74	0.0028
Within groups	77.0343972	67	1.14976712		
Total	102.864865	73	1.40910774		

## T-test “Het is belangrijk dat toiletpapier een keurmerk heeft” (Q13) - “Bent u (mede)verantwoordelijk voor beslissingen omtrent faciliteit binnen uw bedrijf?” (Q4)

. ttest K, by ( Verantwoordelijkvoorbeslissingej) unequal

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	33	3.424242	.2042647	1.173411	3.008169	3.840316
1	41	3.292683	.1888473	1.209213	2.911008	3.674358
combined	74	3.351351	.1379927	1.187058	3.076332	3.62637
diff		.1315595	.2781858		-.4233382	.6864572

diff = mean(0) - mean(1) t = 0.4729  
Ho: diff = 0 Satterthwaite's degrees of freedom = 69.4758

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.6811 Pr(|T| > |t|) = 0.6378 Pr(T > t) = 0.3189

```
. ttest AD, by( Geschlecht ) unequal
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	39	3.897436	.1459987	.9117615	3.601877	4.192995
1	35	3.771429	.1165737	.6896595	3.534522	4.008335
combined	74	3.837838	.0943165	.8113413	3.649865	4.02581
diff		.1260073	.1868289		-.2466049	.4986195

diff = mean(0) - mean(1) t = 0.6745

Ho: diff = 0 Satterthwaite's degrees of freedom = 70.0681

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0

Pr(T < t) = 0.7489 Pr(|T| > |t|) = 0.5022 Pr(T > t) = 0.2511

. pwcorr Leeftijd AD, sig

	Leeftijd	AD
Leeftijd	1.0000	
AD	-0.1093 0.3540	1.0000

## . oneway AD Branche, tabulate bonferroni

Summary of 35			
Branche	Mean	Std. Dev.	Freq.
1	4	1	3
2	3.6666667	.57735027	3
3	3.4	.89442719	5
4	3.7	.67494856	10
5	3	0	2
6	3.9361702	.84452856	47
7	4	.81649658	4
Total	3.8378378	.8113413	74

Analysis of Variance					
Source	SS	df	MS	F	Prob > F
Between groups	3.27887675	6	.546479458	0.82	0.5600
Within groups	44.7751773	67	.668286228		
Total	48.0540541	73	.658274713		

```
. ttest AD, by( VerantwoordelijkvoorbeslissingeR ) unequal
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	33	3.909091	.1097832	.6306562	3.68547	4.132712
1	41	3.780488	.1461381	.9357402	3.485132	4.075844
combined	74	3.837838	.0943165	.8113413	3.649865	4.02581
diff		.1286031	.1827804		-.2359396	.4931459

diff = mean(0) - mean(1) t = 0.7036

Ho: diff = 0 Satterthwaite's degrees of freedom = 70.014

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0

Pr(T < t) = 0.7580 Pr(|T| > |t|) = 0.4840 Pr(T > t) = 0.2420

```
. ttest AB, by( Geschlecht) unequal
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	39	3.384615	.1541832	.9628736	3.072488	3.696743
1	35	3.485714	.1320264	.7810788	3.217404	3.754024
combined	74	3.432432	.1019635	.877123	3.22922	3.635645
diff		-.1010989	.2029863		-.5058117	.3036139

t = -0.4981

Ho: diff = 0                      Satterthwaite's degrees of freedom = 71.3081

Ha: diff < 0  
Pr(T < t) = 0.3100

Ha: diff != 0  
Pr(|T| > |t|) = 0.6200

Ha: diff > 0  
Pr(T > t) = 0.6900

```
. pwcorr AB Leeftijd, sig
```

	AB Leeftijd	
AB	1.0000	
Leeftijd	0.1483	1.0000
	0.2073	

```

. oneway AB Branche, tabulate bonferroni

```

Summary of 33					
Branche	Mean	Std. Dev.	Freq.		
1	4	0	3		
2	3.3333333	.57735027	3		
3	3.8	.4472136	5		
4	3.6	.96609178	10		
5	4	0	2		
6	3.3404255	.93893084	47		
7	3	.81649658	4		
Total	3.4324324	.87712296	74		

Analysis of Variance					
Source	SS	df	MS	F	Prob > F
Between groups	3.74230401	6	.623717334	0.80	0.5755
Within groups	52.4198582	67	.782385943		
Total	56.1621622	73	.769344687		

75

```
. ttest AB, by( Verantwoordelijkvoorbeslissinge) unequal
```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	33	3.333333	.1776673	1.020621	2.971437	3.69523
1	41	3.512195	.1164618	.7457195	3.276817	3.747573
combined	74	3.432432	.1019635	.877123	3.22922	3.635645
diff		-.1788618	.2124359		-.6042589	.2465353

diff = mean(0) - mean(1) t = -0.8420  
 Ho: diff = 0 Satterthwaite's degrees of freedom = 56.9904

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
 Pr(T < t) = 0.2017 Pr(|T| > |t|) = 0.4033 Pr(T > t) = 0.7983

A ranking has been created out of the answers to questions 41-43, choosing between sustainable, cheap or comfortable toilet paper, in Excel. All possible rankings and the number they correspond with:

- 1 - 1. Sustainability; 2. Comfort; 3. Price
- 2 - 1. Sustainability; 2. Price; 3. Comfort
- 3 - 1. Comfort; 2. Sustainability; 3. Price
- 4 - 1. Comfort; 2. Price; 3. Sustainability
- 5 - 1. Price; 2. Sustainability; 3. Comfort
- 6 - 1. Price; 2. Comfort; 3. Sustainability

#### Chi2 Ranking (Q41-43) - Gender (Q1)

```
. tab Geslacht Top3, row chi2
```

Key
frequency
row percentage

Geslacht	Top 3						Total
	1	2	3	4	5	6	
0	22 56.41	5 12.82	11 28.21	0 0.00	1 2.56	0 0.00	39 100.00
1	17 51.52	4 12.12	7 21.21	1 3.03	2 6.06	2 6.06	33 100.00
Total	39 54.17	9 12.50	18 25.00	1 1.39	3 4.17	2 2.78	72 100.00

Pearson chi2(5) = 4.5056 Pr = 0.479

#### Annova Ranking (Q41-43) - Age (Q2)

```
. oneway Leeftijd Top3, tabulate bonferroni
```

Top 3	Summary of Leeftijd		
	Mean	Std. Dev.	Freq.
1	2.8461538	1.0891441	39
2	2.8888889	1.3642255	9
3	2.8333333	1.0981267	18
4	3	0	1
5	3	1	3
6	2.5	.70710678	2
Total	2.8472222	1.0832882	72

Source	Analysis of Variance			F	Prob > F
	SS	df	MS		
Between groups	.353632479	5	.070726496	0.06	0.9979
Within groups	82.965812	66	1.25705776		
Total	83.3194444	71	1.1735133		

Bartlett's test for equal variances:  $\chi^2(4) = 1.0080$  Prob> $\chi^2 = 0.909$

## Chi2 Ranking (Q41-43) - Branche (Q3)

```
. tab Branche Top3, row chi2 exp
```

Key
frequency
expected frequency
row percentage

Branche	Top 3						Total
	1	2	3	4	5	6	
1	0	0	1	1	0	0	2
	1.1	0.3	0.5	0.0	0.1	0.1	2.0
	0.00	0.00	50.00	50.00	0.00	0.00	100.00
2	2	0	1	0	0	0	3
	1.6	0.4	0.8	0.0	0.1	0.1	3.0
	66.67	0.00	33.33	0.00	0.00	0.00	100.00
3	2	1	2	0	0	0	5
	2.7	0.6	1.3	0.1	0.2	0.1	5.0
	40.00	20.00	40.00	0.00	0.00	0.00	100.00
4	4	1	4	0	1	0	10
	5.4	1.3	2.5	0.1	0.4	0.3	10.0
	40.00	10.00	40.00	0.00	10.00	0.00	100.00
5	1	1	0	0	0	0	2
	1.1	0.3	0.5	0.0	0.1	0.1	2.0
	50.00	50.00	0.00	0.00	0.00	0.00	100.00
6	28	5	9	0	2	2	46
	24.9	5.8	11.5	0.6	1.9	1.3	46.0
	60.87	10.87	19.57	0.00	4.35	4.35	100.00
7	2	1	1	0	0	0	4
	2.2	0.5	1.0	0.1	0.2	0.1	4.0
	50.00	25.00	25.00	0.00	0.00	0.00	100.00
Total	39	9	18	1	3	2	72
	39.0	9.0	18.0	1.0	3.0	2.0	72.0
	54.17	12.50	25.00	1.39	4.17	2.78	100.00

Pearson  $\chi^2(30) = 46.4685$  Pr = 0.028

Chi2 ranking (Q41-43) - "Bent u (mede)verantwoordelijk voor beslissingen omtrent faciliteit binnen uw bedrijf?" (Q4)

```
. tab Verantwoordelijkvoorbeslissingen Top3, row chi2
```

Key
frequency
row percentage

Verantwoordelijk voor beslissingen	1	2	Top 3 3	4	5	6	Total
0	17 54.84	4 12.90	7 22.58	1 3.23	1 3.23	1 3.23	31 100.00
1	22 53.66	5 12.20	11 26.83	0 0.00	2 4.88	1 2.44	41 100.00
Total	39 54.17	9 12.50	18 25.00	1 1.39	3 4.17	2 2.78	72 100.00

Pearson chi2(5) = 1.6167 Pr = 0.899

Testing for any correlation among the variables that were tested across from the demographic attributes above.

Correlation keurmerk (Q13) - “Duurzaamheid is belangrijk voor uw bedrijf”(Q6)

. pwcorr K F, sig

	K	F
K	1.0000	
F	0.0860 0.4662	1.0000

Correlation keurmerk (Q13) - merged variable on sustainability factors (Q23 till Q31)

. pwcorr K sust, sig

	K	sust
K	1.0000	
sust	-0.0956 0.4179	1.0000

Correlation Keurmerk (Q13) - “Het is belangrijk dat toiletpapier zacht is” (Q35)

. pwcorr AD K, sig

	AD	K
AD	1.0000	
K	0.0884 0.4538	1.0000

Correlation Keurmerk (Q13) - Cheap (Q33)

. pwcorr K AB, sig

	K	AB
K	1.0000	
AB	-0.0427 0.7181	1.0000

Correlation merged variable on sustainability factors (Q23 till Q31) - “Duurzaamheid is belangrijk voor uw bedrijf”(Q6)

. pwcorr K sust, sig

	K	sust
K	1.0000	
sust	-0.0956 0.4179	1.0000

Correlation merged variable on sustainability factors (Q23 till Q31) - “Het is belangrijk dat toiletpapier zacht is” (Q35)

. pwcorr AD sust, sig

	AD	sust
AD	1.0000	
sust	-0.0647 0.5840	1.0000

Correlation merged variable on sustainability factors (Q23 till Q31) - Cheap (Q33)

```
. pwcorr AB sust, sig
```

	AB	sust
AB	1.0000	
sust	-0.1136 0.3350	1.0000

Correlation “Duurzaamheid is belangrijk voor uw bedrijf”(Q6) - “Het is belangrijk dat toiletpapier zacht is” (Q35)

```
. pwcorr AD F, sig
```

	AD	F
AD	1.0000	
F	-0.0721 0.5415	1.0000

Correlation “Duurzaamheid is belangrijk voor uw bedrijf”(Q6) - Cheap (Q33)

```
. pwcorr AB F, sig
```

	AB	F
AB	1.0000	
F	-0.1032 0.3818	1.0000

Correlation “Het is belangrijk dat toiletpapier zacht is” (Q35) - Cheap (Q33)

```
. pwcorr AB AD, sig
```

	AB	AD
AB	1.0000	
AD	-0.1311 0.2655	1.0000



```
. pwcorr Huishouden sust, sig
```

	Huisho~n	sust
Huishouden	1.0000	
sust	0.0723 0.3747	1.0000

Correlation merged variable on sustainability factors (Q16 till Q24) - household income (Q4)

```
. pwcorr Brutoinkomen sust, sig
```

	Brutoi~n	sust
Brutoinkomen	1.0000	
sust	-0.0161 0.8443	1.0000

Anova merged variable on sustainability factors (Q16 till Q24) - Store (Q6)

```
. oneway sust Winkel , tabulate bonferroni
```

Winkel	Summary of mean(unstandardized items)		
	Mean	Std. Dev.	Freq.
1	4.0376984	.63715021	56
2	4.2676768	.48451516	22
3	3.9972222	.72467805	40
4	3.7373737	.87527448	11
Total	4.0387597	.67094275	129

Source	Analysis of Variance			F	Prob > F
	SS	df	MS		
Between groups	2.2211126	3	.740370866	1.67	0.1768
Within groups	55.399902	125	.443199216		
Total	57.6210146	128	.450164177		

Correlation merged variable on sustainability factors (Q16 till Q24) - buying sustainable toilet paper (Q7)

```
. pwcorr Duurzaamtoiletpapier sust, sig
```

	Duurza~r	sust
Duurzaamto~r	1.0000	
sust	-0.0008 0.9924	1.0000

T-test "Duurzaamheid is belangrijk" (Q8) - gender (Q1)

```
. ttest Q8, by( Geslacht) unequal
```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	49	3.836735	.1409001	.9863007	3.553436	4.120033
1	102	4.009804	.0886657	.8954793	3.833915	4.185693
combined	151	3.953642	.0753727	.9261947	3.804713	4.102572
diff		-.1730692	.1664765		-.5039564	.157818

```
diff = mean(0) - mean(1)          t = -1.0396
Ho: diff = 0          Satterthwaite's degrees of freedom = 87.0547

Ha: diff < 0          Ha: diff != 0          Ha: diff > 0
Pr(T < t) = 0.1507    Pr(|T| > |t|) = 0.3014    Pr(T > t) = 0.8493
```

### Correlation “Duurzaamheid is belangrijk” (Q8) - age (Q2)

```
. pwcorr Leeftijd Q8, sig
```

	Leeftijd	Q8
Leeftijd	1.0000	
Q8	0.0136 0.8677	1.0000

### Correlation “Duurzaamheid is belangrijk” (Q8) - household size (Q3)

```
. pwcorr Huishouden Q8, sig
```

	Huishouden	Q8
Huishouden	1.0000	
Q8	-0.0952 0.2420	1.0000

### Correlation “Duurzaamheid is belangrijk” (Q8) - household income (Q4)

```
. pwcorr Brutoinkomen Q8, sig
```

	Brutoinkomen	Q8
Brutoinkomen	1.0000	
Q8	-0.0494 0.5455	1.0000

### Anova “Duurzaamheid is belangrijk” (Q8) - Store (Q6)

```
. oneway Q8 Winkel , tabulate bonferroni
```

Winkel	Summary of Q8		
	Mean	Std. Dev.	Freq.
1	4.0535714	.79589042	56
2	4.2272727	.92230654	22
3	3.725	.98677148	40
4	3.8181818	1.0787198	11
Total	3.9612403	.91346782	129

Source	Analysis of Variance			F	Prob > F
	SS	df	MS		
Between groups	4.49191584	3	1.49730528	1.83	0.1452
Within groups	102.314286	125	.818514286		
Total	106.806202	128	.83442345		

Bartlett's test for equal variances:  $\chi^2(3) = 2.9394$  Prob> $\chi^2 = 0.401$

### Correlation “Duurzaamheid is belangrijk” (Q8) - Buying sustainable toilet paper (Q7)

```
. pwcorr Duurzaamtoiletpapier Q8, sig
```

	Duurzaamheid	Q8
Duurzaamheid	1.0000	
Q8	0.0864	1.0000
	0.2885	

### T-test “Het is belangrijk dat toiletpapier een keurmerk heeft”(Q26) - gender (Q1)

```
. ttest KeurmerkQ26 , by( Geslacht) unequal
```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
0	49	.3265306	.0676862	.4738035	.1904383 .4626229
1	102	.4215686	.049136	.4962488	.3240961 .5190411
combined	151	.3907285	.039838	.4895373	.3120124 .4694446
diff		-.095038	.0836407		-.261002 .0709259

diff = mean(0) - mean(1)  $t = -1.1363$   
 Ho: diff = 0 Satterthwaite's degrees of freedom = 98.8715

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
 Pr(T < t) = 0.1293 Pr(|T| > |t|) = 0.2586 Pr(T > t) = 0.8707

### Correlation “Het is belangrijk dat toiletpapier een keurmerk heeft”(Q26) - age (Q2)

```
. pwcorr Leeftijd KeurmerkQ26, sig
```

	Leeftijd	KeurmerkQ26
Leeftijd	1.0000	
KeurmerkQ26	-0.0354	1.0000
	0.6636	

### Correlation “Het is belangrijk dat toiletpapier een keurmerk heeft”(Q26) - household size (Q3)

. pwcorr Huishouden KeurmerkQ26, sig

	Huisho~n Keurm~26	
Huishouden	1.0000	
KeurmerkQ26	0.0871	1.0000
	0.2842	

Correlation “Het is belangrijk dat toiletpapier een keurmerk heeft”(Q26) - household income (Q4)

. pwcorr Brutoinkomen KeurmerkQ26, sig

	Brutoi~n Keurm~26	
Brutoinkomen	1.0000	
KeurmerkQ26	0.0243	1.0000
	0.7667	

Anova “Het is belangrijk dat toiletpapier een keurmerk heeft”(Q26) - Store (Q6)

. oneway KeurmerkQ26 Winkel , tabulate bonferroni

Winkel	Summary of Keurmerk (Q26)		
	Mean	Std. Dev.	Freq.
1	.35714286	.48349378	56
2	.5	.51176632	22
3	.4	.49613894	40
4	.45454545	.52223297	11
Total	.40310078	.49243305	129

Source	Analysis of Variance			F	Prob > F
	SS	df	MS		
Between groups	.354344106	3	.118114702	0.48	0.6960
Within groups	30.6844156	125	.245475325		
Total	31.0387597	128	.24249031		

Bartlett's test for equal variances: chi2(3) = 0.1639 Prob>chi2 = 0.983

Comparison of Keurmerk (Q26) by Winkel

Correlation “Het is belangrijk dat toiletpapier een keurmerk heeft”(Q26) - buying sustainable toilet paper (Q7)

. pwcorr Duurzaamtoiletpapier KeurmerkQ26, sig

	Duurzaa~r Keurm~26	
Duurzaamto~r	1.0000	
KeurmerkQ26	0.0074	1.0000
	0.9281	

T-test Cheap (Q28) - gender (Q1)

```
. ttest Q28 , by( Geslacht) unequal
```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	49	4.040816	.1127847	.7894931	3.814047	4.267585
1	102	3.931373	.0884077	.8928739	3.755995	4.10675
combined	151	3.966887	.0699525	.8595907	3.828668	4.105107
diff		.1094438	.143305		-.1746699	.3935575

```
diff = mean(0) - mean(1)          t = 0.7637
Ho: diff = 0          Satterthwaite's degrees of freedom = 106.076
```

```
Ha: diff < 0          Ha: diff != 0          Ha: diff > 0
Pr(T < t) = 0.7766    Pr(|T| > |t|) = 0.4467    Pr(T > t) = 0.2234
```

### Correlation Cheap (Q28) - age (Q2)

```
. pwcorr Leeftijd Q28, sig
```

	Leeftijd	Q28
Leeftijd	1.0000	
Q28	-.01317	1.0000
	0.1046	

### Correlation Cheap (Q28) - household size (Q3)

```
. pwcorr Huishouden Q28, sig
```

	Huishouden	Q28
Huishouden	1.0000	
Q28	-.0160	1.0000
	0.8444	

### Correlation Cheap (Q28) - household income (Q4)

```
. pwcorr Brutoinkomen Q28, sig
```

	Brutoi~n	Q28
Brutoinkomen	1.0000	
Q28	-.01511	1.0000
	0.0632	

### Anova Cheap (Q28) - Store (Q6)

```
. oneway Q28 Winkel , tabulate bonferroni
```

Winkel	Summary of Q28			Freq.
	Mean	Std. Dev.		
1	4.0714286	.78293487		56
2	3.6363636	1.0486025		22
3	4	.93369956		40
4	3.6363636	.80903983		11
Total	3.9379845	.89050493		129

Source	SS	df	MS	F	Prob > F
Between groups	4.15322662	3	1.38440887	1.78	0.1548
Within groups	97.3506494	125	.778805195		
Total	101.503876	128	.792999031		

Bartlett's test for equal variances:  $\chi^2(3) = 3.1989$  Prob> $\chi^2 = 0.362$

Comparison of Q28 by Winkel

## Correlation Cheap (Q28) - Buying sustainable toilet paper (Q7)

```
. pwcorr Duurzaamtoiletpapier Q28, sig
```

	Duurzaam~r	Q28
Duurzaamto~r	1.0000	
Q28	-.0856	1.0000
	0.2927	

## T-test “Het is belangrijk dat toiletpapier zacht is” (Q29) - gender (Q1)

```
. ttest Q29 , by( Geslacht) unequal
```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	49	4.102041	.1210951	.8476659	3.858563	4.345519
1	102	3.960784	.0964539	.9741365	3.769446	4.152123
combined	151	4.006623	.0760485	.9344994	3.856358	4.156887
diff		.1412565	.154814		-.1656235	.4481365

diff = mean(0) - mean(1)      t = 0.9124  
Ho: diff = 0      Satterthwaite's degrees of freedom = 107.636  
Ha: diff < 0      Ha: diff != 0      Ha: diff > 0  
Pr(T < t) = 0.8182      Pr(|T| > |t|) = 0.3636      Pr(T > t) = 0.1818

## Correlation “Het is belangrijk dat toiletpapier zacht is” (Q29) - age (Q2)

```
. pwcorr Leeftijd Q29, sig
```

	Leeftijd	Q29
Leeftijd	1.0000	
Q29	-.0208	1.0000
	0.7986	

## Correlation “Het is belangrijk dat toiletpapier zacht is” (Q29) - household size (Q3)

. pwcorr Huishouden Q29, sig

	Huisho~n	Q29
Huishouden	1.0000	
Q29	0.0561 0.4906	1.0000

Correlation “Het is belangrijk dat toiletpapier zacht is” (Q29) - household income (Q4)

. pwcorr Brutoinkomen Q29, sig

	Brutoi~n	Q29
Brutoinkomen	1.0000	
Q29	-0.0043 0.9579	1.0000

Anova “Het is belangrijk dat toiletpapier zacht is” (Q29) - store (Q6)

. oneway Q29 Winkel , tabulate bonferroni

Winkel	Summary of Q29		
	Mean	Std. Dev.	Freq.
1	4.1964286	.86170324	56
2	3.9545455	.99891716	22
3	3.95	.98579657	40
4	3.7272727	1.00905	11
Total	4.0387597	.93877497	129

Analysis of Variance					
Source	SS	df	MS	F	Prob > F
Between groups	2.9305522	3	.976850733	1.11	0.3472
Within groups	109.875649	125	.879005195		
Total	112.806202	128	.88129845		

Bartlett's test for equal variances: chi2(3) = 1.2088 Prob>chi2 = 0.751

Comparison of Q29 by Winkel

Correlation “Het is belangrijk dat toiletpapier zacht is” (Q29) - buying sustainable toilet paper (Q7)

. pwcorr Duurzaamtoiletpapier Q29, sig

	Duurza~r	Q29
Duurzaamto~r	1.0000	
Q29	-0.0374 0.6464	1.0000

Ranking has been created out of the answers to questions 35-37, choosing between sustainable, cheap or comfortable toilet paper, in Excel. All possible rankings and the number they correspond with:

- 1 - 1. Sustainability; 2. Comfort; 3. Price
- 2 - 1. Sustainability; 2. Price; 3. Comfort
- 3 - 1. Comfort; 2. Sustainability; 3. Price
- 4 - 1. Comfort; 2. Price; 3 Sustainability
- 5 - 1. Price; 2. Sustainability; 3. Comfort
- 6 - 1. Price; 2. Comfort; 3. Sustainability

## Chi2 Ranking (Q35-37) - gender (Q1)

```
. tab Geslacht Top3, row chi2
```

Key
frequency
row percentage

Geslacht	Top3						Total
	1	2	3	4	5	6	
0	11 23.91	3 6.52	16 34.78	10 21.74	1 2.17	5 10.87	46 100.00
1	18 18.37	8 8.16	29 29.59	26 26.53	12 12.24	5 5.10	98 100.00
Total	29 20.14	11 7.64	45 31.25	36 25.00	13 9.03	10 6.94	144 100.00

Pearson chi2(5) = 6.1626 Pr = 0.291

## Annova Ranking (Q35-Q37) - Age (Q2)

```
. oneway Leeftijd Top3, tabulate bonferroni
```

Top3	Summary of Leeftijd		
	Mean	Std. Dev.	Freq.
1	2.6896552	1.4418106	29
2	1.9166667	1.6213537	12
3	2.2444444	1.4005771	45
4	1.5945946	1.1170263	37
5	1.6923077	1.3774745	13
6	2.3	1.4944341	10
Total	2.0958904	1.4011265	146

Analysis of Variance					
Source	SS	df	MS	F	Prob > F
Between groups	23.4347102	5	4.68694205	2.51	0.0327
Within groups	261.222824	140	1.86587731		
Total	284.657534	145	1.96315541		

```
. regress
```

Source	SS	df	MS	Number of obs = 146	
Model	23.4347102	5	4.68694205	F( 5, 140) =	2.51
Residual	261.222824	140	1.86587731	Prob > F =	0.0327
Total	284.657534	145	1.96315541	R-squared =	0.0823
				Adj R-squared =	0.0496
				Root MSE =	1.366

Leeftijd	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Top3						
2	-.7729885	.4688607	-1.65	0.101	-1.699951	.1539743
3	-.4452107	.3252761	-1.37	0.173	-1.088299	.1978776
4	-1.095061	.3387768	-3.23	0.002	-1.76484	-.4252807
5	-.9973475	.4559272	-2.19	0.030	-1.89874	-.0959549
6	-.3896552	.5009275	-0.78	0.438	-1.380016	.6007053
_cons	2.689655	.2536545	10.60	0.000	2.188167	3.191144

```
. sktest Leeftijd if Top3==1
```

Skewness/Kurtosis tests for Normality					
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
Leeftijd	29	0.2960	0.3904	1.99	0.3700

```
. sktest Leeftijd if Top3==2
```

Skewness/Kurtosis tests for Normality					
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
Leeftijd	12	0.0066	0.0576	8.76	0.0125

```
. sktest Leeftijd if Top3==3
```

Skewness/Kurtosis tests for Normality					
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
Leeftijd	45	0.0115	0.6502	6.13	0.0467

```
. sktest Leeftijd if Top3==4
```

Skewness/Kurtosis tests for Normality					
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
Leeftijd	37	0.0001	0.0066	17.19	0.0002

```
. sktest Leeftijd if Top3==5
```

Skewness/Kurtosis tests for Normality					
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
Leeftijd	13	0.0068	0.1307	7.97	0.0186

```
. sktest Leeftijd if Top3==6
```

Skewness/Kurtosis tests for Normality					
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
Leeftijd	10	0.3626	0.4581	1.59	0.4516

## Annova Ranking (Q35-Q37) - Household size (Q3)

```
. oneway Huishouden Top3, tabulate bonferroni
```

Top3	Summary of Huishouden		
	Mean	Std. Dev.	Freq.
1	2.2068966	1.0134563	29
2	2.0833333	1.2401124	12
3	2.6444444	1.4005771	45
4	2.5405405	1.2155153	37
5	3.1538462	1.5730095	13
6	2.9	1.4491377	10
Total	2.5479452	1.3029526	146

Analysis of Variance					
Source	SS	df	MS	F	Prob > F
Between groups	12.3964882	5	2.47929764	1.48	0.1985
Within groups	233.767895	140	1.66977068		
Total	246.164384	145	1.6976854		

Bartlett's test for equal variances: chi2(5) = 4.9263 Prob>chi2 = 0.425

## Annova Ranking (Q35-Q37) - Household income (Q4)

```
. oneway Brutoinkomen Top3, tabulate bonferroni
```

Top3	Summary of Bruto inkomen			Freq.	
	Mean	Std. Dev.			
1	3.3448276	1.7377297		29	
2	2.25	1.3568011		12	
3	3.1136364	1.450195		44	
4	2.4864865	1.5387878		37	
5	3.2307692	2.0878157		13	
6	3.8	1.9888579		10	
Total	2.9862069	1.6582546		145	

Source	Analysis of Variance			F	Prob > F
	SS	df	MS		
Between groups	27.5879359	5	5.51758718	2.08	0.0712
Within groups	368.384478	139	2.65024804		
Total	395.972414	144	2.74980843		

Bartlett's test for equal variances:  $\chi^2(5) = 4.6654$  Prob> $\chi^2 = 0.458$

## Chi2 Ranking (Q35-Q37) - Store (Q6)

```
. tab Winkel Top3, row chi2
```

Key
frequency
row percentage

Winkel	Top3						Total
	1	2	3	4	5	6	
1	8 14.29	6 10.71	18 32.14	16 28.57	6 10.71	2 3.57	56 100.00
2	5 23.81	1 4.76	9 42.86	3 14.29	2 9.52	1 4.76	21 100.00
3	11 31.43	2 5.71	9 25.71	6 17.14	3 8.57	4 11.43	35 100.00
4	1 9.09	1 9.09	5 45.45	4 36.36	0 0.00	0 0.00	11 100.00
Total	25 20.33	10 8.13	41 33.33	29 23.58	11 8.94	7 5.69	123 100.00

Pearson  $\chi^2(15) = 13.6995$  Pr = 0.548

## Anova Ranking (Q35-Q37) - buying sustainable toilet paper (Q7)

```
. oneway Duurzaamtoiletpapier Top3, tabulate bonferroni
```

Top3	Summary of Duurzaam toiletpapier			Freq.	
	Mean	Std. Dev.			
1	4.1034483	1.39757		29	
2	3.0833333	1.505042		12	
3	2.9555556	1.9534998		45	
4	3.7837838	2.2127802		37	
5	3	1.95789		13	
6	3.8	2.3475756		10	
Total	3.4657534	1.9517079		146	

Source	Analysis of Variance			F	Prob > F
	SS	df	MS		
Between groups	32.9410639	5	6.58821278	1.78	0.1216
Within groups	519.387703	140	3.70991217		
Total	552.328767	145	3.80916391		

Bartlett's test for equal variances:  $\chi^2(5) = 8.0089$  Prob> $\chi^2 = 0.156$

Testing for any correlation among the variables that were tested across from the demographic attributes above.

Correlation merged variable on sustainability factors (Q16 till Q24) - “Duurzaamheid is belangrijk” (Q8)

```
. pwcorr sust Q8, sig
```

	sust	Q8
sust	1.0000	
Q8	0.3454 0.0000	1.0000

Correlation merged variable on sustainability factors (Q16 till Q24) - “Het is belangrijk dat toiletpapier een keurmerk heeft”(Q26)

```
. pwcorr KeurmerkQ26 sust, sig
```

	Keurm-26	sust
KeurmerkQ26	1.0000	
sust	0.0919 0.2585	1.0000

Correlation merged variable on sustainability factors (Q16 till Q24) - Cheap (Q28)

```
. pwcorr sust Q28 , sig
```

	sust	Q28
sust	1.0000	
Q28	-0.1383 0.0883	1.0000

Correlation merged variable on sustainability factors (Q16 till Q24) - “Het is belangrijk dat toiletpapier zacht is” (Q29)

```
. pwcorr sust Q29 , sig
```

	sust	Q29
sust	1.0000	
Q29	0.0270 0.7405	1.0000

Correlation “Het is belangrijk dat toiletpapier een keurmerk heeft”(Q26) - Cheap (Q28)

```
. pwcorr KeurmerkQ26 Q28, sig
```

	Keurm-26	Q28
KeurmerkQ26	1.0000	
Q28	-0.1956 0.0154	1.0000

Correlation “Het is belangrijk dat toiletpapier een keurmerk heeft”(Q26) - “Het is belangrijk dat toiletpapier zacht is” (Q29)

```
. pwcorr KeurmerkQ26 Q29, sig
```

	KeurmerkQ26	Q29
KeurmerkQ26	1.0000	
Q29	-0.0344 0.6733	1.0000

Correlation Cheap (Q28) - “Het is belangrijk dat toiletpapier zacht is” (Q29)

```
. pwcorr Q28 Q29, sig
```

	Q28	Q29
Q28	1.0000	
Q29	0.2133 0.0081	1.0000

## APPENDIX 5: STATA RESULTS COMPARISSON B2B AND B2C MARKETS

### Sustainability is important - correlation

```
. pwcorr F Q8, sig
```

	F	Q8
F	1.0000	
Q8	-0.0359 0.7611	1.0000

### Ecolabel - Chi<sup>2</sup>

```
. tab KeurmerkQ26 KeurmerkB2B, row chi2
```

Key
frequency
row percentage

Keurmerk (Q26)	Keurmerk B2B		Total
	0	1	
0	23 54.76	19 45.24	42 100.00
1	11 34.38	21 65.63	32 100.00
Total	34 45.95	40 54.05	74 100.00

Pearson chi2(1) = 3.0394 Pr = 0.081

### Cheap - Correlation

```
. pwcorr AB Q28, sig
```

	AB	Q28
AB	1.0000	
Q28	-0.0500 0.6724	1.0000

### Soft - Correlation

```
. pwcorr AD Q29, sig
```

	AD	Q29
AD	1.0000	
Q29	0.1164 0.3232	1.0000

### Rankings - Chi<sup>2</sup>

. tab Top3 BV, row chi2

Top 3	1	2	Top3 3	4	5	6	Total
1	5 13.89	3 8.33	12 33.33	8 22.22	6 16.67	2 5.56	36 100.00
2	0 0.00	2 22.22	4 44.44	2 22.22	0 0.00	1 11.11	9 100.00
3	4 23.53	2 11.76	6 35.29	1 5.88	4 23.53	0 0.00	17 100.00
5	2 66.67	0 0.00	1 33.33	0 0.00	0 0.00	0 0.00	3 100.00
6	1 50.00	0 0.00	1 50.00	0 0.00	0 0.00	0 0.00	2 100.00
Total	12 17.91	7 10.45	24 35.82	11 16.42	10 14.93	3 4.48	67 100.00

Pearson chi2(20) = 17.4975 Pr = 0.620

### Merged variables on sustainable attributes - correlation

. pwcorr sust1 sust2, sig

	sust1	sust2
sust1	1.0000	
sust2	0.0986 0.4033	1.0000

### Sustainable attributes - Producing CO<sub>2</sub> neutral - correlation

. pwcorr S Q20, sig

	S	Q20
S	1.0000	
Q20	0.0948 0.4218	1.0000

### Sustainable attributes - During production usage of green energy - correlation

. pwcorr T Q22, sig

	T	Q22
T	1.0000	
Q22	-0.0081 0.9453	1.0000

### Sustainable attributes - Usage of as little energy as possible - correlation

. pwcorr U Q21, sig

	U	Q21
U	1.0000	
Q21	0.0880 0.4557	1.0000

### Sustainable attributes - Usage of as little water as possible - correlation

. pwcorr V Q23, sig

	V	Q23
V	1.0000	
Q23	0.0562 0.6343	1.0000

Sustainable attributes - Usage of as little chemicals as possible - correlation

. pwcorr W Q24, sig

	W	Q24
W	1.0000	
Q24	0.1209 0.3051	1.0000

Sustainable attributes - emitting less CO<sub>2</sub> - correlation

. pwcorr Y Q19, sig

	Y	Q19
Y	1.0000	
Q19	0.0617 0.6017	1.0000

Sustainable attributes - emitting less greenhouse gasses - correlation

. pwcorr X Q18, sig

	X	Q18
X	1.0000	
Q18	-0.0172 0.8844	1.0000

Sustainable attributes - cutting less trees - correlation

. pwcorr Z Q17, sig

	Z	Q17
Z	1.0000	
Q17	-0.0447 0.7055	1.0000

Sustainable attributes - usage of recycled paper - correlation

. pwcorr AA Q16, sig

	AA	Q16
AA	1.0000	
Q16	0.0882 0.4550	1.0000

Other attributes - consisting out of multiple layers - correlation

```
. pwcorr AE Q30, sig
```

	AE	Q30
AE	1.0000	
Q30	0.0735 0.5338	1.0000

Other attributes - doesn't fall apart too easily - correlation

```
. pwcorr AF Q31, sig
```

	AF	Q31
AF	1.0000	
Q31	0.1274 0.2795	1.0000

Other attributes - solubility - correlation

```
. pwcorr AG Q32, sig
```

	AG	Q32
AG	1.0000	
Q32	-0.0674 0.5681	1.0000

Other attributes - paper being white - correlation

```
. pwcorr AH Q33, sig
```

	AH	Q33
AH	1.0000	
Q33	0.0267 0.8215	1.0000