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Is Unbleached the New White?

A study on female consumers perceptions related to unbleached sanitary pads

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Abstract

As climate change is becoming an increasingly concerning issue, the need for sustainable products is growing. Many companies are shifting towards more sustainable materials and packaging in order to align their product offerings with the increased expectations from consumers for sustainable products. Unbleached disposable products offer a promising potential to reduce carbon emissions caused by bleaching processes. This paper explores sustainability perceptions, product quality perceptions and purchase intentions in the context of unbleached sanitary pads. The study investigated the mediating effect of perceived product quality and perceived sustainability on the purchase intention of female consumers towards unbleached sanitary pads. Although all hypotheses could not be confirmed, the results from the study found that consumers perceive unbleached sanitary pads as more sustainable yet display a lower intention to purchase them, as compared to bleached sanitary pads. Moreover, the study confirmed the mediating effect that perceived product quality has on purchase intention. The study has contributed with insights regarding consumers perceptions in relation to unbleached products, which has relevance both academically and practically, particularly in the field of sustainability.

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1. Introduction

1.1 Background

As the voices warning about climate change are becoming more and louder, our world is becoming increasingly aware about the escalating dangers of the unsustainable consumption patterns of its inhabitants. With sea levels rising, wildfires becoming more frequent and temperatures reaching record-high levels, the issue is becoming difficult for both individuals as well as organizations and nations to turn their heads away from (Eriksson, 2023).

Nations as well as unions pass new laws with the intention to halt climate change on a yearly basis and take part in global meetings to discuss and collaborate on the issue. In turn, products and services that we are used to in our everyday life are threatened to become compromised with on a global level, to save our species from distinction (Brennan et al., 2023).

Many people could be assumed to instinctively associate climate threats with non-renewable energy, gas vehicles and air traffic. However as of lately, many heads have turned towards the issue of unsustainable “one-time-usage” consumption. More than 80% of marine litter pertains to plastic, according to the EU. In addition to this, the production of single-use plastic products significantly contributes to carbon emissions (European Commission, n.d.). Thus, member states want to tackle this issue by banning single-use plastic products.

Recently, the EU's single-use plastic directive came into effect. For a member state like Sweden, this will for example imply the ban of certain plastic cups and food containers in industries such as restaurants and cafes (Naturvårdsverket, n.d.). Only a decade ago, the consumption of disposable plastic straws raised no eyebrows and was completely normalized in our society. As of now, ten years later, it is practically illegal for restaurants and establishments to offer plastic straws to their guests. This has forced a shift from plastic products towards biodegradable and sustainable materials (TT, 2021).

The shift from single-use plastic products to reusable products illustrates how suddenly something that we consume daily can be tweaked or taken away, due to environmental reasons. The example also illustrates how essential it is for companies and organizations to be well prepared to meet the increased or decreased demand for a certain product that a potential new legislation or ban can cause (Brennan et al., 2023).

1.1.1 The sanitary pad

There exists a disposable product that is used by a large share of the world's population on a monthly basis, yet not mentioned as often as straws or plastic forks - feminine hygiene products, and more specifically; sanitary pads. In the EU member states alone, the production of disposable menstrual hygiene products emits 245,000 tones CO₂ and over 47 billion units are utilized annually (Joan & Simon, n.d.). Having the earlier mentioned laws in mind, companies operating in the EU are likely to be faced with increased pressure to develop sustainable alternatives to their current non-sustainable disposable offerings, due to the single-use nature of the sanitary pad.

The global market for the sanitary pad was worth almost 24 billion USD in 2022 and is expected to grow to the size of roughly 35 billion USD in 2030 (Arnold, 2023). As of 2010, the average sanitary pad consisted of 48% fluff pulp, which is a material that gives the sanitary pad its absorbent properties (Ajmeri & Ajmeri, 2010). The fluff pulp in the sanitary pads that are offered in the Swedish market today is by default bleached to give the product its signature bleached-white color. This aligns with one of the desired properties of the sanitary pad, which is said to be “no unaesthetic appearance or color” (Ajmeri & Ajmeri, 2010). If one were to overview the available options in terms of sanitary pads in the Swedish market, the pads would be much in line with that statement. Brands such as Always and Libresse have varied their offerings of sanitary pads with patterns, wings or even perfume. Even though the sanitary pads in the Swedish market have different packaging, traits and are marketed differently, the actual product inside carries the same color as its competing brands. That is; bleached white (Libresse, 2024).

1.1.2 The potential to reduce the sanitary pads' CO2 emissions

UPM and StoraEnso are two examples of companies which currently produce the fluff materials that are necessary to manufacture a sanitary pad. StoraEnso and UPM are both international companies specialized in areas such as renewable and biodegradable materials, pulp and papers (Stora Enso, 2024, UPM, 2024).

UPM and StoraEnso have developed unbleached fluff materials. That is; unbleached fluff pulp which is claimed to reduce the carbon emissions of the material by 30%, compared to the bleached fluff pulp (Stora Enso, n.d.). This is done through innovation by reduction, i.e. removing the act of bleaching in the manufacturing process. Bleaching the fluff pulp that a sanitary pad normally consists of involves using heavy bleach chemicals. This is not only done in order to achieve the desired bleached white color but also to remove the component lignin. Lignin can disturb the absorption properties of the fluff pulp and in turn affect the product quality negatively if not removed. Stora Enso's NaturaFluff Eco is described as an oxygen-delignified fluff pulp that is treated with oxygen only instead of bleach to remove the lignin (Stora Enso, n.d.). Used in a sanitary pad, the final product has a slightly more yellow-toned white color than the bleached white that consumers are used to. Moreover, this process is estimated to save 80 kilos of bleaching chemicals per tonne of fluff pulp, resulting in a 30% carbon footprint reduction. As of now, a sanitary pad consisting of this unbleached fluff pulp is not available in the Swedish market (Stora Enso, n.d., UPM, n.d.).

1.2 Problem discussion

The world is increasingly recognizing the need to address the environmental impact of disposable products (European Commission, n.d.). A disposable product that may have gone under the radar is the sanitary pad. The numbers speak for themselves in revealing the scale of the issue, but also the potential to reduce its carbon footprint (Stora Enso, n.d.). In EU member states alone, the production and disposal of disposable menstrual hygiene products emit an estimated 245,000 tonnes of CO2 annually, with over 47 billion units utilized each year (Joan &

Simon, n.d.). In a world increasingly faced with escalating climate threats, the willingness to reduce the unsustainable consumption patterns associated with these products should be deemed to be urgent. There are companies, such as Stora Enso, who have created innovations that have the possibility to tackle this issue by contributing to decreasing the carbon footprint related to the manufacturing of sanitary pads (Stora Enso, n.d.).

However, consumers' willingness to purchase an unbleached product, in this case, an unbleached sanitary pad, is yet to be researched in academics. The impact that a product that is perceived as sustainable, through for example eco-labels, may have on consumers' purchase intentions and product quality perceptions have earlier been studied by researchers (Luchs et al., 2010). Moreover, the attitudes and perceptions surrounding recycled and upcycled products have been studied as well (Adıgüzel & Donato, 2021, Meng & Leary, 2021). However, there is no academic research exploring how the color differences in bleached versus unbleached products, particularly a sanitary pad, may affect the consumer's perception of factors such as product quality, perceived sustainability, and the subsequent purchase intention. Moreover, the earlier studied products differ from the unbleached sanitary pad. The unbleached sanitary pad solely relies on its color as a potential sustainability cue. Furthermore, there is presumably a large expectation from consumers that a sanitary pad should be bleached white, since this is the only color that is sold in the market. As sustainable materials are becoming increasingly demanded due to environmental threats, there is relevance in exploring the research gap related to unbleached sustainable materials and their effects on consumers' perceptions.

In addition to this, gender norms and aesthetic preferences add complexity to the study. Since the sanitary pad is associated with menstruation, gender-related norms and preferences may interfere with the purchase intention related to an unbleached sanitary pad. In particular, the association of the color white with femininity and cleanliness highlights the norms that may shape aesthetic preferences related to menstruation and its subsequent effect on product preferences and consumer behavior amongst women (Semin & Palma, 2014). This may cause the unbleached sanitary pad to cause different associations and subsequent purchase intentions compared to other non-gender coded products such as toilet paper.

1.3 Purpose and contribution

The purpose of this study will be to explore female consumer perceptions regarding unbleached sanitary pads. The negative environmental consequences of unsustainable consumption patterns and the subsequent urgent need for sustainable alternatives in the context of disposable products are apparent. The research aims to investigate female consumers purchase intention, perceived product quality and perceived sustainability of unbleached sanitary pads. Moreover, the research seeks to investigate how the purchase intention in females towards unbleached sanitary pads is mediated by perceived product quality and perceived sustainability.

Given the rise of legislative measures targeting disposable products, there exists a need to examine consumer attitudes toward environmentally friendlier alternatives in the feminine hygiene sector. Innovations such as unbleached fluff materials which can be used to manufacture unbleached sanitary pads offer a promising potential to reduce carbon emissions if they were to replace traditional, bleached white sanitary pads.

This study seeks to contribute to the research on sustainable consumption practices and perceptions related to consumer behavior. Regarding practical relevance, the findings may contribute to the development of product strategies and marketing initiatives that seek to promote sustainable alternatives in the feminine hygiene market.

2. Theoretical framework and hypotheses formulation

In this section, relevant literature and earlier research are presented. The following literature and research will be used to formulate hypotheses that will be tested. The framework has been categorized under; “Sustainable consumption”, “Product quality perceptions and sustainability” and “Literature related to color perception”.

2.1 Sustainable consumption

Emerging climate threats and increasing awareness about climate change have over time led to consumers adopting increasingly sustainable consumption habits due to, for example, environmental consciousness (Maduku, 2024). Sustainable consumption can be defined as: *“the use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of further generations”* (Sen & Kumar, 2023). In the recent years, there has been a sharp increase in consumers who claim to have been adopting a more sustainable consumption behavior (Maduku, 2024). Many factors are claimed to have been driving the recent increase in sustainable consumption, and the extent to which certain factors drive the shift is debated and not fully known. One factor contributing to the increase in sustainable consumption is suggested to be consumers personal concerns about the environment (Coelho et al., 2017).

On a deeper and individual level, adopting sustainable consumption behaviors has been described by researchers as being driven by five psychological factors: Social influence, Habit formation, Individual self, Feelings and cognition, and Tangibility (White et al., 2019). These factors, which are summarized under the SHIFT framework, help explain why consumers make the purchase decisions that they do. In turn, these insights can be used by marketers to nudge consumers into making more sustainable purchase decisions (White et al., 2019).

Moreover, women tend to have more positive attitudes towards sustainable consumption when compared to men (Brough et al., 2016). In addition to this, they emit less carbon and tend to purchase environmentally friendly products more often than men (Zhao et al., 2021). This is

partly explained as being a result of society's differentiating expectations on men and women. Women tend to be expected to display caring, nurturing, and motherly traits. This can be translated into the societal expectation on women to care more about the environment than men, thus resulting in increasingly sustainable consumption behavior and an increased intention to engage in sustainable consumption behaviors amongst women (Zhao et al., 2021).

Even though women tend to show more positive attitudes towards sustainable consumption behaviors, there still exists a large attitude-behavior gap regarding these practices for both genders (Park & Lin, 2020). The attitude-behavior gap could be described as the phenomenon of consumers showing positive attitudes towards consuming sustainably, however not always doing so in practice (Park & Lin, 2020). In a UN report from 2005, nearly 40% of respondents showed a positive attitude towards consuming more environmentally friendly. However, only 4% claimed to engage in such consumption behaviors. These numbers show that the attitude-behavior gap is very much present in our society and affects day-to-day purchases and consumption practices worldwide (Dupré. Stanislas, 2005). A more recent survey from 2010 shows that there is a clear inconsistency in how consumers intend to act and how they act in practice in relation to sustainable consumption. Around 30-50% of respondents claimed to have the intention to buy sustainable products, yet the market share of these goods tends to be around 5% (Hirsch & Terlau, 2015). The scale of the attitude-behavior gap varies by country but is nonetheless present to some extent across nations. Thus, it is a phenomenon affecting purchasing practices and in turn carbon emissions worldwide (Hirsch & Terlau, 2015).

The attitude-behavior gap occurs in consumers not only due to a lack of ethical principles. Instead, several factors contribute to this, one of them being product quality perceptions. Generally, consumers tend to perceive sustainable products as less effective and have a lower product quality, which in turn contributes to the attitude-behavior gap and the unwillingness to purchase and consume sustainable products (Park & Lin, 2020). For example, a study found that in food categories that were deemed "pleasurable", such as chips or sweets, consumers were less willing to purchase the products that were labeled as organic, since they automatically assumed that the organic foods would be less pleasurable than the non-organic ones (Van Doorn & Verhoef, 2015).

2.2 Product quality perceptions and sustainability

Contrary to popular belief, it has been suggested that enhanced sustainability-related attributes in products may come with unwanted consequences, such as a reduced perceived product quality among consumers. This phenomenon is named the “sustainability liability” (Luchs et al., 2010). The presence of environmentally friendly attributes, such as eco-labels, can influence the perceptions related to other attributes that the consumer values which in turn affects overall product perception and purchase intention (Luchs et al., 2010). This effect could be explained through consumers being aware of the limited economic resources in organizations. Thus, the conclusion is drawn by consumers that if a product is perceived as sustainable, through for example displaying eco-labels, some compromise or “trade-off” has been made to give the product a sustainable attribute. This trade-off could for example be the quality or efficacy of the product in question (Luchs et al., 2010). However, these negative associations between product quality and sustainability are only apparent in product categories that are deemed “strong”. That is products such as hand sanitizers and laundry detergent, where product performance and effectiveness are of high relevance to consumers. In product categories that are deemed “gentle”, such as body lotions and soaps, the association between product quality and sustainability becomes positive (Luchs et al., 2010). Another study investigating how eco-labels affect the perceived product quality found the same results. That is, products where performance is highly valued by consumers become negatively affected in terms of purchase intentions when they display sustainability cues (van Doorn et al., 2020).

The issue regarding consumers’ product quality perceptions related to sustainable products is also brought up by the SHIFT framework, which is used to describe barriers that consumers may face in relation to sustainable consumption (White et al., 2019). It is suggested that consumers tend to act in a self-interested way, which in many cases negatively affects the purchase intention related to sustainable products (White et al., 2019). This occurs due to consumers’ general beliefs that sustainable attributes in a product may have negative implications on for example the product’s aesthetic appearance or functional performance. In turn, this becomes a barrier for consumers to engage in sustainable consumption behaviors (White et al., 2019).

The idea that sustainability-related cues reduce perceived product quality is further confirmed by other studies. The way by which a product is presented as environmentally friendly affects the consumer's product quality expectations and subsequent purchase intentions (Pancer et al., 2017). This is suggested to be due to the preconceived assumptions among consumers that the presence of an environmentally friendly element will come at the compromise of elements related to product quality. That is, product quality elements cannot fully co-exist with sustainable ones but must be compromised with in order to achieve one or the other (Pancer et al., 2017). This is in line with what is suggested by earlier research (Luchs et al., 2010).

Moreover, Pancer et al. especially study the color green as an environmentally friendly cue and the effect that the color has on evaluating the environmental friendliness of a product. The color green is associated with naturality, the outdoors, and similar characteristics. Thus, it triggers consumers to categorize a product displaying this color as environmentally friendly, and followingly, the authors conclude that the color green is strongly associated with environmental friendliness (Pancer et al., 2017). However, as is also concluded by Luchs et al., this may come with negative product quality expectations. In particular, when the color green is used in the absence of complementary eco-labels (Luchs et al., 2010).

Much research has been done on different environmental cues, such as the color green or different eco-labels, and their subsequent impact on product quality and efficacy perceptions (Luchs et al., 2010). However, the effect of an unbleached color on a traditionally bleached product and its impact on product perceptions are lacking in research, even though sustainable innovations are being done within this field. Research on unbleached materials such as kraft paper has helped to contribute to sustainable innovations, such as more environmentally friendly, yet effective, product packaging (Li, 2021). Moreover, research is continuously being done on unbleached materials such as unbleached kraft pulp (Liu et al., 2023). Thus, the effect of unbleached materials on consumer behavior would be deemed relevant to research due to the possibility of unbleached materials contributing to sustainable practices within several industries.

2.3 Literature related to color perception

Color is deemed to be very impactful in first impression settings. In turn, it heavily impacts consumer perceptions and preferences. The psychology behind color-setting goes as far as having an impact on consumers' emotions and can thus be utilized in effective ways by marketers to evoke purchase intentions (Singh et al., 2023).

2.3.1 Sustainability and color

Research has extensively explored the impact of color, particularly green, in the context of sustainability (Pancer et al., 2017). Furthermore, color saturation and its relation to sustainability perceptions have also been somewhat explored. The findings suggest that the level of saturation in product colors affects the perceived sustainability of products (Pichierri & Pino, 2023). This negative influence extends to perceptions of material naturalness, a product's authenticity, and its durability. However, it is worth noting that this study involves saturated colors such as pink and blue. Thus, it is not investigating different levels of saturation of white (Pichierri & Pino, 2023). Other research further indicates that brown-colored product packaging, which could also be categorized as a low-saturation color, is associated with sustainability by consumers (Van Schoubroeck et al., 2023).

Furthermore, research identifies mechanisms that influence consumer perceptions regarding color saturation. Low-saturation colors are as earlier mentioned associated with perceptions of naturalness, authenticity, and durability, which leads consumers to perceive products with low-saturated colors as more environmentally friendly (Pichierri & Pino, 2023). Moreover, the low-saturated color associations positively impact consumers' trust in a company's commitment to sustainability-related issues which in turn influences purchase intentions (Pichierri & Pino, 2023). As mentioned in the previous paragraph, the sustainability liability phenomenon may lead to low-saturated colored products being faced with a negative purchase intention among consumers, due to their associations with sustainability (Luchs et al., 2010).

2.3.2 Gender and color

Investigating closer how specific colors induce certain feelings related to identity and gender can also give further insight into what and how color associations may affect purchase intentions in women. In a study published in 2013, experiments conducted show that the color white is strongly associated with femininity and that subsequently, the color black is associated with masculinity (Semin & Palma, 2014). More interestingly, these gender-related color associations were shown to drive preferences for consumer goods. A whiter or lighter-colored product was significantly more associated with women and a darker-colored product tended to be associated with men. These color associations shaped purchase intentions, where the white products that were associated with females tended to be purchased by females (Semin & Palma, 2014). In practice, these insights have historically been used by marketers to target a specific gender, as evidenced by the success of marketing strategies employed by companies like Coca-Cola for products such as Coke Light and Coke Zero (Semin & Palma, 2014).

Furthermore, the color white tends to be associated with characteristics such as innocence, pureness, and cleanliness. These are characteristics that traditionally become assigned to women, and thus it further strengthens the connection between whiteness and femininity. (Semin & Palma, 2014) The association of white with cleanliness and purity in a purchase setting is further strengthened in a study conducted in 2023 (Singh et al., 2023). Given that color impacts product preferences in consumers, the color white in a purchase setting may induce feelings and associations related to for example femininity (Singh et al., 2023, Semin & Palma, 2014). In turn, female consumers may identify to a larger extent with whiter and lighter-colored products, shaping product preferences and driving purchase intentions towards those products (Semin & Palma, 2014).

As the sanitary pad is related to menstruation, which is associated with a certain stigma and taboo, there is relevance in exploring characteristics that may shape product preferences and purchase intentions within the product category (Ndichu & Rittenburg, 2021). Purity and cleanliness are two traits that historically seem to have been of essence for marketers in the feminine hygiene industry. These traits have been reflected both in the advertisements and the products with the help of a bleached white color (Przybylo & Fahs, 2020). When menstrual

advertisements from 2002 until 2018 were analyzed, it was found that white was the most displayed color (Talafuse et al., 2024). Furthermore, since the commercialization of menstrual products in the 1920s, their related advertisements have been subject to some varying degree of concealment where clean and sterile aspects have been emphasized, oftentimes making use of the color white to illustrate these aspects (Przybylo & Fahs, 2020). The long-lived practice of displaying blue liquid instead of red has been used by companies such as Always and Libresse in their advertisements to conceal menstrual-related cues (Przybylo & Fahs, 2020). By concealing natural aspects of menstruation, such as the color red, and providing an overall sterile and clean sensation with an emphasis on the color white, the advertisements have not only reflected the stigmatized public view in Western societies on menstruation but more interestingly shaped the expectations consumers might have regarding the whiteness and sterility of the product which is advertised (Przybylo & Fahs, 2020). Again, the snow-white, bleached color of sanitary pads conveys a message that aligns with the advertisement's emphasis on pure and clean characteristics. Thus, the color expectations and subsequent product preferences that females have on feminine hygiene products could be argued to be bleached white, as this is the color that female consumers have been faced with in both products and advertisements (Przybylo & Fahs, 2020).

As color is deemed an important element in affecting consumer behavior, the yet unknown color-related effects of an unbleached product displayed on a traditionally bleached white product could be deemed relevant to investigate (Singh et al., 2023). Moreover, its potential interplay with product quality and sustainability perceptions as well as purchase intentions could have implications both academically and practically.

2.4 Hypotheses formulation

Building upon the literature review, particularly the research presented by Pichierri M & Pino G, suggesting that less saturated colors are likely to be associated with sustainable elements, it is hypothesized that respondents will perceive the unbleached pad as more sustainable than the bleached one (Pichierri & Pino, 2023). This hypothesis also considers the potential of highly saturated white being associated with bleaching processes and in turn, resulting in a less

environmentally friendly perception in respondents. Thus, respondents may perceive the unbleached pad, aligning with sustainability-related cues, as a more environmentally friendly option despite the potential deviations from the traditional bleached white color expectations that they may have. The hypotheses H1 can be summarized as follows:

H1: Respondents will perceive the unbleached pad as more sustainable (than the bleached one)

Based on the literature indicating that sustainability-related attributes in products can lead to reduced perceptions of product quality, it is hypothesized that respondents will perceive the unbleached pad as lower in quality compared to the bleached one. This hypothesis is rooted in the concept of the "sustainability liability," where consumers may associate environmentally friendly attributes with compromises in product quality and performance in product categories where "strength" is valued (Luchs et al., 2010). The sanitary pad is often described by emphasizing its absorbent and overall utilitarian qualities; thus it could be assumed to be categorized as a product where "strength" is valued (Ajmeri & Ajmeri, 2010). This makes the product likely to fit into the category of products in which the sustainability liability effect is present (Luchs et al., 2010). Furthermore, the color white, associated with femininity, cleanliness, and purity may evoke particularly stronger perceptions of higher quality and effectiveness in menstrual hygiene products due to societal menstrual norms (Semin & Palma, 2014, Przybylo & Fahs, 2020). The hypotheses H2 can be summarized as follows:

H2: Respondents will perceive the unbleached pad as lower in quality (than the bleached one)

As hypothesized in H1, respondents are thought to perceive the unbleached pad as more sustainable due to the color associations that may be evoked from being displayed with a less saturated color (Pichierri & Pino, 2023). This will, in turn, create the effect of the sustainability liability, which implies that respondents will perceive the unbleached pad as lower in quality (Luchs et al., 2010). As suggested by the research brought up in the literature review, consumers may tend to act in a self-interested way in relation to sustainable products, in order to avoid products that are perceived to be less effective (White et al., 2019). Thus, their purchase intention could be assumed to be lowered for the unbleached pad. Moreover, the advertisements and subsequent whiteness norms related to feminine hygiene products and their display of pure

and clean characteristics may not align with the unbleached color of the sanitary pad and evoke a dissonance in respondents (Przybylo & Fahs, 2020). Thus, respondents may perceive the unbleached pad, deviating from traditional color expectations, as less desirable resulting in a lower purchase intention. The hypotheses H3 can be summarized as follows:

H3: Respondents will have a lower purchase intention towards the unbleached pad (as compared to the bleached one)

H4 aims to investigate the interplay between the perceptions and the purchase intentions given the different conditions. The logic behind the hypothesis H4 can be illustrated through a conceptual framework displayed in the figure below, and summarized as follows:

H4: The indirect effect of the condition of unbleached or bleached on purchase intention will be mediated serially by sustainability perceptions and quality perceptions.

These hypotheses together aim to investigate the interplay between color perceptions, sustainability considerations, quality evaluations, and the subsequent purchase intentions in the context of sanitary pads, shedding light on consumer attitudes and preferences towards sustainable alternatives in the market.

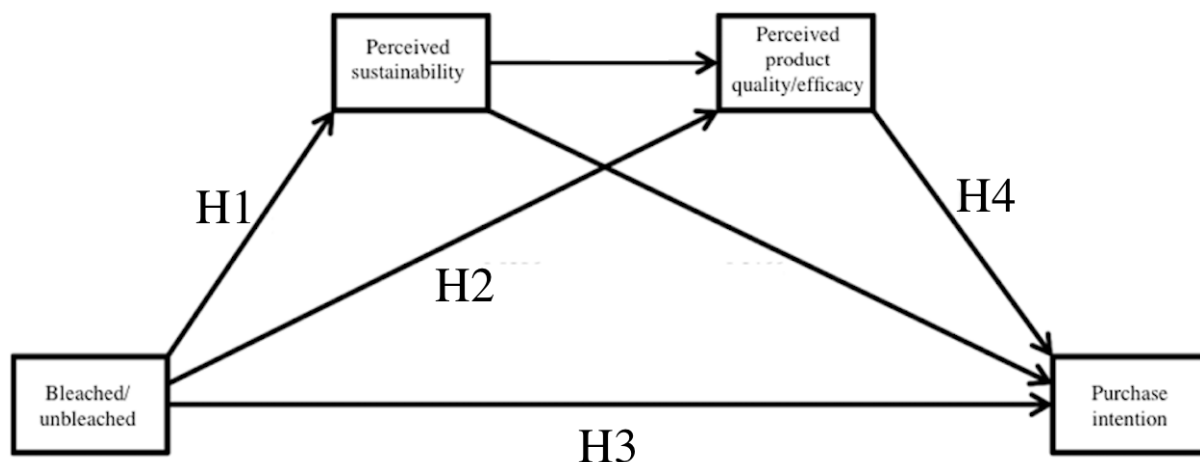


Figure 1: An illustration of the conceptual framework pertaining to H4. Adapted from Hayes model 6.

3. Methodology

In this section, the method behind the study conducted will be presented and motivated. The paragraphs included contain information on the scientific approach to the research design, the choice of research stimuli and the pilot study as well as information regarding the questionnaire, the data and the reliability and validity of the study.

3.1 Scientific approach to the research design

This research aims to study the mediating effect of perceived product quality and perceived sustainability on the purchase intention of unbleached sanitary pads in female consumers. To investigate these relationships, generalizations must be made. Thus, the most appropriate way to conduct the research would be with the help of a quantitative method, as this allows for larger generalizations based on a smaller number of respondents as well as exploring several relationships and their interplay (Eliasson, 2013).

Based on the theoretical framework presented in section 2 of the paper, hypotheses will be formulated. This will be done with the help of a deductive research approach. In practice, this means that (1) hypotheses will be formulated, followed by (2) empirical testing of the hypotheses, and lastly, (3) the results of the empirical testing will be compared with the hypotheses (Bryman & Bell, 2011).

The research will be conducted as an experiment since experiments are regarded by literature to be an appropriate way of testing hypotheses and claims (Söderlund, 2018). In this case, that implies that respondents will randomly be presented with a stimulus in the form of either an image of a bleached sanitary pad or an unbleached one. Afterward, the respondents will be asked a series of questions about the stimuli that they were presented with.

3.1.1 Alternative approaches

A qualitative method, such as in-depth interviews, would allow for a deeper understanding of the mediating effects but would on the other hand not allow for larger generalizing claims (Eliasson, 2013). Since the general relationships between unbleached sanitary pads and perceived product

quality and sustainability yet are unknown, a quantitative method was deemed more suitable to start. However, this comes with the downside of a loss of in-depth insights about why the respondents answer in the manner that they do (Eliasson, 2013). On the other hand, the question regarding whether there is a relationship between consumer perceptions and unbleached sanitary pads at all must be answered before the in-depth “why” question arises.

3.2 Choice of research stimuli

The stimuli that will be used for research will consist of two different types of sanitary pads. One of the sanitary pads will be a bleached one which has the shade of bleached white that consumers are accustomed to. The other one will have the beige-toned white color of a prototype sanitary pad, containing unbleached fluff pulp produced by StoraEnso, which is less white than the bleached sanitary pad. The prototype sanitary pad from StoraEnso is as close as can be found to a potential sanitary pad that would be available to purchase. Currently, no unbleached sanitary pad is available in the Swedish market and thus the prototype could be assumed to become the most accurate alternative. The picture of the bleached sanitary pad will be derived from editing a picture of the unbleached sanitary pad. The color of the sanitary pad will be altered into a heavier saturated, bleached color which is in line with the color of the sanitary pads currently available in the Swedish market. A picture of the two sanitary pads can be found in the Appendix.

3.3 Pilot study

A pilot study was conducted on a small group of respondents to assess whether the manipulation check had the intended effect on the respondents. Moreover, it had the purpose of assuring that the questionnaire ran properly. The pilot study questionnaire was designed in the same manner as the main questionnaire and no alterations were made following the pilot study.

“These sanitary pads appear more yellow than other sanitary pads I have seen”	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound
0	7	5.57	2.149	0.812	3.58	7.56
1	5	1.60	0.548	0.245	0.92	2.28
Total	12	3.92	2.610	0.753	2.26	5.57

Figure 2: Illustration of the results from the pilot study

The “0” represents the respondents who received the treatment with the unbleached pad and the “1” represents the respondents who received the treatment with the bleached pad. The results of the pilot study displayed above confirm that the two different treatments had the intended effect on the respondents and that the manipulation check worked as intended. That is, the respondents who were presented with an unbleached pad perceived it as more yellow than their regular product expectations and vice versa. The results returned a p-value of .003 which strongly indicates that the manipulation check is reliable.

3.4 Main questionnaire and variables

3.4.1 Questionnaire

The questionnaire was designed using Qualtrics. This software was chosen due to its accessibility and its possibility to effectively design questionnaires to collect anonymous responses.

Upon entering the questionnaire, the respondents were first presented with brief information regarding the privacy policy, safety, and the treatment of their data. Furthermore, contact information was provided in case of any questions or concerns. The respondent was asked to agree to the terms presented and confirm that they had taken part in the information in order to proceed with the questionnaire. Those respondents who did not consent were automatically directed to the end of the survey and unable to partake in the study.

Upon proceeding to the next step, the respondent was asked to answer questions about themselves. The questions involved their age and gender. Respondents who stated that they were males or identified as a gender other than female or male were not able to complete the questionnaire and were redirected to the end.

Followingly, the respondent was randomly assigned one of the two stimuli. The respondent was presented with the picture pertaining to that stimuli and was instructed to inspect it thoroughly before proceeding to the next step. In addition to this, the respondents were asked to imagine a scenario in which they were purchasing sanitary pads for themselves. They were also asked to imagine their usual product expectations for the sanitary pad and put that into relation to the image of the sanitary pad that they were to be presented. Following this, the respondent was presented with a series of questions about the stimuli they were presented. The entirety of the questionnaire that the respondents received is displayed in the Appendix. Note that only one of the two pictures of the sanitary pads was included randomly for each respondent.

3.4.2 Survey flow

In the figure below, the flow of the survey is illustrated. Note that after the block “Purchase intention”, the order of the presentation of “Perceived sustainability” and “Perceived product quality” was randomized.

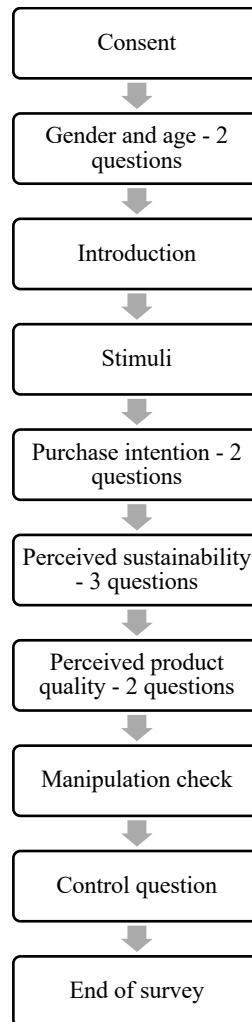


Figure 3: Illustration of the survey flow

3.4.3 Variables

The questions pertaining to the dependent variable and each of the two categories of mediators were indexed to one variable for each category in the analysis. Indexes was used as it is suggested by literature to be an effective and reliable way of obtaining an overview of a respondent's overarching belief or attitude. This is done through asking several questions that are alike and then compiling them into an average index for the question-category. (Kumar Chaudhary & Israel, 2016)

Purchase intention (dependent variable)

The purchase intention was measured with two questions regarding the likelihood that the respondent would purchase the product in the scenario which was described in paragraph 3.4.1. Moreover, the extent to which respondents would consider purchasing the product was measured. These measures were adapted from a study by Pancer et al. (Pancer et al., 2017). The respondent was able to grade their answer on a 7-point scale, where "1" was labeled "Very unlikely", "4" was labeled "Neither likely nor unlikely" and "7" was labeled "Very likely".

Sustainability perceptions (mediator)

The first section of questions about the stimuli revolved around sustainability. The first question in the sustainability section asked the respondents to what extent they perceived the product as environmentally friendly, to what extent they perceived the product as more sustainable than others, and lastly how they perceived its harmfulness to the environment in comparison to other products. These questions were formulated with the help of reviewing another study by Haws et al. (Haws et al., 2014). The questions asked were graded using a 7-point scale, where "1" was labeled "Not at all environmentally friendly/Very harmful to the environment", "4" was labeled "Neither" and "7" was labeled "Very environmentally friendly/Not at all harmful to the environment".

Product quality perceptions (mediator)

The product quality perceptions section consisted of two questions which asked the respondent to state the extent to which they perceived the sanitary pad to be of poor quality and whether it was perceived as effective. These questions were formulated based on an earlier study by

Newman et al. (Newman et al., 2014). The respondents were able to grade their answer on a 7-point scale, where “1” was labeled “Very poor quality/effectiveness”, “4” was labeled “Neither poor nor good/high quality/effectiveness” and “7” was labeled “Very good/high quality/effectiveness”.

Manipulation check

To make sure that the two different treatments worked properly, a manipulation check was included. The respondents were presented with the stimuli a second time at the end of the survey. Upon being presented with the stimuli, the respondents were given a statement that said: “These sanitary pads appear more yellow than other sanitary pads I have seen”. They had the option to choose alternatives on a 7-grade scale ranging from “Strongly disagree” to “Strongly agree”. The purpose of this manipulation check was to investigate whether the respondent’s perception of the color of the sanitary pad aligned with the intended perception. Moreover, this was useful for the pilot study to ensure that the stimuli produced the intended effect on the respondents. If not, the stimuli could be altered to create the intended effect.

3.5 Data collection and statistical methods

3.5.1 Data collection

The data from the questionnaire was collected from females, who for the most part were students at the Stockholm School of Economics. This was mainly due to convenience and easy accessibility to that group of respondents. The questionnaire was distributed through a printed QR code on paper and made available to those who felt that they wanted to participate in the study. In that way, the risk of pressured, biased, or rushed-through responses was minimized, since the respondents were not directly asked to participate in the study but rather did so by their own initiative.

While a random sampling approach would be deemed more scientifically accurate as it would be more representative of a large population, this was not practically feasible (Bell et al., 2019). Thus, the sample used in this research could be described as a convenience sample, since the respondents were chosen based on their accessibility. This comes with the compromise of potentially introducing bias into the research. Moreover, the risk of reduced external and internal

validity increases as well as the ability to generalize becomes reduced (Bell et al., 2019). Thus, the chosen method of sampling comes with limitations. To exemplify, as the research consisted of mainly young females aged 18-25, the responses may tend to be more positive towards an unbleached sanitary pad as one could assume a younger group of people may have a more open-minded attitude towards menstruation and products related to feminine hygiene.

3.5.2 GDPR

The study complied with the principles of GDPR set up by the European Union (General Data Protection Regulation (GDPR) Compliance Guidelines, n.d.). This guaranteed the respondent's anonymity and called for informed consent from the respondent to participate in the study. The consent was given by the respondent with the help of a consent form at the beginning of the survey. The consent form needed to be accepted by the respondent in order to proceed with the survey. Moreover, the data collected solely consisted of data that was deemed relevant for the study.

3.5.3 Data quality

When the questionnaire was closed on the 23rd of April 2024, the total number of answers was 60. The total number of responses which were suitable to analyze amounted to 52.

A control question was included in the questionnaire to confirm that the respondents had been paying attention to the questions and answered properly and honestly. This question related to the subject of the questionnaire and asked respondents to choose from three alternatives regarding what subject the questionnaire had been about. If the respondent chose the wrong answer, their response was disregarded from the study. Moreover, unfinished responses were disregarded. The number of respondents who failed to answer the control question or finish the entirety of the questionnaire was 8 and were thus disregarded from the study.

3.5.4 Data analysis

The statistical software used to analyze the results of the study was SPSS. This was chosen due to the ability of the software to do mean comparisons and other statistical measures relevant to analyzing the results as well as its accessibility. More specifically, one-way ANOVA was used to

compare means for H1, H2 and H3. Hayes process model 6 was used for H4 to investigate the relationships between the mediators and test the conceptual framework. Hayes process model 6 allows for analyzing how the condition X affect the outcome Y with the help of two mediators. The logic behind Hayes process model 6 is illustrated in Figure 3 under 4.4 (Hayes, 2012).

3.5.5 Reliability and validity

Reliability

Reliability refers to the consistency of the measures. This can be assessed with the help of Cronbach's Alpha, which measures internal consistency. Generally, a Cronbach's Alpha with a score of 0.7 or higher is deemed reliable (Heale & Twycross, 2015). This minimum score regarding Cronbach's Alpha was applied in this study.

Validity

In order to obtain a valid result, the factors in the study must be appropriately measured (Heale & Twycross, 2015). In this case, it implies that the questionnaire must ask the respondents questions that are relevant to the purpose of the study as well as comprehensible to the respondents. In this study, the questions were formulated as clearly and precisely as possible to achieve validity. Moreover, the questions were only asked in English to avoid any translation errors that might interfere with the validity of the results. Lastly, as described in paragraph 3.5.3, control questions were included to confirm the respondent's attention to the questions in the questionnaire.

4. Results

4.1 Descriptive statistics

52 out of 60 responses were valid to use for the analysis. Out of these, 51.7% of the respondents had been assigned the treatment with the unbleached pad and 48.3% with the bleached. All valid respondents except for one were in the age interval of 18-28 and all were females. Other than age and gender, no other personal information regarding the respondents was collected.

4.2 Reliability

To evaluate the reliability of the study, Cronbach's alpha was used as a statistical measure. The Cronbach's alpha for the two questions pertaining to the category "Purchase intention" was .942. For the three questions pertaining to "Sustainability perceptions" it was .719, and for the two questions pertaining to "Perceived product quality" it was .860. Thus, all variables were deemed reliable as they surpassed the limit for reliability, which was 0.7.

4.3 Mean comparisons

The mean scores for the purchase intention index, the sustainability perceptions index, and the product quality perceptions index were compared between the group that received the unbleached treatment and the bleached treatment. This was done in order to test H1, H2, and H3. The results were analyzed with the help of one-way ANOVA mean comparison analysis. The results are described below and further summarized in paragraph 4.3.5.

4.3.1 Purchase intention

The first one-way ANOVA was conducted to compare the mean values of purchase intentions for bleached and unbleached products. The results demonstrate that those exposed to the bleached sanitary pad indicated a greater intention to purchase ($M = 4.84$, $SD = 1.72315$) compared to those exposed to the unbleached sanitary pad ($M = 3.4464$, $SD = 1.61193$; $F = 9.178$, $p = 0.004$).

4.3.2 Perceived sustainability

A second one-way ANOVA was conducted to compare the mean values of the perceived sustainability for the bleached and unbleached sanitary pads. The results demonstrate that those exposed to the bleached sanitary pad indicated lower perceived sustainability ($M = 3.48$, $SD = 0.7333$) compared to those exposed to the unbleached sanitary pad ($M = 4.7901$, $SD = 0.84301$; $F = 35.497$, $p = <0.001$).

4.3.3 Perceived product quality

The third and last one-way ANOVA was conducted to compare the mean values of the perceived product quality for the bleached and unbleached sanitary pads. The mean scores demonstrate that those exposed to the bleached sanitary pad indicated a higher perceived product quality ($M = 4.1$, $SD = 1.42887$) compared to those exposed to the unbleached sanitary pad ($M = 3.5926$, $SD = 1.41447$; $F = 1.654$, $p = 0.204$). However, the results could not be deemed significant, and thus the means are not statistically reliable enough to draw assumptions from.

4.3.4 Implications on H1, H2 and H3

These results confirm H1 and H3. That is, they show that respondents displayed a lower purchase intention towards the unbleached pad than towards the bleached pad. Similarly, they perceived the unbleached pad as more sustainable than the bleached one. However, H2 cannot be accepted due to the significance level of the test pertaining to it being too high, .204.

4.3.5 Summarized bar chart of mean scores

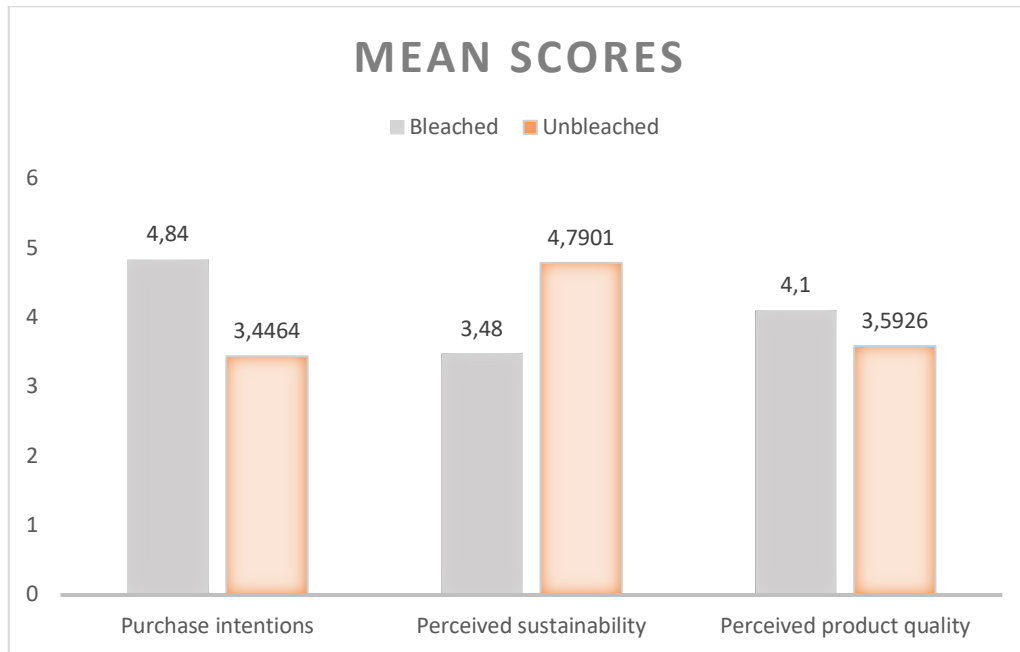


Figure 4: Summarized bar chart of mean scores

4.4 Mediation analysis

For the serial mediation analysis pertaining to H4, Hayes Model 6 was used. This model allows for analyzing the mediators and their subsequent effect on outcome Y, which in this case was purchase intention (Hayes, 2012). The analysis used 5,000 bootstrap samples with 95% bias-corrected intervals. The logic behind the model is displayed in the Figure 3 below.

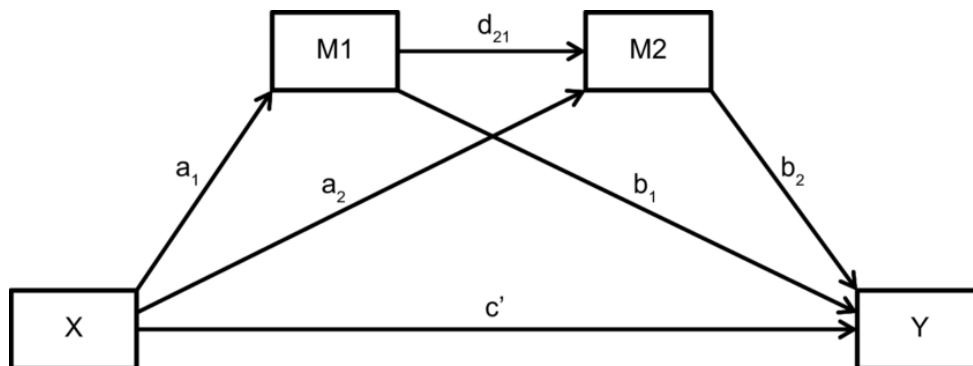


Figure 5: Hayes Model 6

Moreover, in the context of this study, the logic behind the model much like the conceptual framework can be shown in Figure 4 below.

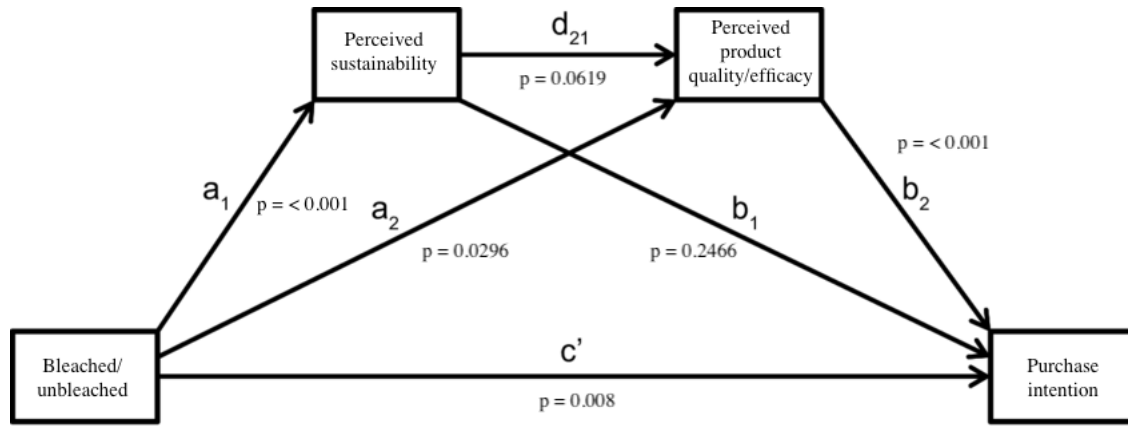


Figure 6: Hayes Model 6 adapted to the study with corresponding p-values

In Figure 4, the bleached or unbleached sanitary pad represents the X-variable which in turn becomes the condition. The Y-variable, which becomes the dependent variable is represented by the purchase intention. Furthermore, the perceived sustainability and the perceived product quality are the mediators that were hypothesized to affect the dependent variable.

The indirect effect of the bleached or unbleached condition on the purchase intention, that is; the conceptual framework in its whole, was tested. ($b = -0.4857$, $SE = 0.3369$, $CI_{95} = -1.2524, 0.362$) Since the confidence interval included 0, it could not be deemed significant. In addition to this, there were multiple indirect effects which were analyzed. The only indirect effect that could be deemed significant was the indirect effect of product quality perceptions which represents the relationship *Condition (bleached/unbleached) → Perceived product quality → Purchase intention*. ($b = 0.8839$, $SE = 0.3839$, $CI_{95} = 0.2235, 1.7302$). Since the model as a whole, including all mediators, not could be deemed significant due to the confidence intervals, the results from the mediation analysis led to H4 having to be rejected. However, the significance of the indirect effect of the quality perceptions still has relevance. The significance of the indirect effect of the product quality perceptions implies that the direct effect of the condition on the purchase intention can be explained through quality perceptions. In other words, the mediation effect shows that even though there is no significant difference in the perceived quality between bleached and unbleached sanitary pads, the way that respondents perceive the quality of these products still influences their purchasing intentions. Thus, the mediation by quality perceptions

becomes a pathway through which the unbleached versus bleached condition affects consumer behavior.

5. Discussion

5.1 Discussion of main findings

The results from the study indicate that respondents were more willing to purchase a bleached sanitary pad than an unbleached one. Moreover, the respondents perceived the unbleached sanitary pad as more sustainable than the bleached one. Lastly, the mediation analysis indicated that the way in which respondents perceived the product quality had a mediating effect on their purchase intentions.

These results confirm H1 and H3 but reject H2. The ANOVA-test pertaining to H2 resulted in a significance score of $p = 0.204$, which was too low to be deemed significant. Moreover, it rejects the H4 model as a whole even though the model did show interesting implications related to product quality perceptions.

H2 hypothesized that respondents would perceive the unbleached product as lower in quality than the bleached one. This was hypothesized due to literature suggesting that there exists a “sustainability liability”, which results in consumers perceiving certain products containing sustainability cues as less effective or lower in quality (Luchs et al., 2010). In turn, this would affect the purchase intention. A potential reason for the rejection of H2 in this study could be due to the possibility of respondents’ subjective categorization of the product itself. Due to the stigmatized nature of feminine hygiene products, some people may have highly subjective and individual associations with them (Przybylo & Fahs, 2020). In turn, some of the respondents may view it as a “gentle” product rather than a “strong” one, resulting in the sustainability liability not being fully applicable (Luchs et al., 2010). Even though the product could be described as a “strong” one objectively by literature, subjective views in certain respondents regarding how they prioritize its effectiveness and performance may lead to the product quality not being affected by the perceived sustainability.

Another potential reason for the rejection of H2 may be due to the small sample size. It is worth mentioning that the mean scores from the analysis (See section 4.3.5) indicated that respondents indeed perceived the unbleached pad as lower in quality and less effective than the bleached

sanitary pad. However, due to the significance level ($p = 0.204$) the results could not be deemed reliable. If the sample size were larger, H2 may have been proven correct.

The conceptual framework related to H4 was tested and rejected as a whole. However, the parts of the framework related to the mediating effect between product quality and purchase intentions were proven correct. Even though this does not say much about how the unbleached or bleached sanitary pads differ, it confirms that how respondents perceive product quality has an impact on purchase intentions. In conclusion, the results related to H4 show that quality perceptions play a role in mediating purchase intention, however, the effect of the condition could not be deemed to influence this differently.

Similarly to the potential reason for the rejection of H2, the indifference in perceived product quality between the unbleached and the bleached sanitary pad related to H4 could be explained as possibly being due to some respondents perceiving the sanitary pad as a “gentle” product.

Nonetheless, it is clear from the results that an unbleached color may be more associated with sustainability as compared to a bleached color. This is in line with H1 and suggests that an unbleached color may serve as a sustainability cue to consumers. Potential reasons for this may be knowledge about the chemicals involved in bleaching processes or the less saturated, more nature-like color.

The willingness to purchase, which was higher for the bleached group, may be explained by additional factors beyond those included in the conceptual framework. As suggested in the introduction, gender norms and the sterile norm surrounding menstruation may have negatively impacted respondents’ purchase intentions toward the unbleached sanitary pad.

5.2 Contributions to research

These findings have contributed to the knowledge regarding perceptions about unbleached products, which has been a rather under-investigated area in research. More commonly, researchers have studied eco-labels, brown packaging, or the color green as sustainability cues (Pancer et al., 2017, Van Schoubroeck et al., 2023). The study conducted has shown that an unbleached color is perceived as more sustainable than a bleached one, which in turn can make it serve as a sustainability cue to consumers. Researchers may make use of this insight to use

unbleached products as sustainability cues in for example experiments. Thus, the results have contributed to research regarding color perception and cues in the context of sustainability. Moreover, it has been confirmed that perceived product quality has a significant impact on consumers' purchase intentions.

This particularly contributes to the literature on sustainable consumption and sustainable consumer behavior. As demand for unbleached products could be assumed to increase in the future due to the increasing need for environmentally friendly products, this study has contributed with valuable insights regarding how unbleached products are perceived (Nguyen Tran Cam, 2023). Given that environmentally friendly products, such as unbleached products, are on the rise, more studies may be conducted regarding these products in the future. Thus, this study can serve as a source of inspiration, insights, and knowledge for future researchers.

Moreover, this study has contributed to knowledge regarding the “sustainability liability”-phenomenon and confirmed the earlier researched connection between product quality and purchase intentions (Luchs et al., 2010). The insignificance in differences in product quality perceptions related to the unbleached sanitary pad has further shown that the “sustainability liability” is a rather complex phenomenon. That is, it is not always applicable to all products which are perceived as sustainable. Furthermore, the level of impact that the “sustainability liability”-effect has on purchase intentions may depend largely on the product qualities that consumers seek, such as effectiveness or durability.

5.3 Practical implications

The findings in this study may be useful to marketers and product developers. The finding that an unbleached color creates an association with sustainability could be used to develop product packaging and design products with the intention to communicate to consumers that a product is sustainable. Moreover, the role that perceived product quality has in affecting purchase intentions can be used to develop and design products with an emphasis on, for example, a products effectiveness and performance.

Unbleached products could be deemed particularly relevant given the increasing demand for sustainable consumer goods (Deloitte UK, 2023). In addition to this, unbleached materials are continuously being tested and new, unbleached innovations have recently been brought to market (Stora Enso, n.d., UPM, n.d.). Thus, it could be assumed that we will see more unbleached products in the future. The findings in this study may apply to other products than the sanitary pad and therefore be useful in a variety of contexts. For example, the results may also have practical relevance for products such as cotton pads or diapers, thus expanding the relevance to not only unbleached sanitary pads but unbleached products as a whole.

Companies and organizations that will bring unbleached products to market will be in need of insights regarding consumers' perceptions and attitudes towards unbleached products in order to market and design the products effectively. Furthermore, knowledge regarding consumers' perceptions of unbleached products can help marketers communicate and guide consumers to make sustainable purchase decisions. In turn, this may lead to increased awareness as well as increased willingness to purchase unbleached products among consumers.

5.4 Limitations and suggestions for further research

For this study, the size of the sample was quite small. Out of 60 respondents, 52 provided responses that were suitable to analyze. A larger sample may have contributed to more significant results ($p = <0.05$). Moreover, the group was rather homogenous with an age span of females aged 18-28 whom the majority studied at Stockholm School of Economics. A larger sample may have generated more reliable and representative results in comparison to the small convenience sample that was used (Bell et al., 2019). Attitudes and norms regarding sustainability and quality perceptions may vary between age groups, thus a larger age span among the respondents may give a different result from the one obtained in this study.

Even though the respondents were asked to imagine themselves in a scenario in which they were shopping for sanitary pads, such an imaginary situation may not always be representative of what choices would be made in reality. Thus, the experiment could have benefitted from being done in a real purchase setting in order to obtain more reliable data. Conducting the experiment in a real purchase setting could lower the risk for an attitude-behavior gap-bias in respondents, which

describes the phenomenon where consumers tend to show the intention to purchase more sustainable products than they do in reality (Hirsch & Terlau, 2015). Moreover, including demographic questions regarding the sustainable purchase habits of the respondents would allow for further exploring the role of the attitude behavior gap and could be suggested for future research.

This study used unbleached and bleached sanitary pads to examine perceptions regarding sustainability and product quality. Studying the impact of for example an unbleached product packaging instead of solely a product could be suggested for future research. This could be more practically relevant in measuring purchase intentions since the product packaging is what consumers face in a shopping setting.

Moreover, researching the effects of unbleached colors on other products than sanitary pads may also give further insight. The sanitary pad is a product that is associated with menstruation and therefore the perceptions related to it may be affected by underlying stigmatization and taboos. Unbleached products that are less stigmatized, such as paper towels or toilet paper could be deemed interesting to research for comparison.

5.5 Conclusion

Given the current state of the climate, it is apparent that both individuals as well as organizations need to adapt to the increased need for sustainable consumption and innovation. This study has contributed to a better understanding of consumer perceptions about unbleached products, specifically sanitary pads. Hopefully, it has laid the ground for guiding future research in the area. New sustainable innovations continuously enter the market, and thus there is a need to research consumers' perceptions related to other sustainability cues than traditional ones, such as eco-labels. While this study found that an unbleached color on a sanitary pad indeed can serve as a sustainability cue to consumers, there is a large potential for researching this further. Insights regarding unbleached products may lead to more effective marketing, in turn increasing sustainable purchase intentions among consumers and ultimately, making the world a better place.

6. Appendix

Welcome to my research study!

Please note that your responses will be kept completely anonymous and confidential. The study should take approximately 2 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. You will need to read all survey instructions carefully and answer thoughtfully.

Privacy

According to the laws of GDPR, no connection is made between the data you submit and your identity, i.e. completely anonymous. In the future the researchers may take the data open access and share it with others. However, no identifying information about you or any other participant will be shared.

Risk

There is no risk that might result from participation in this study. By clicking the button below, you acknowledge that your participation in the study is voluntary, you are 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason. Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

Any questions contact 50784@student.hhs.se

- ☐ I consent
- ☐ I do not consent

Please select your gender

- ☐ Female
- ☐ Male
- ☐ Other

Please enter your age



In the following page, you will be presented with a picture of a sanitary pad. Please inspect the picture thoroughly. Afterwards, you will be asked a series of questions (~1 min). When you answer these questions, please imagine yourself in a typical scenario where you are shopping for sanitary pads.

- ☐ I have taken part of the information above



In a scenario where you would be shopping for sanitary pads, how likely would you be to purchase this product?

1 - Very unlikely	2	3	4 - Neither likely nor unlikely	5	6	7 - Very likely
☐	☐	☐	☐	☐	☐	☐

How did you perceive the quality of the product?

1 - Very poor quality	2	3	4 - Neither poor nor good quality	5	6	7 - Very good quality
☐	☐	☐	☐	☐	☐	☐

In a scenario where you would be shopping for sanitary pads, how likely would you be to consider purchasing this product?

1 - Very unlikely	2	3	4 - Neither likely nor unlikely	5	6	7 - Very likely
☐	☐	☐	☐	☐	☐	☐

How did you perceive the effectiveness of the product?

1 - Very poor effectiveness	2	3	4 - Neither poor nor high effectiveness	5	6	7 - Very high effectiveness
☐	☐	☐	☐	☐	☐	☐



To what extent did you perceive the product as environmentally friendly?

1 - Not at all environmentally friendly	2	3	4 - Neither	5	6	7 - Very environmentally friendly
☐	☐	☐	☐	☐	☐	☐

To what extent did you perceive the product as environmentally friendly in comparison to other sanitary pads?

1 - Not at all environmentally friendly	2	3	4 - Neither	5	6	7 - Very environmentally friendly
☐	☐	☐	☐	☐	☐	☐

To what extent did you perceive the product as harmful to the environment?

1 - Very harmful to the environment	2	3	4 - Neither	5	6	7 - Not at all harmful to the environment
☐	☐	☐	☐	☐	☐	☐



These sanitary pads appear more yellow than other sanitary pads I have seen

Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
☐	☐	☐	☐	☐	☐	☐



What was this survey about?

☐ Alcohol consumption

☐ Feminine hygiene products

☐ Chocolate

We thank you for your time spent taking this survey.
Your response has been recorded.



7. References

- Adıgüzel, F., & Donato, C. (2021). Proud to be sustainable: Upcycled versus recycled luxury products. *Journal of Business Research*, 130, 137–146.
<https://doi.org/10.1016/J.JBUSRES.2021.03.033>
- Ajmeri, J. R., & Ajmeri, C. J. (2010). Nonwoven personal hygiene materials and products. *Applications of Nonwovens in Technical Textiles*, 85–102.
<https://doi.org/10.1533/9781845699741.2.85>
- Arnold, C. (2023). (15) With 4.94% CAGR, Global Built-in Sanitary Napkin Market Size to Surpass USD 35.14 Billion by 2030 - Comprehensive Research Report by Facts & Factors | LinkedIn. <https://www.linkedin.com/pulse/494-cagr-global-built-in-sanitary-napkin-market-size-surpass-arnold-v8dbf/>
- Bell, E., Bryman, A., & Harley, B. (2019). *Business Research Methods* (5th ed.). Oxford University Press.
- Brennan, S., Puzniak-Holford, M., Gonzalez, R. B., & Kilsby, R. (2023). *EU and the Net Zero Transition | Deloitte Insights*. <https://www2.deloitte.com/us/en/insights/environmental-social-governance/transition-to-net-zero.html>
- Brough, A. R., Wilkie, J. E. B., Ma, J., Isaac, M. S., & Gal, D. (2016). The green-feminine stereotype and its effect on sustainable consumption. *Journal of Consumer Research*, 43(4), 567–582. <https://doi.org/10.1093/JCR/UCW044>
- Bryman, A., & Bell, E. (2011). *Business Research Methods* (3rd ed.). Oxford University Press Inc.
- Coelho, F., Pereira, M. C., Cruz, L., Simões, P., & Barata, E. (2017). Affect and the adoption of pro-environmental behaviour: A structural model. *Journal of Environmental Psychology*, 54, 127–138. <https://doi.org/10.1016/J.JENVP.2017.10.008>
- Dupré, Stanislas. (2005). *Talk The Walk Advancing Sustainable Lifestyles through Marketing and Communications*. www.unep.org

- Eliasson, A. (2013). *Kvantitativ metod från början* (1st ed., Vol. 3). Studentlitteratur AB.
- Eriksson, S. (2023). *Varmaste oktober som har uppmätts | SvD*.
<https://www.svd.se/a/Knxk54/varmaste-oktober-jorden-pa-vag-mot-rekordar>
- European Commission. (n.d.). *EU restrictions on certain single-use plastics - European Commission*. Retrieved March 21, 2024, from
https://environment.ec.europa.eu/topics/plastics/single-use-plastics/eu-restrictions-certain-single-use-plastics_en
- General Data Protection Regulation (GDPR) Compliance Guidelines*. (n.d.). Retrieved April 15, 2024, from <https://gdpr.eu/>
- Haws, K. L., Winterich, K. P., & Naylor, R. W. (2014). Seeing the world through GREEN-tinted glasses: Green consumption values and responses to environmentally friendly products. *Journal of Consumer Psychology*, 24(3), 336–354.
<https://doi.org/10.1016/J.JCPS.2013.11.002>
- Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling*.
- Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence-Based Nursing*, 18(3), 66–67. <https://doi.org/10.1136/EB-2015-102129>
- Hirsch, D., & Terlau, W. (2015). Sustainable Consumption and the Attitude-Behaviour-Gap Phenomenon - Causes and Measurements towards a Sustainable Development. *International Journal on Food System Dynamics*, 6, 159–174.
<https://doi.org/10.18461/1869-6945-14>
- Home I Stora Enso*. (n.d.). Retrieved May 28, 2024, from <https://www.storaenso.com/en>
- Joan, •, & Simon, M. (n.d.). *SINGLE-USE MENSTRUAL PRODUCTS, BABY NAPPIES & WET WIPES Reviewers*.
- Kumar Chaudhary, A., & Israel, G. D. (2016). Savvy Survey #6d: Constructing Indices for a Questionnaire. *EDIS*, 2016(1), 6. <https://doi.org/10.32473/EDIS-PD069-2015>
- Li, C. (2021). New enzymatic technology proves effective in unbleached Kraft Rosy Covarrubias - Innovation Director Packaging. *TAPPICon LIVE 2021*, 1, 361.
- Libresse. (2024). *Våra Produkter | Libresse*. <https://www.libresse.se/shoppa-vara-produkter/shoppa-i-butik/>
- Liu, Y., Zhang, S., Li, L., & Coseri, S. (2023). Cellulose nanofiber extraction from unbleached kraft pulp for paper strengthening. *Cellulose*, 30(5), 3219–3235.
<https://doi.org/10.1007/S10570-022-05008-4/TABLES/5>
- Luchs, M. G., Naylor, R. W., Irwin, J. R., & Raghunathan, R. (2010). The Sustainability Liability: Potential Negative Effects of Ethicality on Product Preference. *Journal of Marketing*, 74(5), 18–31. <https://scholarworks.wm.edu/businesspubs>

- Maduku, D. K. (2024). How environmental concerns influence consumers' anticipated emotions towards sustainable consumption: The moderating role of regulatory focus. *Journal of Retailing and Consumer Services*, 76, 103593. <https://doi.org/10.1016/J.JRETCONSER.2023.103593>
- Meng, M. D., & Leary, R. B. (2021). It might be ethical, but I won't buy it: Perceived contamination of, and disgust towards, clothing made from recycled plastic bottles. *Psychology and Marketing*, 38(2), 298–312. <https://doi.org/10.1002/MAR.21323>
- Naturvårdsverket. (n.d.). *Single-use plastic products and other disposable products*. Retrieved February 12, 2024, from <https://www.naturvardsverket.se/en/guidance/plastic/single-use-plastic-products-and-other-disposable-products/>
- Ndichu, E. G., & Rittenburg, T. L. (2021). Consumers' navigation of risk perceptions in the adoption of stigmatized products. *Journal of Business Research*, 132, 340–353. <https://doi.org/10.1016/J.JBUSRES.2021.03.057>
- Newman, G. E., Gorlin, M., & Dhar, R. (2014). When going green backfires: How firm intentions shape the evaluation of socially beneficial product enhancements. *Journal of Consumer Research*, 41(3), 823–839. <https://doi.org/10.1086/677841>
- Nguyen Tran Cam, L. (2023). A rising trend in eco-friendly products: A health-conscious approach to green buying. *Heliyon*, 9(9), e19845. <https://doi.org/10.1016/J.HELİYON.2023.E19845>
- Pancer, E., McShane, L., & Noseworthy, T. J. (2017). Isolated Environmental Cues and Product Efficacy Penalties: The Color Green and Eco-labels. *Journal of Business Ethics*, 143(1), 159–177. <https://doi.org/10.1007/S10551-015-2764-4/TABLES/3>
- Park, H. J., & Lin, L. M. (2020). Exploring attitude–behavior gap in sustainable consumption: comparison of recycled and upcycled fashion products. *Journal of Business Research*, 117, 623–628. <https://doi.org/10.1016/J.JBUSRES.2018.08.025>
- Pichierri, M., & Pino, G. (2023). Less saturated, more eco-friendly: Color saturation and consumer perception of product sustainability. *Psychology & Marketing*, 40(9), 1830–1849. <https://doi.org/10.1002/MAR.21858>
- Przybylo, E., & Fahs, B. (2020). Empowered Bleeders and Cranky Menstruators: Menstrual Positivity and the “Liberated” Era of New Menstrual Product Advertisements. *The Palgrave Handbook of Critical Menstruation Studies*, 375–394. https://doi.org/10.1007/978-981-15-0614-7_30/FIGURES/4
- Semin, G. R., & Palma, T. A. (2014). Why the bride wears white: Grounding gender with brightness. *Journal of Consumer Psychology*, 24(2), 217–225. <https://doi.org/10.1016/j.jcps.2013.09.003>

- Sen, S., & Kumar, M. (2023). Basics and policies of sustainable development. *Reference Module in Earth Systems and Environmental Sciences*. <https://doi.org/10.1016/B978-0-323-93940-9.00009-8>
- Singh, P. K., Kumari, A., Agrawal, S., Miri, S., & Choithramani, N. (2023). *Business, Management and Economics Engineering THE ROLE OF COLOUR IN INFLUENCING CONSUMER BUYING BEHAVIOUR-AN EMPIRICAL STUDY*. <https://creativecommons.org/licenses/by-sa/4.0/>
- Söderlund, M. (2018). *Experiments in Marketing* (1st ed.). Studentlitteratur AB.
- Stora Enso. (n.d.). *NaturaFluff Eco by Stora Enso - Market pulp | Stora Enso*. Retrieved February 12, 2024, from <https://www.storaenso.com/en/products/market-pulp/naturafluff-eco>
- Sustainable consumer behaviour and lifestyle 2023 | Deloitte UK*. (n.d.). Retrieved April 15, 2024, from <https://www2.deloitte.com/uk/en/pages/consumer-business/articles/sustainable-consumer.html>
- Talafuse, A., Dockery, B., & Tevaseu, C. (2024). *The International Journal of Interdisciplinary Social and Community Studies Menstruation Product Advertising and Color*. 17.
- TT. (2021). *Nu ska engångsplasten bort | SvD*. <https://www.svd.se/a/8QOAqG/nu-ska-engangsplasten-bort>
- UPM. (n.d.). *Have you already tried Unbleached Fluff pulp | UPM Raumacell*. Retrieved February 12, 2024, from <https://www.upmraumacell.com/newsroom/2019/10/have-you-already-tried-unbleached-fluff-pulp/>
- UPM.com | UPM.COM*. (n.d.). Retrieved May 28, 2024, from <https://www.upm.com/>
- Van Doorn, J., & Verhoef, P. C. (2015). Drivers of and Barriers to Organic Purchase Behavior. *Journal of Retailing*, 91(3), 436–450. <https://doi.org/10.1016/J.JRETAI.2015.02.003>
- van Doorn, J., Verhoef, P. C., & Risselada, H. (2020). Sustainability Claims and Perceived Product Quality: The Moderating Role of Brand CSR. *Sustainability* 2020, Vol. 12, Page 3711, 12(9), 3711. <https://doi.org/10.3390/SU12093711>
- Van Schoubroeck, S., Chacon, L., Reynolds, A. M., Lavoine, N., Hakovirta, M., Gonzalez, R., Van Passel, S., & Venditti, R. A. (2023). Environmental sustainability perception toward obvious recovered waste content in paper-based packaging: An online and in-person survey best-worst scaling experiment. *Resources, Conservation and Recycling*, 188, 106682. <https://doi.org/10.1016/J.RESCONREC.2022.106682>
- White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT Consumer Behaviors to be More Sustainable: A Literature Review and Guiding Framework. *Journal of Marketing*, 83(3), 22–49. <https://doi.org/10.1177/0022242919825649>

Zhao, Z., Gong, Y., Li, Y., Zhang, L., & Sun, Y. (2021). Gender-Related Beliefs, Norms, and the Link With Green Consumption. *Frontiers in Psychology, 12*.
<https://doi.org/10.3389/fpsyg.2021.710239>