



Handelshøyskolen BI

GRA 19703 Master Thesis

Thesis Master of Science 100% - W

Predefinert informasjon

Startdato:	09-01-2023 09:00 CET	Termin:	202310
Sluttdato:	03-07-2023 12:00 CEST	Vurderingsform:	Norsk 6-trinns skala (A-F)
Eksamensform:	T		
Flowkode:	202310 11184 IN00 W T		
Intern sensor:	(Anonymisert)		

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Informasjon fra deltaker

Tittel *: From Labels to Actions: Unraveling the Nexus of Eco-Labels in Driving Environmentally Purchasing Behavior

Navn på veileder *: Anders Gustafsson

Inneholder besvarelsen konfidensielt materiale? Nei Ja

Kan besvarelsen offentliggjøres? Ja Nei

Gruppe

Gruppenavn: (Anonymisert)

Gruppenummer: 165

Andre medlemmer i gruppen:

Master Thesis

From Labels to Actions:

Unraveling the Nexus of Eco-Labels in Driving Environmentally Purchasing Behavior

Program:

Master of Science in Strategic Marketing Management

Campus:

BI Oslo

Hand-in date:

03.07.2023

Supervisor:

Anders Gustafsson

“This thesis is a part of the Master of Science program at BI Norwegian Business School. The school takes no responsibility for the method used, results found, and the conclusions drawn”

Acknowledgements

Our journey at BI Norwegian Business School has come to an end, and this master's thesis marks five years studying at BI, where the past two have been dedicated to completing a master's degree in Strategic Marketing Management. This degree has prepared us for the future, and our time at BI has been extremely valuable. Accordingly, the time spent on this thesis will be remembered fondly for many years to come. First, and foremost, we would like to thank our supervisor Anders Gustafsson. He has provided us with expertise throughout the past months, as well as contributed to interesting discussions regarding the research topic. We tremendously value his assistance and eagerness to challenge us.

During the course of working on the master's thesis, we were able to enhance our academic competence in both the selected topic and analysis techniques. Consequently, we have amassed a vast amount of knowledge and experience, individually as well as together.

Finally, we would like to express our appreciation for the excellent teamwork and collaboration. Throughout this master's thesis, we have been able to inspire one another despite frustrations along the way.

We are now ready for new challenges and eager to see what the future holds.

Thank you!

BI Norwegian Business School, Oslo, Norway, 29.06.2023

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Executive Summary

This master's thesis examines the relationship between eco-labels and consumer purchasing behavior, concentrating on the impact of perceived trust, quality, and price in eco-labeled products. Furthermore, we were intrigued by the question of whether a label, certified or not, can effectively substitute or replace other product characteristics, thereby influencing purchasing behavior. The purpose of the study is to comprehend how the use of eco-labels can effectively encourage environmentally conscientious purchasing and contribute to reducing the global environmental impact. Our proposed research question is *“How do eco-labels influence consumer purchasing behavior, taking into account the effects of perceived trust, quality and price?”*

Further, the literature review underpins the research methods and analysis in the research. Based on prior research, we have developed a conceptual model that illustrates casual and correlated patterns. In order to answer our research question, we have opted for a 3x2 between-subjects design and developed eight hypotheses. Moreover, to analyze the results of the main study and comprehend the relationship between the variables in the conceptual model, we found it appropriate to conduct regression analysis, univariate analysis of variance (ANOVA), and mediation analysis.

Our findings suggest that eco-labels could be used as a marketing tool to encourage more sustainable consumption and purchasing. The results demonstrate that it is preferable to use certified and well-known eco-label brands on products as opposed to unknown, as it will reduce uncertainty, increase perceived quality, and consequently increasing purchase behavior. In addition, we have investigated the effect of a high price level on these relationships.

Conclusively, based on the results from the analyses, we discuss strategic and managerial opportunities in the use of eco-labels on products to encourage consumers to be environmentally conscious and make sustainable purchasing decisions.

1.0 Introduction

The rapid economic growth over the past several years has led to a surge in global consumer consumption, resulting in environmental damage caused by over-consumption and the depletion of natural resources (Chen & Chai, 2010). This unsustainable trend is expected to worsen environmental degradation, including global warming, depletion of the stratospheric ozone layer, pollution of seas and rivers, noise and light pollution, acid rain, and desertification (Ramlogan, 1997). Fortunately, there is a growing global awareness and concern about these environmental issues.

As individuals become more conscious of the observable effects of global warming on the climate, environmental demand increases (Calculli et al., 2021). This increased awareness has fostered the need for transitioning to more sustainable consumption patterns and the promotion of environmental consciousness among the public (Taufique et al., 2014). In this context, consumers possess the potential to make a positive difference through their purchasing decisions by considering the environmental impact of the products they buy (Mainieri et al., 1997).

In recent years, 85 percent of consumers have become more environmentally conscious (Business Wire, 2021). Further, as the demand for eco-friendly options continues to rise, more than one out of third of global consumers are willing to pay more for sustainability (Business Wire, 2021). As a result, sustainability is a major factor for a range of consumers when making purchasing decisions (Deloitte, 2021).

Moreover, the increased awareness of climate change and environmental issues has led to a surge in demand for labels that allow consumers to differentiate between sustainable and less sustainable options. Such requests appear to assume that if consumers are provided with sufficient label information, their purchasing behavior will change, resulting in more sustainable consumption (Horne, 2009). However, according to recent research, surprisingly only one out of four consumers among UK adults consider a product's labeling as responsibly sourced or manufactured to be an indication that it is sustainable, and only one out of five considers labeling to be highly essential when making a purchasing decision

(Deloitte, 2023). This might suggest inconsistencies in labeling, which can lead to consumer confusion. Further, the study discovered that the top reasons for not adopting a more sustainable lifestyle are connected to high costs, a lack of interest in the topic of sustainability, and insufficient knowledge (Deloitte, 2023). Hence, to facilitate environmentally responsible purchases, it is necessary to provide relevant environmental information about products. Consequently, corporations and marketers are increasingly incorporating eco-labels with externally certified information into their products and services (Taufique et al., 2016).

By selecting a certified eco-label, consumers can ensure that the product meets professionally developed environmental standards (Svanemerket, 2023). “The Nordic Swan” is the most well-known eco-label in Norway, with 93% of the population being familiar with it. Its purpose is to make it simpler for consumers to choose sustainable products and services (Svanemerket, 2023). Thus, eco-labels can be an important tool to reduce consumer confusion and increase consumer trust (Brécard, 2017; Brécard, 2014; Sharma & Kushwaha, 2019; Thøgersen et al., 2010).

In this context, the presence or absence of eco-labels on products, and whether the labels are certified or familiar becomes crucial in influencing consumer behavior. Certified eco-labels provide visible indicators of a product’s sustainability credentials, allowing consumers to recognize and trust them as eco-friendly options (Hadjimichael & Hegland, 2016). Products without eco-labels, on the other hand, lack this visible endorsement, making it difficult for consumers to evaluate their environmental impact and make informed decisions. As a result, the presence of eco-labels can considerably impact consumer purchasing decisions (Testa, 2013), as they serve as a signal for sustainability and responsible consumption (Rex & Baumann, 2007).

However, a challenge for businesses is that consumers express concerns about the potential trade-off between product quality and environmental impact when purchasing eco-labeled products (Luchs et al., 2010). Notably, sustainable labels do not always have the desired effect on consumers, as many perceive the price of sustainable products with eco-labels to be relatively high in relation to their perceived quality (Pancer et al., 2015). Thus, companies can benefit from utilizing certified eco-labels more strategically which could possibly contribute to building

trust and increase perceived quality among consumers, thereby enhancing purchase intention.

Based on the highlights above, we want to explore the relationship between eco-labels and purchasing behavior, specifically focusing on the influence of perceived trust, quality, and price. The objective is to understand how eco-labels can effectively drive environmentally conscious purchasing behavior and contribute to reducing the overall environmental impact.

Based on this, our proposed research question is:

“How do eco-labels influence consumer purchasing behavior, taking into account the effects of perceived trust, quality and price?”

2.0 Literature Review

With a growing emphasis on sustainability, a rising number of businesses are adopting sustainability practices (Wang et al., 2014), resulting in an increase in the number of companies globally that produce sustainable products. Additionally, the number of individuals eager to adopt sustainable consumerism has risen over time (Young et al., 2009).

The rising number of consumers who prefer and are willing to buy eco-friendly products are creating an opportunity for businesses to meet consumer needs and acquire more market-applicable approaches to survive and sustain in the competitive market (Taufique et al., 2014). An important way to educate consumers about environmentally friendly products is to use eco-labels (Testa, 2013). During the last decades, a growing number of eco-labels have been developed by individual companies, industrial sectors, non-government organizations (NGOs), national and international governmental organizations (OECD, 2016). Furthermore, the significance of eco-labels in guiding consumers' purchase decisions is an emerging issue in the study of environmental management (Testa, 2013). However, owing to a lack of relevant or misleading information, they may not always accomplish their intended goal (Galil et al., 2013).

In the context of eco-labels on products, the role of brands becomes particularly significant. Brands can serve as signals of reputation and act as proxies for trust, influencing consumer preferences for product attributes (Aaker, 1991). This raises the intriguing question of whether a label, either certified or not, can effectively substitute or replace other product characteristics, thereby influencing purchasing decisions. The general assumption is that a trusted brand can serve as a proxy for consumers, reducing uncertainty about product quality variation and substituting other informational attributes (Keller, 1993). Given the importance of brands and labels in the decision-making process, it is essential to investigate consumer perceptions of established and familiar eco-labels versus unestablished and unfamiliar eco-labels and how these factors collectively influence consumer purchase decisions and sustainable behavior.

In the following sections, we will examine pertinent research on the effects of eco-labels, perceived trust, perceived quality, perceived price, and purchase behavior. Our hypotheses that will be examined in the study will be presented through the following sections.

2.1 The Effect of Eco-labels

Eco-labels serve the purpose of providing reliable and clear information about a product's reduced environmental impact, aiming to increase consumer demand for environmentally friendly products (Heyes et al., 2020). These labels are also utilized by businesses as marketing tools, accompanied by communication plans and comprehensive information for consumers to guide their purchase decisions (Testa, 2013).

Within the field of green marketing, eco-labels have gained significant importance. Previous studies have consistently shown that consumers tend to choose eco-labeled products and prefer labeled products as a sign of environmental quality compared to unlabeled alternatives (Heidenstrøm et al., 2011). In fact, research conducted by Sörqvist et al. (2013) revealed that individuals even perceive the taste of "eco-friendly" coffee as superior and are willing to pay a premium for it, despite similarities with "normal" coffee. This preference bias for eco-labeled products has been termed as "the eco-label effect" (Sörqvist et al., 2015).

However, controversies have arisen regarding the actual impact of green product labels on consumers' adoption of eco-friendly practices. Consequently, research findings regarding the relationship between eco-labels and purchase intention have been mixed. Several studies demonstrate the positive influence of eco-labeling on purchase decisions (Cai et al., 2017; Testa, 2013; Waris & Hameed, 2020). However, Golan et al. (2001) found that positive consumer attitudes toward labeled products do not always translate into actual purchases. Moreover, Dangi et al. (2020) and Sharma & Kushwaha (2019) suggest that the effectiveness of eco-labels in influencing purchase intention depends on various other factors, including consumers' environmental awareness, income, product quality, and price. Based on the preceding factors, eco-labels are rarely the deciding factor. These contradictory results illustrate the complexity of consumer behavior and the numerous aspects of the impact of different eco-labels.

2.1.1 Established Versus Unestablished Eco-labels

Eco-labels play a significant role in the marketplace as indicators of products with favorable environmental impacts compared to unlabeled alternatives (Grankvist & Biel, 2007). As a result, when choosing between products consumers frequently choose the product with the eco-label (Sörqvist et al., 2015). However, research indicates varying opinions on the influence of non-scientific claims, unfamiliar labels, or labels as decision cues on consumer behavior (Heidenstrøm et al., 2011; Hoek et al., 2013; Kaczorowska et al., 2019). Moreover, differentiating a credible environmental label from a non-credible one is challenging due to the enormous number of environmental labels available and their varying quality, making it difficult for consumers to determine which to trust (European Commission, n.d).

Among the numerous eco-labels available, The European Ecolabel, the Nordic Swan, and the Blue Angel are well-known and established eco-labels that adhere to strict environmental standards (UNOPS, 2009). Despite efforts by European authorities to regulate the labeling of organic products, consumers often lack the time and knowledge to evaluate the accuracy and significance of labels and claims associated with organic products (Hoek et al., 2013; Kim et al., 2015; Teisl et al., 2002). Instead, consumers tend to rely on heuristics or simple principles to associate product logos with perceived green attributes (Hoek et al., 2013; Kim et al., 2015; Teisl et al., 2002). Thus, product labels, when perceived as indicators of

environmental consciousness, serve as mental cues for consumers seeking to make eco-friendly purchases without extensively examining the eco-labels' detailed information. In the absence of such information, consumers may rely on simplified associations between product logos and their perceptions of environmental attributes, presuming that a product with a recognizable eco-label is automatically more sustainable.

Moreover, studies have shown that consumers are more likely to make eco-friendly purchase decisions if the eco-labels are well recognized and trusted companies (Roberts, 2008). Trust in certification bodies is also a crucial factor in consumers' preference for eco-labeled products (Beldad & Hegner, 2020; De Canio et al., 2021). Thus, the reputation and credibility of these companies play a significant role in influencing consumer perceptions and establishing trust in the eco-labels' environmental claims. Hence, the presence of an established and trustworthy eco-labeled brand encourages consumer assurance and confidence in the product's environmental credentials.

In light of this, we hypothesize that the presence of an established eco-label has a positive effect on purchase behavior. We refer to established eco-labels as certified and familiar eco-labels, such as The European Ecolabel, the Nordic Swan, and the Blue Angel, whereas unestablished eco-labels refer to as not certified and unfamiliar eco-labels, such as self-declared environmental claims.

Thus, we present the following hypothesis:

H1: The presence of an established *eco-label* has a positive effect on *purchase behavior*

2.2 Perceived Trust

Some researchers have questioned whether eco-labels give consumers information that aids them in making ecologically responsible purchasing decisions (Gallastegui, 2002; Thøgersen et al., 2010). The number of new eco-label programs has increased significantly, and according to “The Ecolabel Index”, the largest global directory of eco-labels, 463 eco-labels in 199 countries and 25 industry sectors are currently being tracked (Ecolabel Index, 2023). Consequently, high levels of consumer confusion and organizational distrust have followed this growth (Delmas et al., 2013). As a result, consumers are increasingly skeptical and less trusting towards green products and eco-labels. Thus, this has been identified as a challenge for businesses due to consumers’ increased awareness and knowledge of sustainability (Banerjee & Solomon, 2003; Vermeir & Verbeke, 2006; Vittersø & Tangeland, 2015). In addition, firms might utilize eco-labels inappropriately, where the abuse of eco-labels can result in “greenwashing”, in which a company’s actions are destructive to the environment, despite its claim to produce eco-friendly products (Sharma & Kushwaha, 2019).

However, several prior studies have suggested that environmentally responsible consumption depends at least in part on appropriate information from various sources, such as advertising, product packaging (i.e., eco-labels), and any other environmental awareness program (Daugbjerg et al., 2014; Polonsky et al., 2012). Moreover, when consumers have trust in such information, their dependence on it increases (Young et al., 2009). Trust can be defined as “a feeling of security and willingness to depend on someone or something” (Chung & Kwon, 2009). In turn, consumers who lack trust in environmental claims are less likely to engage in environmentally responsible behavior (Carrete et al., 2012).

Furthermore, eco-labels can be used to minimize consumer confusion and increase consumer trust (Brécard, 2017; Brécard, 2014; Kirchhoff, 2000; Sharma & Kushwaha, 2019; Thøgersen et al., 2010). Since consumers cannot directly verify the qualities of green products, they must rely on labels to validate such claims (Grunert & Wills, 2007). Thus, eco-labels can increase sustainable behavior without compromising consumer choice, minimize confusion and information search costs, and increase the likelihood that consumers will actually utilize this information (Grunert & Wills, 2007). In addition, Jiang et al. (2008) found a

correlation between knowledge and trust in purchasing behavior. Hence, consumers with greater environmental knowledge are more likely to engage in environmentally responsible purchase behavior (Peattie, 1995).

Thus, for eco-labels to be successful, consumers must comprehend their meaning and trust the offered information (Horne, 2009). Nevertheless, there is little research on how consumer knowledge of eco-labeling standards and consumer trust in particular eco-labeling schemes impact sustainable consumer purchasing behavior (Taufique et al., 2016). Based on research indicating that consumers are less likely to make eco-friendly purchase decisions when they lack trust in environmental claims and when eco-labels are not associated with well-recognized and trusted companies (Carrete et al., 2012; Roberts, 2008), we hypothesize that an unestablished eco-label will negatively affect perceived trust.

Thus, we present the following hypothesis:

H2a: The presence of an unestablished *eco-label* has a negative effect on *perceived trust*

Moreover, since consumers will only utilize information such as eco-labeling if they trust or believe it (Grunert & Wills, 2007; Horne, 2009), it is necessary to examine their impact on sustainable purchase behavior. We aim to examine the potential mediating role of perceived trust in the relationship between an established eco-label and purchase behavior. Based on existing research suggesting that a recognized eco-label is likely to engender higher levels of perceived trust, owing to consumers' confidence in such environmental labels, we anticipate that the increased perceived trust will subsequently influence purchase behavior. In short, we hypothesize that the mechanism of higher perceived trust operates as a mediator between an established eco-label and purchase behavior.

Thus, we propose the following hypothesis:

H4a: The relationship between an established *eco-label* and *purchase behavior* is mediated by *perceived trust*

2.3 Perceived Quality

In the literature, there are various academic definitions of perceived quality. According to Zeithaml (1988), perceived quality is defined as “the consumer’s judgment about a product’s overall excellence or superiority” (Zeithaml, 1988). As Chaudhuri (2002) found, perceived quality may lead to consumer satisfaction, which is determined by perceived performance and expectation. In addition, the study viewed perceived quality as a significant factor, arguing that the higher consumers’ perceived quality, the greater their purchase intent (Chaudhuri, 2002). Moreover, Tsiotsou (2006) demonstrated that perceived quality and purchase intention are positively correlated. Additionally, perceived quality has been found to be a significant factor influencing consumers’ purchasing decisions (Lin et al., 2009; Nekmahmud & Fekete-Farkas, 2020), hence, perceived quality can be used to predict purchase intention.

According to Iyer & Kuksov (2010), consumers base their purchasing decisions on the quality cues they perceive. Thus, the value received from the perceived quality gives consumers a reason to purchase and differentiates the brand from the competition (Wang, 2015). Further, organic-labeled products have been found to have an increase in product quality perceptions (Carpenter & Larceneux, 2008). Accordingly, eco-labeled products are typically subjected to heightened standard and monitoring by both society and the media, leading to a general perception that these products adhere to higher quality standards. Consequently, some consumers hold the belief that eco-labeled products possess superior quality compared to ordinary products (de Magistris & Gracia, 2008).

However, consumers’ divergent perceptions of the quality of eco-certified products have been noted as a significant drawback of eco-labels (Luchs et al., 2010). Newman et al. (2014) discovered that consumers are less inclined to buy a green product, as they believe green innovations make buyers think the corporation sacrificed product quality (Newman et al., 2014). As a result, consumer confusion about the link between eco-labels and product quality might reduce the effectiveness and adoption of eco-labels (Delmas & Gergaud, 2021). Moreover, the average consumer is often unaware of the quality differences between eco-labels (Feser, 2022), thus making it difficult for consumers to evaluate the validity of some environmental quality claims (Fischer & Lyon,

2019). Consequently, consumers often perceive a trade-off between product quality and environmental impact for eco-labeled products (Luchs et al., 2010).

Based on the highlighted literature above, there is evidence that consumers are unaware of the quality differences between different eco-labels, making it difficult to assess the validity of certain environmental quality claims (Fischer & Lyon, 2019). Hence, we assume that when an eco-label is unestablished it will negatively affect perceived quality of the product.

Thus, we present the following hypothesis:

H2b: The presence of an unestablished *eco-label* has a negative effect on *perceived quality*

Moreover, previous research has demonstrated that eco-labeled products exhibit increased perceptions of product quality, and consumers rely on these quality cues when making purchasing decisions (Carpenter & Larceneux, 2008; Iyer & Kuksov, 2010). Based on this evidence, we assume that when consumers hold a high level of perceived quality in relation to eco-labels, it will exert a positive influence on their purchase behavior. Thus, our interest lies in investigating whether the perception of quality operates as a mediating factor in the relationship between an established eco-label and purchase behavior. In short, we hypothesize that the mechanism of higher perceived quality acts as a mediator between an established eco-label and purchase behavior.

Thus, we propose the following hypothesis:

H4b: The relationship between an established *eco-label* and *purchase behavior* is mediated by *perceived quality*

2.4 Perceived Price

In the marketing literature, the relationship between price and quality has been extensively studied. Since more than half a century ago, it has been widely accepted that price is a strong indicator of perceived quality, making it one of the consumer's primary considerations when selecting a product (Peterson, 1970). Pricing based on perceived value is "the price that consumers are willing to pay for a product or service based on their perception of it" (The Economic Times, 2023). Thus, it is not based on the cost of the product, but rather on the value that the consumer perceives to be derived from purchasing a product or service (The Economic Times, 2023).

Moreover, the current literature on eco-labels has largely neglected the interaction between eco-labeling and other informational cues, such as price premiums (Potter et al., 2021). Prior marketing research indicates that price premiums serve as an external cue (Teas & Agarwal, 2000). In addition, according to "Cue-utilization Theory", which is widely accepted as an explanation for consumers' evaluations of products and product attributes (Pezoldt et al., 2014), the informational perspective refers to consumers' perception of a higher quality when prices are higher (Völckner, 2007). Higher prices signal prestige to other individuals, and expensive products elicit hedonistic effects such as increased satisfaction and exhilaration. Consequently, these informational effects positively affect consumers' purchase behavior (Völckner, 2007).

Additionally, in line with several other studies, price has been shown to be a major external factor influencing purchasing intentions (Aschemann-Witzel & Zielke, 2015; Avitia et al., 2015; Ozimek & Zakowska-Biemans, 2011). Further, according to "Neoclassical Theory", consumers attempt to optimize their purchasing decisions so as to satisfy their own requirements to the greatest extent feasible. In this sense, when they accept a higher price and purchase a product, they also demonstrate a greater preference for it (Combris et al., 2009; van Herpen et al., 2015).

However, as shown in a number of studies, there is a conflict between environmental concern and the desire to purchase and pay a higher price for sustainability-labeled products (Grunert et al., 2014; Ling, 2013; Schäufele &

Hamm, 2018). Consequently, many consumers perceive the price of sustainable products with sustainable labels attached to be relatively high in comparison to the product quality (Pancer et al., 2015). Moreover, the labels applied to the products may induce a sense of uncertainty regarding the trustworthiness of the products or whether the higher prices are justified (Pancer et al., 2015). In addition, confusion, coupled with high prices, has been shown to weaken consumers' trust (Huber, 2008).

A considerably lesser corpus of research has introduced the concept of fairness to the study of price perceptions (Xia et al., 2004). Hence, it is remarkable that there are few academic contributions that examine price fairness for green products. Price fairness can be defined as “a consumer’s evaluation and associated feelings regarding whether the difference (or lack of difference) between a seller’s price and the price of a comparable other party is reasonable, acceptable, or justifiable” (Xia et al., 2004). The perception of price fairness appears to be especially important in the context of eco-products, which evoke the notice of justice (Dekhili & Achabou, 2012). Furthermore, the display of fair prices may enhance the effectiveness of pricing policies for eco-friendly products. Hence, price transparency is essential because the perception of an unfair price can have a destructive effect on businesses (Campbell, 1999; Martins & Monroe, 1994; Oliver & Swan, 1989).

2.4.1 Willingness to Pay a Price Premium

In the case of green products, consumers can express their concern for society and the environment by purchasing differentiated products and by willingness to pay (WTP) premiums. A price premium refers to “the amount of money an individual is willing to pay to secure welfare improvement” (Aguilar & Vlosky, 2007). The literature on sustainability has examined the question of willingness to pay extensively and asserts that consumers generally accept that the prices of green products are higher than those of conventional products and are even willing to pay more for them (Gam et al., 2010; Harris & Freeman, 2008). This trend has been confirmed in both food and non-food production (Aprile et al., 2012; Laroche et al., 2001; Vecchio & Annunziata, 2015). Therefore, sustainable

labeling may play a role in obtaining added value for products and influencing the relative importance of their prices.

Further, Feuß et al. (2022) found a beneficial effect of eco-labels on consumer purchases and that higher price premiums can even reinforce the positive effect of eco-labels. In addition, Tranter et al. (2009) showed that some consumers pay a premium for environmentally friendly products, indicating that their WTP for a product with an eco-label is greater than that for an “equivalent” product lacking an eco-label. However, despite the fact that consumers are concerned about the environmental impact of the products they purchase, empirical economics has shown that their WTP is frequently relatively low (Yokessa & Marette, 2019).

In the marketing literature, the examination of price perceptions in relation to eco-products has received limited attention (Dekhili & Achabou, 2012). From one point of view, the presence of eco-labels on products may introduce doubts about product reliability and raise questions about the justification of higher pricing (Pancer et al., 2015), and excessive pricing coupled with confusion has been found to diminish consumer trust (Huber, 2008). On the other side, studies have indicated that consumers generally accept higher prices for green products and are often willing to pay a premium for them. Additionally, consumers who have trust in certifying bodies are more inclined to purchase eco-labeled products (Beldad & Hegner, 2020; De Canio et al., 2021). Building on this evidence, we assume that a high price level will moderate the relationship between an established eco-label and perceived trust.

Thus, we present the following hypothesis:

H3a: An established *eco-label* combined with a *high price level* will lead to higher *perceived trust*

Further, in previous studies, the role of price as an indicator of perceived quality has been widely accepted (Peterson, 1970), with consumers often perceiving higher quality in products that command higher prices (Völckner, 2007). Considering this relationship between price and perceived quality, it is reasonable to assume that the pricing of a product may interact with the presence of an established eco-label, influencing consumers' perceptions of quality.

Thus, we present the following hypothesis:

H3b: An established *eco-label* combined with a *high price level* will lead to *higher perceived quality*

Lastly, in the existing body of research, there is evidence suggesting that eco-labels play an important role in shaping consumer purchase decisions, and in certain instances, higher price premiums can even enhance this impact (Feuß et al., 2022). Based on this evidence, we assume that the relationship between an established eco-label and purchase behavior may be moderated by a high price level.

Therefore, the following hypothesis is proposed:

H3c: An established *eco-label* combined with a *high price level* will lead to *purchase behavior*

2.5 Purchase Behavior

Consumer behavior can be defined as “the behavior that consumers display in searching for, purchasing, using, evaluating, and disposing of products and services that they expect will satisfy their needs” (Schiffman et al., 2007).

According to Kotler & Keller (2011), it is crucial for manufacturers and service providers to understand consumer purchasing behavior and the ways in which consumers choose their products and services, as this provides them with a competitive advantage over their competitors.

As seen in previous literature, eco-labels have been shown to effectively guide consumers' decision-making processes (Potter et al., 2021), influencing their purchase intentions and willingness to make purchases (Bauer et al., 2013; Brach et al., 2018; Bradu et al., 2013; Cai et al., 2017; Harms & Linton, 2015; Testa, 2013; Waris & Hameed, 2020). However, the purchase of eco-friendly products, such as organic food, is frequently hindered by a number of barriers (Pham et al., 2018). The most prevalent cause for not purchasing organically grown food appears to be the product's high price (Van Doorn & Verhoef, 2015). Other barriers include a lack of information and availability, mistrust in organic labels, a time barrier, insufficient marketing, poor presentation, and cosmetic defects (Hughner et al., 2007; Nguyen et al., 2017; Tanner & Wölfing Kast, 2003; Von Meyer-Höfer et al., 2015). Despite consumers' positive attitudes toward the products, these barriers appear to reduce consumers' intent to purchase organic food (Hughner et al., 2007; Magnusson et al., 2001). Therefore, it is intriguing to investigate whether similar or other barriers influence purchase behavior in product categories other than food. Further, it is also intriguing to investigate whether there are other factors that have an impact, since the effectiveness of eco-labels in influencing purchase intention has been found to depend on various other factors (Dangi et al., 2020; Sharma & Kushwaha, 2019).

By comprehending the complex interplay between eco-labels and the factors such as perceived trust, quality and price in influencing purchase behavior, businesses and policymakers can develop effective strategies to promote sustainable consumption and facilitate the adoption of eco-labeled products.

2.6 Conceptual Model

The literature is used to assess the influence of eco-labels on purchase behavior. Our framework is predicated on the premise that the presence of an eco-label affects both perceived quality and perceived trust, hence influencing purchase behavior. Therefore, we suggest that perceived trust and perceived quality in eco-labels will mediate the effect of eco-labels on purchase behavior. Finally, the study investigates the moderating effect of perceived price when combined with an eco-label on consumers' perceived trust, perceived quality, and purchase behavior.

Based on our comprehensive review of the literature, we have developed a conceptual framework that illustrates our understanding of the causal and correlational relationships within the chosen research topic. To summarize our conceptual framework, we present the following research model (Figure 1).

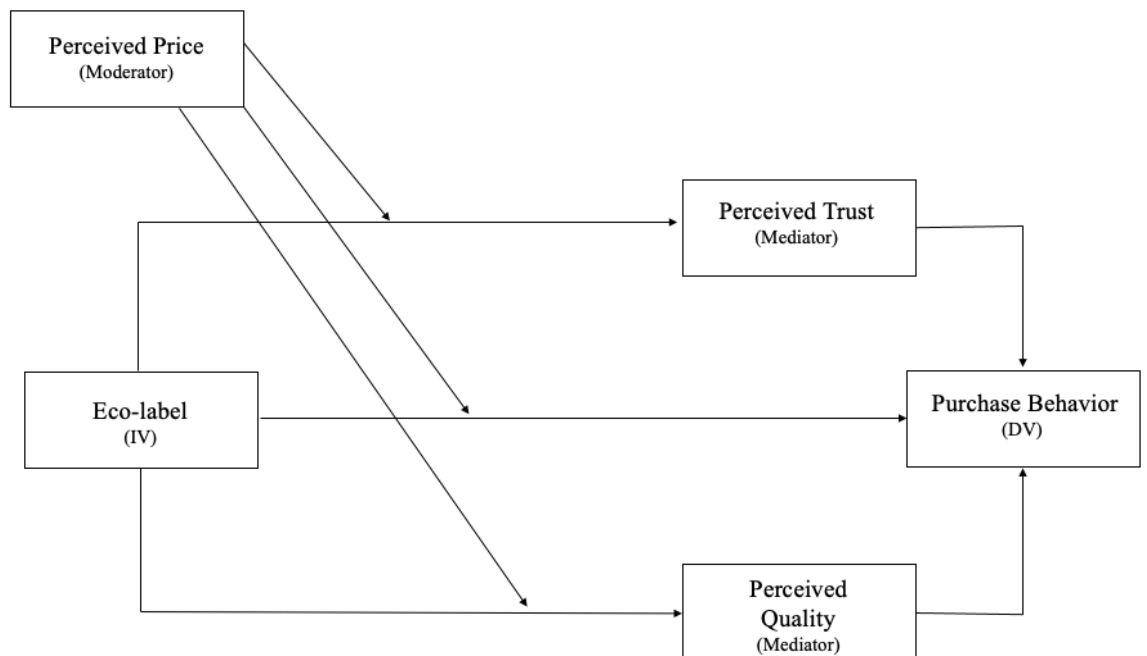


Figure 1: Research Model

2.7 Overview of Hypothesis

In this section, we provide an overview of the proposed hypotheses. Figure 2 below outlines the hypotheses in our research model that will be tested in this thesis. We assume that the following hypotheses are adequate and feasible for examining our research question:

H1: The presence of an established *eco-label* has a positive effect on *purchase behavior*

H2a: The presence of an unestablished *eco-label* has a negative effect on *perceived trust*

H2b: The presence of an unestablished *eco-label* has a negative effect on *perceived quality*

H3a: An established *eco-label* combined with a *high price level* will lead to higher *perceived trust*

H3b: An established *eco-label* combined with a *high price level* will lead to higher *perceived quality*

H3c: An established *eco-label* combined with a *high price level* will lead to *purchase behavior*

H4a: The relationship between an established *eco-label* and *purchase behavior* is mediated by *perceived trust*

H4b: The relationship between an established *eco-label* and *purchase behavior* is mediated by *perceived quality*

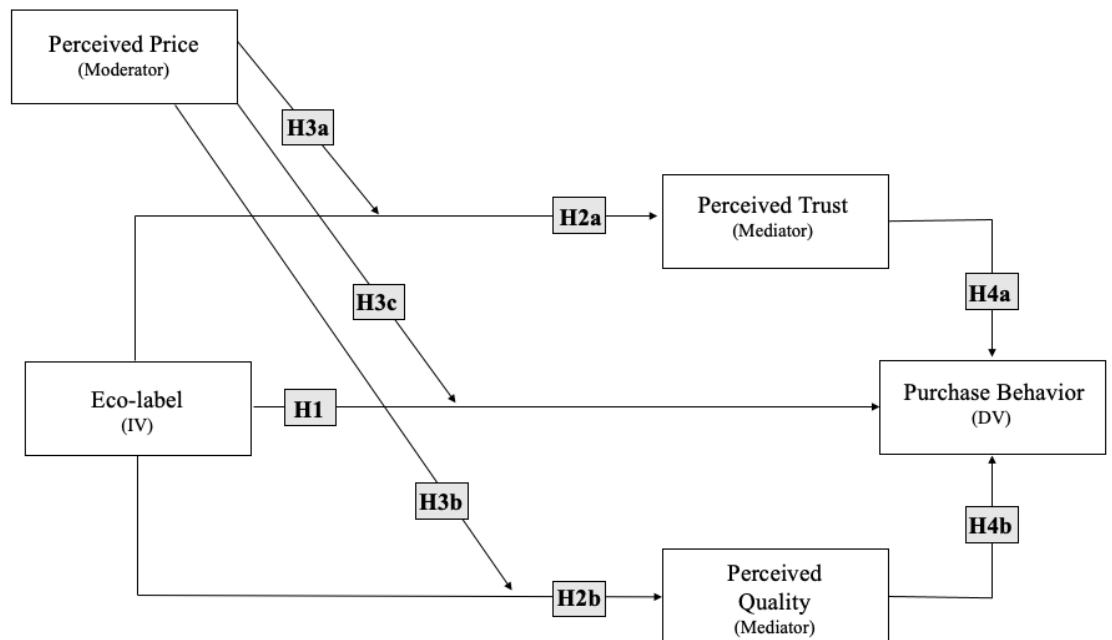


Figure 2: Research Model with Hypotheses

3.0 Methodology

The purpose of this study is to understand how eco-labels can effectively drive environmentally conscious purchasing behavior and contribute to reducing the overall environmental impact. To test the proposed research model (Figure 1) and answer our research question, an online survey was conducted through a pre-test and a main study, respectively. The objective of the pre-test was to acquire a deeper understanding of consumer purchasing behavior among eco-label products, in addition, to explore important data to examine further in the main study. The main study employed a 3x2 between-subjects design. The experiment was survey-based and was conducted using a quantitative, self-administered questionnaire.

In the sections that follow, we will first elaborate on our sampling method, procedure for data collection, and the pre-test, before we explain the main study and survey design.

3.1 Sample and Data Collection

The pre-test and the main study were conducted as an online survey, which is a quantitative method for collecting data (Gripsrud et al., 2017). The main study was structured as an online experiment utilizing the Qualtrics software. In addition, we recruited participants using social networks like Facebook, Snapchat,

Instagram and LinkedIn, by employing a convenience sample (Gripsrud et al., 2017). Our sampling technique is categorized as a non-probability sample, in which elements are mostly decided by what is easiest to get (Gripsrud et al., 2017). In addition, we encouraged respondents to share the online survey with their network, generating a snowball effect (Malhotra, 2010). This allowed us to reach a greater number of participants outside of our network. We aimed for reaching at least 350 respondents at a starting point. Following data collection, we transferred the responses to the SPSS software for further data analysis.

Before sending out the survey for our main study, it was tested by five people in the segment. The purpose of this was to uncover any deficiencies or ambiguities (Gripsrud et al., 2017) so that it was possible to correct these in advance. Our target group consists of Norwegian respondents of all ages. Due to our established network, we anticipated that the majority of respondents would be young adults. Since a recent survey from Kantar's (2021) climate barometer revealed that young Norwegians are particularly concerned about climate and the consequences of climate change (Kantar, 2021), we assume that young adults are a suitable group for our study.

3.2 Privacy and Ethical Considerations

The online survey was distributed to our target audience using Qualtrics. In addition, we wanted the survey to be completed within two to five minutes. When collecting and utilizing data, the thesis adheres to all applicable legal and ethical standards (Sikt, previously NSD, and GDPR).

In order to conduct our research in accordance with the fundamental principles of data protection, we anonymized all data collected. Therefore, it was unnecessary to submit a request for the collection of personal data to the Sikt (Sikt, n.d). A section requesting the participant's consent to data collection was included at the introduction of the survey to comply with the norms for ethical research practice. In addition, participants were informed that no personally identifiable information or IP addresses would be collected and that their privacy would be protected.

3.3 Pre-test

To gain broader knowledge and more insights into purchasing behavior among eco-label products, we wanted to initiate our study with a pre-test.

The pre-test served as the foundation for our main study and enabled us to acquire insight into what consumers are genuinely interested in and care about. As we desired to standardize the communication and collect quantitative data, we considered a digital survey suitable. Such an approach allowed us to reach a bigger audience of consumers, which provided us with a deeper understanding of the purchasing behavior among sustainable products.

Based on the findings from Cox (1980), we made statements on a seven-point Likert scale. The statements explored the general perceptions of sustainable purchasing with regards to eco-labels. We wanted to investigate in which industries purchasing eco-label products are important, as well as which eco-labels that are trusted and known. We also wanted to look into other factors of sustainable purchasing, such as price, satisfaction, consumer behavior and loyalty. The eco-labels displayed in the survey are a chosen selection from Forbrukerrådet (2023).

All questions were asked on semantic differential scales anchored by 1 and 7, where 1 = not important at all and 7 = extremely important. See full pre-test questionnaire in Appendix 1.

3.3.1 Pre-test Results

74 participants took part in the pre-test ($M_{Age}=30.76$, $SD_{Age}=12.840$, 67.6% female, 32.4% male). The participants indicated that sustainability is most important when making a purchase in the *food* industry ($M=4.70$, $SD=1.279$) and *health care* industry ($M=4.46$, $SD=1.714$). Sustainable labeling was found to be the most important when making a purchase in the *food* ($M=4.97$, $SD=1.605$) and *household cleaning supplies* industry ($M=4.74$, $SD=1.866$). *Beauty products* ($M=4.20$, $SD=1.767$) was found to be the most neutral industry (with a mean closest to 4 on a scale from 1-7), regarding the importance of sustainability among participants. This finding indicated that *beauty products* could be an appropriate

product category to examine in our main study, as sustainability claims were considered neither highly important nor unimportant.

The *Nordic Swan* eco-label was the most recognized eco-label with 98.64% familiarity among the participants, followed by *Nyt Norge* (93.24%), *Ø-merket* (78.37%), *Eco-Lighthouse* (72.97%), *Forest Stewardship Council (FSG)* (36.48%) and lastly, *EU-Ecolabel* (18.91%) and *Energy Star* (18.91%). Further, *Nyt Norge* (82.43%) and *Nordic Swan* (64.86%) are the two eco-labels the participants place most emphasis on when purchasing products. We chose to utilize the *Nordic Swan* eco-label further in our main study as this is the eco-label most participants are familiar with.

When assessing the perception of quality, price, satisfaction, behavior and loyalty, we found that the participants perceive the *quality* ($M=5.14$, $SD=1.102$) and the *price* ($M=5.16$, $SD=1.086$), of a product that has an eco-label to be higher.

Further, the participants feel more *satisfied* ($M=5.30$, $SD=1.119$) if a product has an eco-label. When it comes to *purchasing behavior*, it is less important that a product contains an eco-label when choosing between different products ($M=4.36$, $SD=1.429$). Additionally, when it comes to *loyalty* ($M=3.85$, $SD=1.841$), the participants do not always purchase the same product because it has an eco-label.

The pre-test results gave us valuable insight that were incorporated into our main study. Full summary of results can be found in Appendix 2.

3.4 Main Study

To test our hypotheses and gather quantitative data, the main study was conducted as an experiment. The experiment was designed in the survey program Qualtrics and was carried out using an online questionnaire.

3.4.1 Survey Design

Our survey design was 3x2 between-subjects (Eco-label: *Absent* versus *Established* versus *Unestablished* x Price: *High* versus *Low*). This allowed us to test main effects, as well as interaction effects in the study. The 3x2 matrix below (Figure 3) illustrates the six different treatment conditions in the main study. Each

respondent was randomly assigned to one of the six conditions using the tool “Randomizer” in Qualtrics.

		Eco- Label		
		<i>Absent</i>	<i>Established</i>	<i>Unestablished</i>
Price	<i>High</i>	Condition 1	Condition 3	Condition 5
	<i>Low</i>	Condition 2	Condition 4	Condition 6

Figure 3: 3 x 2 Factorial Design Structure

To generate the six experimental conditions, six fictitious product versions of a regular day cream were created and presented to the participants, where the eco-label (*absent* versus *established* versus *unestablished*) and price (*high* versus *low*) was manipulated in each condition. Conditions 1 and 2 contained a product where the eco-label was absent with a high and a low price. Conditions 3 and 4 contained an established eco-label (Nordic Swan eco-label) where the price was high and low. Finally, conditions 5 and 6 contained an unestablished eco-label (a fictitious made-up eco-label) with a price of high and low. All participants were asked the same questions, towards a different version of the same product. Illustrations of the fictive products that were presented across the six treatment conditions can be found in Appendix 3.

3.4.2 Stimulus

Six fictitious products of a regular day cream were created and presented to the participants. Each treatment condition was presented with a different image, where the levels in the experiment were manipulated on the packaging of the products. Based on the results from the pre-test, the selected product was a day cream, as the pre-test revealed that sustainability claims in this product category (beauty products) were neither viewed as extremely essential nor as inconsequential. We also chose a day cream in this product category because it is

fairly neutral and a product that many people use on a daily basis, both men and women. We therefore presume this product was suitable for use.

Further, visual components of the day cream were modified across treatment conditions. Across the three levels of eco-label, the Nordic Swan eco-label logo was placed on the front of the packaging in all conditions containing the presence of an established eco-label (condition 3 and 4), an unestablished eco-label (a fictitious made-up eco-label) was present in condition 5 and 6, and lastly, no eco-label was present in condition 1 and 2.

Since the most familiar and recognizable eco-label from the pre-test was the Nordic Swan eco-label, this label was chosen as the established eco-label. The chosen label also had to correspond with the selected product. Some of the products the Nordic Swan eco-label appears on are personal care and hygiene items (Svaneriket, 2023), which is suitable for our chosen product category. Moreover, among Norwegian consumers, the Nordic Swan eco-label is regarded as highly legitimate, with 93 percent of the population being familiar with it (Svaneriket, 2023). In addition, according to a study by Ipsos, nearly 60 percent believe that products with the Nordic Swan eco-label are environmentally responsible (Jerijervi, 2022). Consequently, the Nordic Swan eco-label was chosen for the treatment conditions containing an established eco-label on the product.

Additionally, we included a treatment condition with an unestablished eco-label presented on the product, as prior research indicates that there is a divide regarding whether consumers are influenced by non-scientific claims, poorly known labels, or labels as cues for purchase decisions (Heidenstrøm et al., 2011; Hoek et al., 2013; Kaczorowska et al., 2019). Therefore, we created a fictitious eco-label that refers to an unestablished eco-label, in order to be able to evaluate the impact of an unestablished eco-label's presence. In addition, we included a treatment condition in which there was no label on the product, as previous research indicates that consumers perceive eco-labeled products to be superior to unlabeled products (Grankvist & Biel, 2007; Sörqvist et al., 2015). As a result, this enables us to investigate the effect of a product lacking an eco-label compared to when the product contains an eco-label, or whether there are any differences.

Across the two levels of price, the participants were shown a “high” or “low” price associated with the product they were viewing. The price was displayed as a descriptive text next to the item. In addition, according to Gam et al. (2010), Harris & Freeman (2008) and the pre-test results, there is an indication that consumers perceive eco-label products to be more expensive. Consequently, the price is an intriguing variable to manipulate. To determine the appropriate price, we examined the market prices for regular day creams and calculated the mean price. The “high” and “low” prices were then calculated by subtracting the mean price from a price that was both higher and lower. We discovered that the average market price for standard day creams is approximately NOK 150, -. Consequently, we opted for a high price of NOK 329, - and a low price of NOK 79, -. As a result, the “low” price level (presented to treatment groups 2, 4, and 6) resulted in a price of NOK 79, - for the product. In addition, the “high” price level for the product (presented to treatment groups 1, 3, and 5) was NOK 329, -.

Further, we designed the day cream to be as neutral as feasible, with a plain packaging across all conditions, as we did not want the packaging color, name, size, shape, design, or the day cream’s ingredients to influence the results (Waheed et al., 2018). Additionally, we designed the day cream to be suitable “for all skin types” to make it an even more neutral product. Moreover, we decided not to have any real brand names related to the product, as consumers may already have established their own brand recognition, loyalty, and satisfaction towards the brand, which may affect the results (Keller & Swaminathan, 2020). Canva, an image-editing program, was used to modify every image. Appendix 3 contains images of the fictitious products that were presented under each of the six treatment conditions.

3.4.3 Questionnaire

The questionnaire was broken down into different sections: an introduction, questions about perceived quality, perceived trust, and perceived price, questions about purchasing behavior and sustainable purchase behavior, attribute evaluation questions, usage and purchase frequency questions, and demographic questions. The full questionnaire can be found in Appendix 4.

The introduction section informed the participants of the purpose of the study, the approximate time needed to take the survey, and information about

confidentiality. The respondents also had to consent to participate in the study. In addition, we provided participants with our contact information in case they should have any questions regarding the study. Before the beginning of the survey, the respondents were presented with the following information: “You are going to be presented with an example of a day cream. Imagine that you are going to purchase this product for yourself. Please answer the questions as truthfully and precisely as possible”. Thereby, we encouraged the participants to provide as accurate and truthful answers as feasible.

On a semantic differential scale ranging from 1 to 7, respondents were asked to evaluate the product based on a series of statements. To prevent participants from forgetting the product and instructions, a picture of the assigned product condition was displayed at the top of the page while they completed the corresponding questions. Finally, demographic factors were recorded with questions about age, gender, employment status, and highest completed education. After completing the questionnaire, participants received an appreciation for their participation in the study.

3.4.4 Measures and Scales

All questions were measured using a semantic differential scale ranging from 1 to 7. Items were modified as necessary to preserve the semantic properties of the study’s context.

To operationalize the constructs, we modified existing measurement scales to determine the variables in our study. We used the scale from Alavi et al. (2015), which was adopted from Grewal et al. (1998), to measure *Perceived Quality*. The questions in their study were measured using a seven-point Likert scale. We chose to modify two of the three formulations on the scale in order to tailor them to our product and contexts. This is determined by questions 1 and 2.

Moreover, we utilized the scale created by Moussa & Touzani (2008) to measure *Perceived Trust*. In their study, the authors present quality labels as signals that mitigate issues caused by asymmetric information. To evaluate the perceived credibility of a quality label, they present a revised version of a scale originally proposed by Larceneux (Moussa & Touzani, 2008). They used a seven-point Likert scale ranging from 1= completely disagree to 7= completely agree. We

utilized two of the formulations and modified one to suit our product and contexts. This is determined by questions 3-5.

To measure *Perceived Price*, we utilized the scale developed by Chiang & Jang (2007). Their study examined the effects of perceived price and brand image on perceived quality, trust, perceived value, and travelers' online hotel booking purchase intentions. On a seven-point Likert scale ranging from strongly disagree to strongly agree, respondents were asked to rate their perceptions of the price of three distinct hotels as *expensive*, *reasonable*, *appropriate*, and *affordable*. We implemented all four options from their research. This is determined by question 6.

Further, Wee et al. (2014)'s scale was used to measure *Purchase Behavior*. Their study aimed to examine the interrelationship between consumer perception, purchase intentions, and actual purchase behavior in the context of organic food products. They were using a five-point Likert scale (1 is low and 5 is high). However, we altered two of their formulations and employed a seven-point Likert scale. This is determined by questions 7 and 8.

Lastly, *Sustainable Purchase Behavior* was measured using the scale developed by Taufique et al. (2016), which was based on Roberts (1996). Their research combines consumers' knowledge and trust in eco-labels with their environmental knowledge to determine how this affect pro-environmental consumer behavior (PECB). They utilized an 11-item scale derived from Robert's (1996) "ecologically conscious consumer behavior scale" to measure pro-environmental consumer behavior. In addition, they utilized a six-point Likert scale without a midpoint (1 = strongly disagree; 6 = strongly agree). As a result, we decided to modify one of their formulations and use a seven-point Likert scale to accommodate the context of our study. This is measured through question 9.

For a deeper comprehension of other potential explanatory factors, we also included seven attributes (not based on specific scales) in which respondents were asked to rate the importance of various attributes when purchasing a day cream (Product quality, Price, Environmental sustainability, Product design, Sensory aspects (e.g., feel, scent), Functionality, Convenience (e.g., clear instructions for use)). We utilized a seven-point Likert scale ranging from 1= not important at all to 7= extremely important. This is measured through question 10.

Further, we also included two questions on a categorical measurement scale regarding the frequency with which participants use and purchase a day cream. These questions were included to facilitate categorization and determine whether the frequency of using/purchasing the product and responses to the statements are consistent. This is measured through questions 11 and 12. Finally, we asked the participants about their demographics (age, gender, employment status and highest completed education) using an open-ended question scale for age and categorical measurement scale for the remaining questions. This is determined by questions 13-16.

The full questionnaire with scales is summarized in Appendix 5.

3.4.5 Data Cleaning

According to Gripsrud et al. (2017), there is no statistical foundation for determining the precise number of respondents to include in a non-probability sample. On the other hand, they note that 200 respondents are a common starting point for convenience selection, with 20 to 50 observations required per condition (Gripsrud et al., 2017). Based on this, we chose to set a target of at least 50 observations per experimental group. Hence, we chose to aim for at least 350 respondents in total as a starting point.

Further, using the “Necessary Sample Size” formula from Qualtrics (as calculated below), our ideal sample size of the Norwegian population of 5,489,984 (SSB, n.d.) with a 95% level of confidence is 385 respondents (Qualtrics, 2023). This number was also confirmed by Qualtrics’ “Sample size calculator” (Qualtrics, 2023). Since we used a convenience sample, the results cannot be generalized to the entire population (Malhotra, 2010). Therefore, the ideal sample size was only used as an indication.

$$\text{Necessary Sample Size} = \frac{(Zscore)^2 \times StdDev \times (1 - StdDev)}{(margin\ of\ error)^2} = \frac{(1.96)^2 \times 0.5 \times (1 - 0.5)}{(0.05)^2} \approx 385$$

The survey was active for two weeks, and data collection occurred at the end of April 2023. The gathered Qualtrics data were exported and imported into IBM SPSS Statistics 29. The sample contained a total of 447 respondents before data cleaning.

Further, we eliminated all respondents who did not complete the survey, leaving only those who answered every question. We eliminated in total 48 respondents who did not complete the survey in its entirety. As the “force response” function was used throughout the questionnaire for all other respondents, it was possible to analyze their responses further.

The final sample, after data cleaning, contained 399 respondents ($n_1 = 65$, $n_2 = 62$, $n_3 = 71$, $n_4 = 65$, $n_5 = 68$, $n_6 = 68$). Hence, there was an equal distribution of responses for each treatment condition, with more than 50 respondents in each condition, assuring reliability and equal distribution. Thus, we concluded that the sample size was suitable for further examination.

3.4.6 Description of Sample

As the aim of this research was to test the general population, no specific demographics or psychographic characteristics were considered when distributing the survey. The participants were between 20 and 63 years old, with a mean age of 28.14 years ($SD = 5.85$). 115 respondents (28.8%) identified themselves as male and 284 (71%) as female. Further, 262 (65%) were full-time employed, 129 (32%) were part-time employed, 7 (1.7%) unemployed, and 1 (0.25%) self-employed. Further, from the respondent’s highest completed education, 196 (49.1%) have completed college or university education of 4 years or less, 168 (42.1%) have completed college or university education of more than 4 years 34 (8.5%) have completed high school or vocational education (yrkesfag) (3-year) 34 (8.5%), and 1 (0.25%) have completed primary school. See full table of descriptive statistics in Appendix 6. Further, 313 (78%) in our sample use a day cream daily, and 237 (59.39%) purchase it monthly (Appendix 6), which indicates that the product is used and purchased frequently by both men and women in our sample.

By examining descriptive means for each condition (see Appendix 7), we find that in condition 3 and 4, where an established eco-label was presented, all the variables (perceived quality, perceived trust, perceived price, and purchase behavior) had a higher aggregate mean score. In addition, we can observe that the mean scores are higher in conditions where the price level is high (conditions 1, 3, and 5). Contrary, the average score for the conditions that include a low price level, an absent eco-label and an unestablished eco-label is relatively low. This is interesting for further analysis.

Finally, when participants were asked about their sustainable purchasing behavior, the aggregate mean score was 4.82 (Appendix 8), indicating that the sample appears to be relatively environmentally conscious when making purchases. In addition, when examining attribute evaluations (Appendix 9), product quality and functionality were the most important attributes when purchasing the type of product presented. In contrast, the least important attributes were sensory aspects and product design.

3.5 Reliability and Validity

Prior to the hypothesis testing, the study's validity and reliability were analyzed. Validity and reliability must be addressed while evaluating the quality of the study if the results are to be considered trustworthy. Validity refers to the extent to which the study measures what it claims to measure (Kelley, 1927). Contrary, reliability is the extent to which a certain test, technique, or tool, such as a questionnaire, would yield identical findings under varied conditions, assuming nothing has changed (Roberts & Priest, 2006). Cronbach's alpha was conducted to measure the internal consistency reliability and should be greater than 0.7 to be considered reliable (Malhotra, 2010).

3.5.1 Validity

The validity in our study was accounted for. In an experiment, both internal and external validity needs to be considered (Malhotra, 2010).

The study was considered as a controlled laboratory experiment, which provides a high level of internal validity (Malhotra, 2010). Further, we accomplished a high internal validity through the distribution of a standardized survey consisting of six manipulated images of a regular day cream and an identical questionnaire, with participants randomly assigned to each treatment group. However, laboratory experiments may result in demand artifacts, in which respondents infer the experiment's purpose and respond accordingly. In addition, because laboratory experiments are conducted in an artificial setting, it may be difficult to generalize the results to the real world (Malhotra, 2010). Additionally, since our survey was

distributed in English, the content validity may be weakened, as some Norwegians may have had difficulty comprehending the questions, which could have led to misunderstanding and incorrect responses.

Further, to ensure construct validity, the extent to which the test or measure accurately assesses what it's supposed to (Bhandari, 2022), the questionnaire items were based on operationalizations from prior research, ensuring that the measurements were based on pertinent existing knowledge. In addition, questions were modified to fit the context of our research. Further, we reduce subject bias by covering the purpose of the research, so that respondents could not predict the expected response. Consequently, a less biased and more sincere response is anticipated (Heath, 2023).

Factors that threaten internal validity can also threaten external validity, with extraneous variables posing the greatest threat (Malhotra, 2010). Through randomization in our experiment, we are controlling for extraneous variables. Due to random assignment, extraneous factors can be represented equally in each treatment condition, making randomization the preferred procedure for ensuring the prior equality of experimental groups (Malhotra, 2010).

A field experiment, on the other hand, can replicate a more realistic environment and thus provide greater external validity (Malhotra, 2010). Hence, we chose a laboratory approach because we wanted to ensure that the causal relationship, we were examining was reliable and that the observed effects were not influenced by other variables (Malhotra, 2010).

3.5.2 Reliability

To ensure a high level of reliability, established measurement scales were utilized and adapted to the study's context. Using a previously defined and validated scale minimizes the possibility of researcher error and bias, as the researcher should not manipulate the scales to influence the results. This is easily accomplished by not biasing the statement wording, scale descriptors, or other aspects of the scales. (Malhotra, 2010). Further, we utilized a seven-point Likert scale which has been shown to have good reliability and validity (Malhotra, 2010). We used a Likert scale with a midpoint as it allows respondents to express their neutral feelings toward a presented subject (Chyung, 2019). However, research shows that some

respondents may use a midpoint as a dumping ground, resulting in inaccurate data (Chyung, 2019). On the other hand, previous findings suggest that scales (without a midpoint) reduce social desirability bias, as respondents frequently seek to please the interviewer, appear helpful, or avoid giving what they perceive as a socially unacceptable response (Garland, 1991). Thus, using a scale without a midpoint, would have forced respondents to select either a positive or negative response. Therefore, we chose a seven-point Likert scale with a midpoint.

Additionally, we utilized multiple features of the survey software Qualtrics, such as the “force response” function on all questions. This decreased the possibility of random errors in participant responses (Malhotra, 2010). As the experiment was conducted online, we could also assure that each participant received the same instructions and questions. To reduce the likelihood of participant bias, we specified that all survey responses would be anonymous prior to conducting the survey.

Moreover, Cronbach’s alpha was conducted to measure the internal consistency reliability. The Analysis of Cronbach’s alpha was performed through the variables *Perceived Quality*, *Perceived Trust*, and *Purchase Behavior*, since these are measured through several questions. We first performed Cronbach’s alpha through these variables in a random condition to determine the internal consistency reliability. All variables gave a value of more than 0.7 ($\alpha_{\text{Perceived Quality}} = 0.885$, $\alpha_{\text{Perceived Trust}} = 0.924$, $\alpha_{\text{Purchase Behavior}} = 0.965$). In order to confirm that the result was greater than 0.7 overall, we also tested these variables in several of the conditions. As the values are greater than 0.7, we consider the internal consistency reliability of the scales to be satisfactory (Malhotra, 2010). The results are illustrated in Appendix 10.

4.0 Analysis and Results

To confirm or reject our hypotheses, we have used SPSS to conduct a number of analyses. We performed Linear Regression Analysis, Univariate Analysis of Variance (ANOVA) and Mediation Analysis to comprehend the relationship between the variables in the research model and to examine the results of the primary study.

We decided to integrate the variables measured by multiple questions to one variable in SPSS for further analysis. In each condition, we incorporated the variables *Perceived Quality* (Q1, Q2), *Perceived Trust* (Q3, Q4, Q5), and *Purchase Behavior* (Q7, Q8). The means of these variables were calculated to produce a single variable by merging them in SPSS to a single variable. Appendix 11 contains the new variables that will be utilized for further analysis.

4.1 Hypothesis Testing

4.1.1 Linear Regression Analysis

We conducted a regression analysis to test H1, H2a and H2b.

An established eco-label (Nordic Swan eco-label) and an unestablished (fictitious) eco-label were coded as dummy variables – either 0 (absent) or 1 (present) – to investigate the effect of an eco-label (independent variable) on purchase behavior, perceived trust, and perceived quality (dependent variables). Consequently, for the established eco-label, conditions 3 and 4 received a value of 1, while conditions 1, 2, 5, and 6 received a value of 0. For the unestablished eco-label, conditions 5 and 6 received the value of 1 while conditions 1, 2, 3, and 4 received 0.

Hypothesis 1:

H1: The presence of an established *eco-label* has a positive effect on *purchase behavior*

The results from the regression analysis (see Appendix 12) were statistically significant (Sig.=<.001). Thus, the presence of an established eco-label resulted in a significant change in purchasing behavior, showing a positive effect (B= 1.850, SE= 0.150). In conclusion, statistical evidence supports our hypothesis; therefore, H1 is confirmed.

Further, by comparing means of purchase behavior, our findings provide solid evidence supporting the influence of established eco-labels on consumer purchase

behavior. A notable disparity in means of purchase behavior was observed between scenarios where an established eco-label was present and where it was absent, with the former exhibiting significantly higher means of purchase behavior. Furthermore, our investigation into the impact of unestablished eco-labels revealed a higher mean of purchase behavior in cases where such labels were absent, highlighting consumers' preference for established eco-labels (Appendix 12.1 and 12.2).

In addition, we wanted to evaluate and compare the means of purchase behavior when an eco-label was present or absent, regardless of its establishment status. Thus, the variables were coded as dummy variables. Conditions containing an established or unestablished eco-label (conditions 3, 4, 5, and 6) were assigned the value 1, whereas conditions without an eco-label (conditions 1 and 2) were assigned the value 0. Appendix 12.3 demonstrates that the mean was greater when an eco-label was present. This indicates that the presence of an eco-label has a greater impact on purchase behavior than its absence, highlighting the significance of a label's presence. Nonetheless, the presence of a recognized eco-label showed a significantly greater impact.

Hypothesis 2a:

H2a: The presence of an unestablished *eco-label* has a negative effect on *perceived trust*

The results (see Appendix 13) from the regression analysis were statistically significant (Sig.= <.001). Thus, the presence of an unestablished eco-label demonstrated a statistically significant difference in perceived trust. Furthermore, we observed a negative effect on perceived trust when an unestablished eco-label was present (B= -0.647, SE= 0.179). In conclusion, statistical evidence supports our hypothesis; therefore, H2a is confirmed.

Further, by comparing means of perceived trust, our findings provided compelling evidence supporting the significant decrease in perceived trust when an unestablished eco-label was present, as opposed to its absence. Conversely, the presence of an established eco-label leads to a substantial increase in mean of

perceived trust. These results suggest that unestablished eco-labels have a negative effect on consumer trust, while established eco-labels positively influence this relationship (Appendix 13.1 and 13.2).

Moreover, our investigation revealed that the presence of an eco-label, regardless of its establishment status, generates a higher mean level of perceived trust compared to scenarios where eco-labels were absent (Appendix 13.3). This suggests that the presence of an eco-label, whether established or not, enhances consumer perception of trust in the product, surpassing the trust associated with unlabeled products.

Hypothesis 2b:

H2b: The presence of an unestablished *eco-label* has a negative effect on *perceived quality*

The results (see Appendix 14) from the regression analysis were statistically significant (Sig.= .001). Consequently, the presence of an unestablished eco-label revealed a substantial difference in perceived quality, showing a negative effect (B= -0.623, SE= 0.193). To conclude, we find statistical evidence for our hypothesis and H2b is confirmed.

By comparing the mean levels of perceived quality, we found that the presence of an unestablished eco-label resulted in a lower mean. Conversely, the presence of an established eco-label resulted in a substantial increase in the mean of perceived quality. These findings support that unestablished eco-labels have a negative effect on perceived quality, while established eco-labels have a positive influence (Appendix 14.1 and 14.2).

Additionally, our investigation revealed that when an eco-label in general was present, regardless of its establishment status, we observed a higher mean of perceived quality when eco-labels were present compared to when eco-labels were absent (Appendix 14.3). This indicates however, that the presence of an eco-label in general, enhances consumer perception of quality in the product, in contrast to the perceived quality of unlabeled products.

4.1.2 Univariate Analysis of Variance (ANOVA)

We wanted to determine the relationship between categorical predictor variables and a single numerical dependent variable. Thus, three Univariate Analysis of Variance (ANOVA's), were conducted to test hypothesis H3a, H3b and H3c.

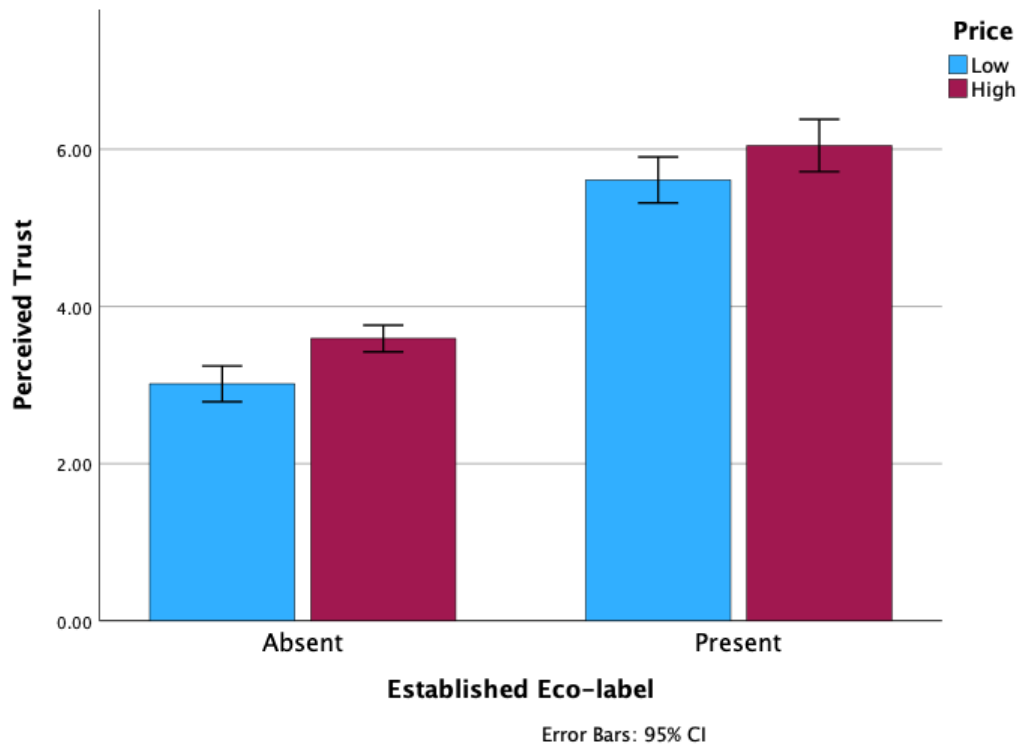
Hypothesis 3a:

H3a: An established *eco-label* combined with a high *price level* will lead to higher *perceived trust*

The results (See Appendix 15) showed a significant effect on the presence of an established eco-label on perceived trust (Sig.= <.001) and a significant effect on the high price level on perceived trust (Sig.= <.001). Moreover, compared to all treatment conditions, the variable perceived trust in condition 3 (established eco-label and high price) has the highest overall mean (M= 6.048, SD= 1.39415) (Appendix 7), indicating that consumers' perceived trust increases when an established eco-label and a high price level are present.

However, the interaction effect between an established eco-label and high price were non-significant (Sig.= .587). Thus, we did not have statistical evidence to say that an established eco-label combined with a high price level leads to higher perceived trust, and hypothesis H3a is rejected. In conclusion, the price level does not moderate the relationship between the presence of an established eco-label and perceived trust.

In addition, as depicted in Bar Chart 1 below, our analysis revealed that regardless of the presence or absence of an established eco-label, there is a minor impact on the perceived trust, irrespective of the price level (high or low). This implies that the presence of an established eco-label is more crucial than the price of the product in establishing consumer trust.



Bar Chart 1: Results from hypothesis H3a

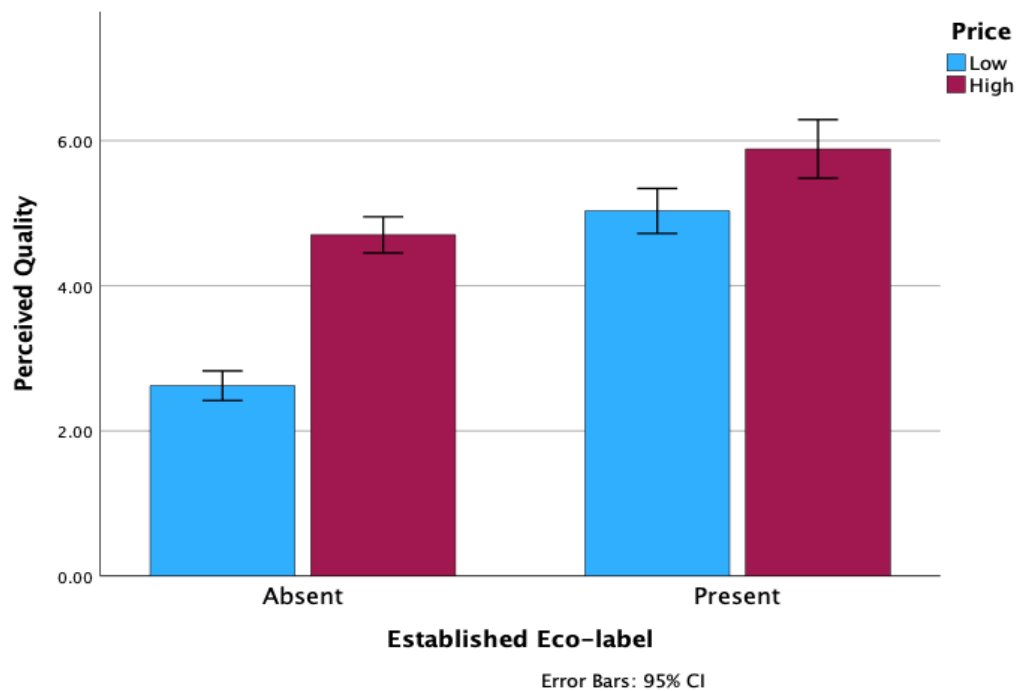
Hypothesis 3b:

H3b: An established *eco-label* combined with a high *price level* will lead to higher perceived quality

The results (See Appendix 16) showed a significant effect on the presence of an established eco-label on perceived quality (Sig.= <.001) and a significant effect on the price level on perceived quality (Sig.= <.001). In addition, the interaction effect between an established eco-label and high price was significant (Sig.= <.001). Thus, we have statistical evidence to say that an established eco-label combined with a high price level leads to higher perceived quality, and hypothesis H3b is confirmed. Hence, the price level moderates the relationship between the presence of an established eco-label and perceived quality.

Furthermore, Bar Chart 2 below illustrates that the presence of an established eco-label significantly enhances perceived quality compared to the absence of an eco-label. Additionally, the bar chart indicates that a higher price level exerts a greater influence on perceived quality than a lower price level, regardless of the presence or absence of an established eco-label. Notably, the absence of an established eco-

label combined with a high price, has a greater impact on perceived quality than a low price. These observations suggest that high prices, in general, play a substantial role in shaping consumer perceptions of product quality.



Bar Chart 2: Results from hypothesis H3b

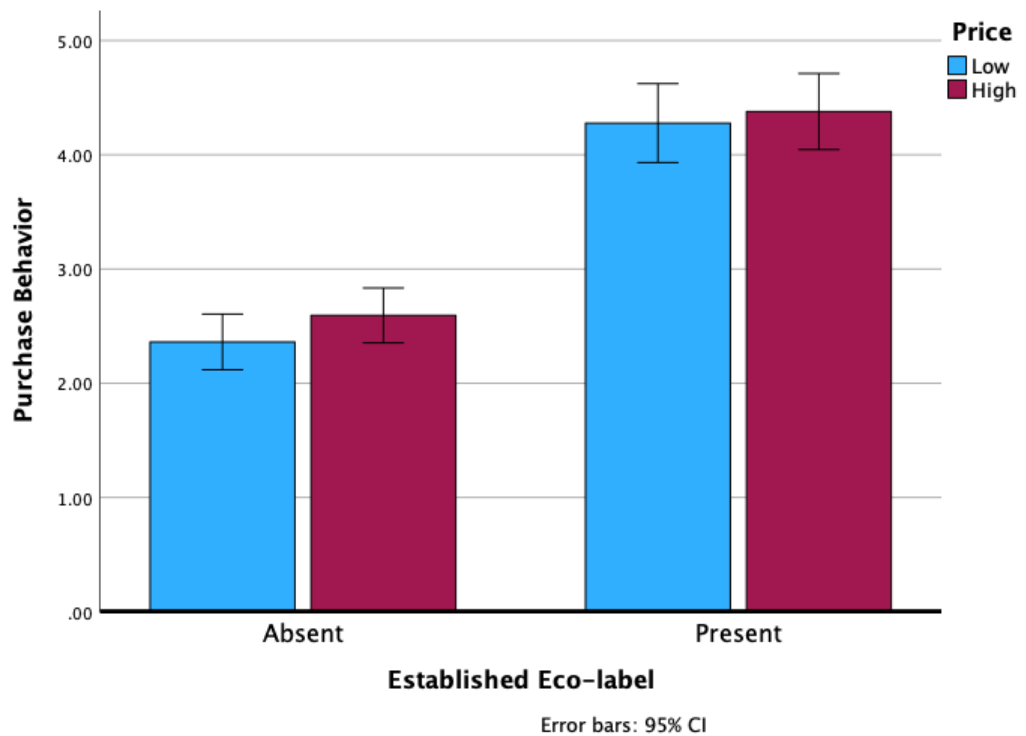
Hypothesis 3c:

H3c: An established *eco-label* combined with a high *price level* will lead to *purchase behavior*

The results (See Appendix 17) showed a significant effect on the presence of an established eco-label on purchase behavior (Sig.= <.001). However, the high price level was not significant (Sig.=.267). Moreover, the interaction effect between an established eco-label and high price was also non-significant (Sig.= .665). Thus, we did not have statistical evidence to say that an established eco-label combined with a high price level will lead to purchase behavior, and hypothesis H3c is rejected. Hence, the price level does not moderate the relationship between the presence of an established eco-label and purchase behavior.

Furthermore, the findings presented in Bar Chart 3 below demonstrate a minor difference in the price level (high versus low) of purchase behavior, irrespective

of the presence or absence of an established eco-label. This observation suggests that the presence of an established eco-label holds a greater significance in driving purchasing behavior compared to the price.



Bar Chart 3: Results from hypothesis H3c

4.1.3 Mediation Effects

To test for mediation effects in our research model, two mediation analyses were conducted using the PROCESS macro in SPSS.

We wanted to investigate whether the effects of our independent variable X (eco-label) on our dependent variable Y (purchase behavior) operate through a third variable M (perceived trust and perceived quality). In this way, the mediators are able to explain the causal relationship between the independent and dependent variables. In addition, the mediation analysis facilitates the calculation of the total, direct, and indirect effects. The tested hypotheses were H4a and H4b.

Hypothesis H4a:

H4a: The relationship between an established *eco-label* and *purchase behavior* is mediated by *perceived trust*

The mediation model with the coefficient effects, p-values and indirect effects of each pathway is illustrated in Figure 4 below. See Appendix 18 for mediation analysis results.

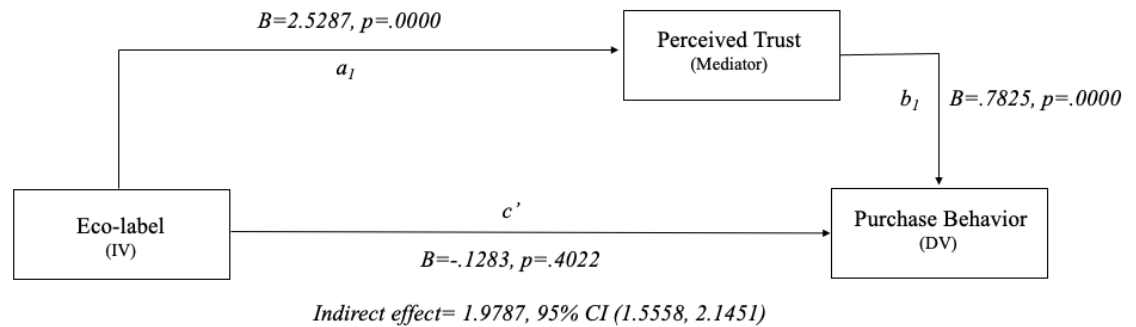


Figure 4: Mediation Model of hypothesis H5a

In path a_1 , we observed a significant positive effect of an established eco-label on perceived trust. (Coeff_a = 2.5287, SE_a = 0.1397, P_a = 0.0000). Thus, the presence of an established eco-label significantly increases the perceived trust. In path b_1 , we also observed a significant positive effect, indicating that perceived trust leads to purchase behavior (Coeff_b = 0.7825, SE_b = 0.0421, P_b = 0.0000).

Total indirect results (See Appendix 20) showed a significant positive indirect effect on perceived trust on the relationship between an established eco-label and purchase behavior (Effect = 1.9787, t = 12.3454). Thus, the total indirect effect is significantly positive, meaning that an established eco-label increases perceived trust, and this increase in the mediator further increases purchase behavior.

Further, we observed that the confidence interval (see Appendix 20) did not contain the value of 0 (1.5558, 2.1451), which indicates statistically significant results. Thus, mediation was found.

However, in Path c' , the direct effect of an established eco-label on purchase behavior in presence of the mediator was found to be non-significant (Coeff_c = -0.1283, SE_c = 0.1530, P_c = 0.4022). This finding indicates that perceived trust

plays a crucial role in explaining the relationship between the established eco-label and purchase behavior, hence, indirect mediation was proven and hypothesis H5a is confirmed.

Hypothesis H4b:

H4b: The relationship between an established *eco-label* and *purchase behavior* is mediated by *perceived quality*

The mediation model with the coefficient effects, p-values and indirect effects of each pathway is illustrated in Figure 5 below. See Appendix 19 for mediation analysis results.

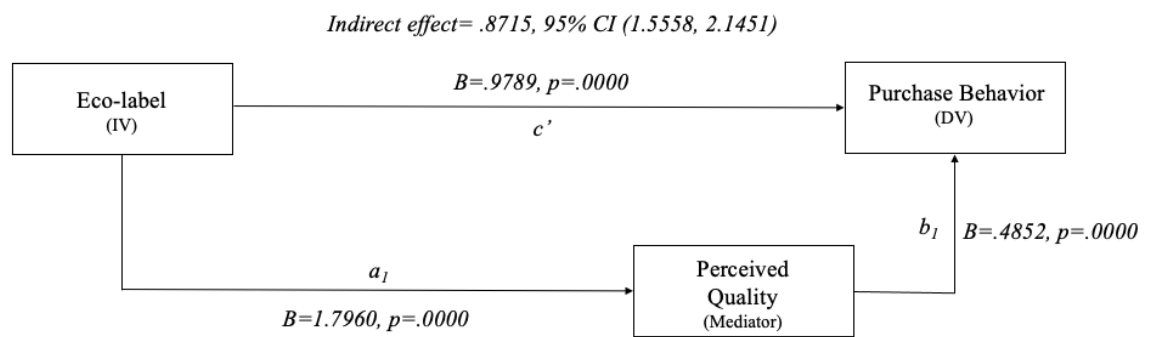


Figure 5: Mediation Model of hypothesis H5b

In path a₁, we observed a significant positive effect of an established eco-label on perceived quality. (Coeff_a = 1.7960, SE_a = 0.1736, P_a = 0.0000). Thus, the presence of an established eco-label significantly increases the perceived quality. In path b₁, we also observed a significant positive effect, indicating that an increased perceived quality leads to purchase behavior (Coeff_b = 0.4852, SE_b = 0.0359, P_b = 0.0000).

Total indirect results (See Appendix 20) showed a significant positive indirect effect of perceived quality in the relationship between an established eco-label and purchase behavior (Effect = 0.8715, t= 12.3454). Thus, the total indirect effect was significantly positive, meaning that an established eco-label increases perceived quality, and this increase in the mediator further increases purchase

behavior. Further, we observed that the confidence interval (see Appendix 20) did not contain the value of 0 (1.5558, 2.1451), which indicates statistically significant results. Thus, mediation was found.

Moreover, in Path c', the direct effect of an established eco-label on purchase behavior in presence of the mediator was also found to be statistically significant (Coeff_c = 0.9789, SE_c = 0.1399, P_c = 0.0000). This finding indicates that both the direct and indirect effect is significant – providing evidence of partial mediation, where there are multiple pathways through which the established eco-label influences purchase behavior.

5.0 Summary of Results

<i>Hypotheses</i>	<i>Items</i>	<i>Results</i>
H1	The presence of an established <i>eco-label</i> has a positive effect on <i>purchase behavior</i>	Confirmed
H2a	The presence of an unestablished <i>eco-label</i> has a negative effect on <i>perceived trust</i>	Confirmed
H2b	The presence of an unestablished <i>eco-label</i> has a negative effect on <i>perceived quality</i>	Confirmed
H3a	An established <i>eco-label</i> combined with a high <i>price level</i> will lead to higher <i>perceived trust</i>	Rejected
H3b	An established <i>eco-label</i> combined with a high <i>price level</i> will lead to higher <i>perceived quality</i>	Confirmed
H3c	An established <i>eco-label</i> combined with a high <i>price level</i> will lead to <i>purchase behavior</i>	Rejected
H4a	The relationship between an established <i>eco-label</i> and <i>purchase behavior</i> is mediated by <i>perceived trust</i>	Confirmed
H4b	The relationship between an established <i>eco-label</i> and <i>purchase behavior</i> is mediated by <i>perceived quality</i>	Confirmed

Table 1: Summary of Results

6.0 Discussion

This research explored the relationship between eco-labels and purchasing behavior, specifically focusing on the influence of perceived trust, quality, and price. Further, the study investigated the interaction effects of perceived price on perceived trust, perceived quality, and purchase behavior. Moreover, the mediating effects of perceived trust and perceived quality in the relationship between eco-labels and purchase behavior has been studied.

The following sections comments on the results from our analyses and aims to answer our research question:

“How do eco-labels influence consumer purchasing behavior, taking into account the effects of perceived trust, quality and price?”

6.1 The Effect of Eco-labels

6.1.1 Effect on Purchase Behavior

Previous research has shown that eco-labeling influences purchase decisions (Cai et al., 2017; Testa, 2013; Waris & Hameed, 2020), and has the potential to effectively guide consumers' decisions (Potter et al., 2021). However, in the light of findings regarding consumer's increased skepticism, confusion, and mistrust of eco-labels (Banerjee & Solomon, 2003; Ipsos, 2013; Vermeir & Verbeke, 2006; Vittersø & Tangeland, 2015), we hypothesized that the presence of an established eco-label has a positive effect on purchase behavior. The results from the regression analysis showed that the presence of an established eco-label influenced purchase behavior, hence, H1 was confirmed. Thus, the results are in line with several previous research showing that eco-labeling influences purchase decisions. However, the effectiveness of eco-labels on purchase behavior may depend on several other factors as mentioned by Dangi et al. (2020) and Sharma & Kushwaha (2019), which should be considered in the relationship between eco-labels and purchase behavior, as eco-labels are rarely the deciding factor. Therefore, we have to be cautious of our results, as they might warrant further investigation.

Further, in the study, we discovered that respondents generally had a higher aggregate mean score in purchase behavior in both conditions where an established eco-label was presented (conditions 3 and 4) compared to the other conditions where the eco-label was either absent or unestablished (Appendix 7). This is consistent with the importance of a trusted brand in reducing uncertainty (Keller, 1993). Moreover, the mean for purchase behavior was considerably higher when an established eco-label was present compared to when an unestablished eco-label was present (Appendix 12.1 and 12.2). Furthermore, when investigating the presence of an eco-label in general, both established and unestablished eco-labels, the mean of purchase behavior exhibited a higher value in comparison to instances where no eco-label was displayed (Appendix 12.3). This observation may indicate that the presence of an eco-label, regardless of it being a recognized one or a fictitious one, generally exerts a stronger influence on purchasing behavior than its absence. This outlines the possible significant role that brands play in shaping consumer preferences and their decision-making process (Aaker, 1991).

6.1.2 Effect on Perceived Trust

Further, as previous research has shown, opinions vary on whether consumers are persuaded by non-scientific claims, poorly known labels, or labels as purchasing cues (Heidenstrøm et al., 2011; Hoek et al., 2013; Kaczorowska et al., 2019), we wanted to test the effect of the presence of an unestablished eco-label. We discovered a statistically significant difference in perceived trust in the presence of an unestablished eco-label, indicating a negative effect, thereby confirming H2a. Moreover, in our study, we discovered a considerably higher mean score in perceived trust in the conditions containing an established eco-label (Appendix 7). Furthermore, the mean of perceived trust was significantly higher when an established eco-label was present compared to when an unestablished eco-label was present (Appendix 13.1 and 13.2). This is consistent with previous research indicating that consumers are more likely to make eco-friendly purchase decisions if the companies behind the eco-labels are well-known and reputable (Roberts, 2008).

Nevertheless, despite the negative effect on perceived trust when an unestablished eco-label was present, it is worth mentioning that we observed a higher mean of

perceived trust when an eco-label in general was present (both established and unestablished eco-labels) than when the eco-label was absent (Appendix 13.3), showing possible evidence for the overall significance of brands in influencing the perceived trustworthiness of a product.

6.1.3 Effect on Perceived Quality

Additionally, we also found a significant negative effect of an unestablished eco-label on perceived quality; thus, H2b was confirmed. In our study, we discovered that respondent's perceived quality increased, as the mean score on perceived quality was considerably higher in the conditions containing an established eco-label, compared to the conditions where the eco-label was either absent or unestablished (Appendix 7). Furthermore, the mean of perceived quality was significantly higher when an established eco-label was present compared to when an unestablished eco-label was present (Appendix 14.1 and 14.2). This can be explained by consumers' difficulties in evaluating the validity of certain environmental quality claims, and their uncertainty of which authority is responsible for the certification (Fischer & Lyon, 2019). Intriguingly, when an eco-label in general was present (both established and unestablished), we observed a higher mean of perceived quality than when the eco-label was absent (Appendix 14.3), highlighting the potential importance of brands in general in shaping consumer perceptions of quality.

However, in this context, a challenge for established eco-labels (in this case, the Nordic Swan eco-label) as an important tool for sustainable production and consumption, is the escalating number of labeling schemes, not all of which are equally serious, which has implications for familiarity with official and comprehensive labeling schemes (Regjeringen, 2020). Possible efforts to address these issues may be concentrating on integrating and standardizing labeling criteria, while simultaneously increasing consumer awareness of established eco-labels.

We acknowledge that our findings may vary depending on the product type and other external factors. However, the neutralized aspects of the product (day cream) enabled us to emphasize that established eco-labels have a positive effect

on consumer purchase behavior, whereas unestablished eco-labels have a negative effect on perceived trust and perceived quality in general.

6.2 Interaction Effects

6.2.1 Interaction Effects Between Perceived Price and Perceived Trust

Building on previous research finding that consumers generally accept that the prices of green products are higher than those of conventional products and are even willing to pay more for them (Gam et al., 2010; Harris & Freeman, 2008), we hypothesized that consumers would perceive a product with an established eco-label as more trustworthy and credible if it was offered at a higher price level.

We found, however, that high price level does not interact with the relationship between the presence of an established eco-label and perceived trust, thus H3a was rejected. This is consistent with previous findings stating that high prices on eco-label products might create uncertainty regarding the product's credibility and whether the higher prices are justified (Huber, 2008; Pancer et al., 2015).

Arguably, another explanation may involve feelings of skepticism or confusion, in which consumers find that the combination of a high price level and an eco-label can create a situation in which the label is considered as unreliable.

Nonetheless, the presence of an established eco-label and the high price level independently had a significant effect on perceived trust. This demonstrates that both an established eco-label and a high price level alone is sufficient to establish product trustworthiness. The presence of an established eco-label may serve as a signal to consumers that the product has met specific environmental standards and requirements, thereby increasing confidence and trust in consumers. Furthermore, it is worth noting that the mean score for perceived trust was higher in the condition with a high price and no eco-label (condition 1) compared to the condition with a low price level and no eco-label (condition 2). This observation suggests that in the absence of an eco-label, a high price level alone can still contribute to consumer's trustworthiness in a product.

6.2.2 Interaction Effects Between Perceived Price and Perceived Quality

In accordance with previous literature, it is widely acknowledged that price is a strong indicator of perceived quality, making it one of the primary factors consumers consider when choosing a product (Peterson, 1970). Therefore, we hypothesized that perceived price would moderate the relationship between an established eco-label and perceived quality. We assumed that a product with an established eco-label, combined with a high price would lead to higher perceived quality.

According to our findings, the high price level moderates the relationship between the presence of an established eco-label and perceived quality; therefore, H3b was confirmed. Further, in our study, we observed that the condition that contained a high price level and an established eco-label (condition 3) had the highest aggregate mean score of perceived quality (Appendix 7). Furthermore, we observed that, regardless of the presence or absence of an established eco-label, higher prices had a greater impact on perceived quality than lower prices (Appendix 16.1). This is consistent with the relationship between price and perceived quality (Peterson, 1970), and consumers' perception of a higher quality when prices are higher (Völckner, 2007). Thus, the combination of a high price and an established eco-label reinforces this effect, as the strength of the relationship between an established eco-label and perceived quality is affected by a high price level.

Moreover, the significant interaction effect can be explained by the concept of "price fairness" as the perception of price fairness appears to be especially important in the context of eco-products, which evoke the notice of justice (Dekhili & Achabou, 2012). Thus, we can argue that an established eco-label justifies the high price level and higher quality perception of the product.

6.2.3 Interaction Effects Between Perceived Price and Purchase Behavior

Based on previous literature discovering that eco-labels have a positive influence on consumer purchases, and that higher price premiums can even enhance this effect (Feuß et al., 2022), we hypothesized that a combination of an established eco-label and a high price level would lead to purchase behavior. We discovered,

however, that high price level does not interact with the relationship between the presence of an established eco-label and purchase behavior; therefore, H3c was rejected. However, we observed that the presence of an established eco-label alone had a significant effect on purchasing behavior. This indicates that when an established eco-label is present, the high price level becomes less important in the relationship between an established eco-label and purchase behavior. Hence, an established eco-label will be enough for making a purchase, as supported in H1.

In addition, we found, however, that a high price level alone had no significant effect on purchasing behavior. This is consistent with prior studies which have found that the most common reason for not purchasing organically grown food is the product's high price (Van Doorn & Verhoef, 2015). According to our findings, this observation might also be applicable to product categories other than food. Furthermore, this observation might also be explained by the rising prices, increased price awareness among consumers (Kantar, 2023; Respons Analyse 2022) and the high prices of sustainable products, a factor that has become increasingly significant as the cost of living continues to rise (Taylor, 2022), which in result may affect consumers' spending capability.

6.3 Mediation Effects

6.3.1 Mediating Effect of Perceived Trust

Based on prior research indicating that eco-labels can be used to reduce consumer confusion and increase consumer trust, and that eco-labels can increase sustainable purchase behavior (Brécard, 2017; Brécard, 2014; Kirchhoff, 2000; Sharma & Kushwaha, 2019; Thøgersen et al., 2010), we assumed that eco-labeled products would increase the perceived trust, thereby influencing purchase behavior. Thus, we hypothesized that the relationship between an established eco-label and purchase behavior is mediated by perceived trust (H4a). According to our results, perceived trust was shown to mediate the relationship between an established eco-label and purchase behavior, thus explaining the underlying mechanism. Hence, H4a was confirmed. In accordance with findings from prior research, the established eco-label led consumers to view the product as more reliable, which in turn influenced their purchasing behavior. Consequently, the

study demonstrated that an increase in perceived trust has a significant effect on purchasing behavior.

However, in the mediation analysis, we discovered that Path c', the direct effect of an established eco-label on purchase behavior, independent of perceived trust, was found to be non-significant. This finding indicates that perceived trust plays a crucial role in explaining the relationship between the established eco-label and purchase behavior. However, this finding can be perceived as quite interesting, as the previous hypotheses (H1 and H3c) indicated that the established eco-label alone had a significant positive effect on purchase behavior. This contradictory result can be explained by the fact that eco-labels are rarely the only deciding factor in this relationship. Thus, other explanatory variables and underlying factors may also affect the results and should have been included in the study to gain a deeper understanding in explaining the relationship.

6.3.2 Mediating Effect of Perceived Quality

As previous research has discovered, organic-labeled products have been found to have an increase in product quality perceptions, and that consumers hold the belief that eco-labeled products possess superior quality compared to ordinary products (Carpenter & Larceneux, 2008; de Magistris & Gracia, 2008), we assumed that eco-labeled products would enhance the perceived quality, which in turn influences purchase behavior. Thus, we hypothesized that the relationship between an established eco-label and purchase behavior is mediated by perceived quality (H4b). According to our results, perceived quality was shown to mediate the relationship between an established eco-label and purchase behavior, thus explaining the underlying mechanism. Hence, H4b was confirmed. However, the significant direct effect in Path c', indicates that an established eco-label still exerts some influence on purchase behavior independent of perceived quality – indicating the need to consider other pathways or mechanisms in explaining the relationship.

In addition, we observed that respondents in our study selected *product quality* as one of the most essential attributes when purchasing the type of product presented (Appendix 9), supporting findings from prior research, indicating that perceived quality is a significant factor influencing consumers' purchasing decisions (Lin et al., 2009; Nekmahmud & Fekete-Farkas, 2020).

Consistent with previous research, an established eco-label was found to enhance consumer's perception of the product's quality, consequently influencing their purchasing decisions. Thus, the analysis demonstrated that an increased perception of quality can exert a substantial influence on consumer purchasing behavior.

7.0 Theoretical and Managerial Implications

In the sections that follow, we discuss the theoretical and managerial implications of our study.

7.1 Theoretical Implications

Our study has important theoretical contributions to the body of literature on eco-labels in relation to perceived trust, perceived quality, perceived price, and sustainable purchase behavior. Through our findings, we have identified that established eco-labels have a significant effect on purchase behavior, which is supported by previous literature (Cai et al., 2017; Testa, 2013; Waris & Hameed, 2020). However, previous researchers have been mixed about the relationship between eco-labels and purchase intention, offering room for further explanation that could contribute to the existing literature. Hence, the intention to purchase depends on several other factors than those investigated in our study, which could have affected our results. Therefore, other factors should be investigated further in relation to eco-labels and purchasing behavior to obtain a deeper understanding of the researched topic.

Furthermore, by investigating sustainable purchasing in relation to eco-labels, we examined the topic in a relatively unexplored context, to the best of our knowledge. As most of the previous research on the subject has focused on the product categories of food, coffee, and clothing (Feuß et al. 2022; Pham et al., 2018; Sörqvist et al. 2013; Van Doorn & Verhoef, 2015), beauty products, specifically a day cream, remain an unexplored area of study. In contrast to foods, coffee and clothing, beauty products are not typically linked to sustainability.

Nonetheless, consumers frequently rely on eco-labeled products as an indicator of environmental quality when making a purchase (Heidenstrøm et al., 2011); therefore, we believe this product category is incredibly interesting to investigate, as product quality appears to be an important factor when purchasing these types of products. Additionally, the fact that the “green” sector of the beauty industry is one of the world’s fastest-growing markets with expansion potential (Whittaker et al., 2019) makes this product category interesting for future research.

In addition, our findings indicate that established eco-labels are most effective when used in combination with a high price level on perceived quality as opposed to perceived trust and purchase behavior (which were non-significant), supporting the relationship between price and quality (Peterson, 1970). This creates a marketing research field in which eco-labels when combined with other cues should be investigated in greater depth. By delving deeper into this topic, marketers can obtain a more thorough comprehension of how eco-labels can be utilized in addition to other strategies to influence consumer behavior.

7.2 Managerial Implications

Due to the heightened environmental consciousness of consumers, our findings suggest that eco-labels could be used as a marketing tool for improving sustainable consumption and purchasing. This section summarizes important takeaways that marketers should take into consideration in their practice.

Given the increasing skepticism and decreased trust among consumers regarding green products and eco-labels (Banerjee & Solomon, 2003; Vermeir & Verbeke, 2006; Vittersø & Tangeland, 2015), it is recommended that companies, policymakers, and certification organizations (i.e., labeling) engage in consumer education about eco-labels and environmental concerns to enhance sustainable purchasing (Taufique et al., 2016). Our research findings contribute to this understanding, specifically as our study on the evaluated product indicates that the familiarity and reputation of the presented eco-label are more crucial than an unfamiliar and unestablished eco-label. This suggests that for environmentally friendly products, the recognition and established status of their labels are vital factors to consider.

Moreover, understanding the significance of well-known and reputable brands enables managers to develop effective marketing and branding strategies. By investing in strategies that strengthen brand recognition and trust, managers can increase the likelihood of attracting new customers and retaining existing ones. However, since consumers with greater environmental knowledge are more likely to engage in environmentally responsible purchasing behavior (Peattie, 1995), the strategy should emphasize the importance of educating consumers about such schemes.

In the context of the Nordic Swan eco-label, to address the challenge of the significant increase of new eco-labels, it should be required additional resources to develop criteria in multiple areas and to establish even more requirements that promote a circular economy (Regjeringen, 2020). Thus, additional resources are needed to maintain the brand's familiarity with the Norwegian population, of which 93 percent are currently aware of the Nordic Swan eco-label (Svanemarket, 2023). It would also be advantageous to have support programs that enable more businesses to afford the eco-labeling application process (Regjeringen, 2020).

Moreover, managers should consider the pricing of eco-labeled products, as our research demonstrates that a higher price level does not interact with the relationship between the presence of an established eco-label and consumer purchasing behavior. Consequently, the high expense of sustainable goods has long hindered consumers from embracing more eco-friendly lifestyles, particularly given the escalating cost of living (Taylor, 2022). As a result, consumers typically seek out ways to save money, but this does not necessarily have to come at the detriment of the environment. Therefore, managers should prioritize cost-effective strategies that encourage consumers to adopt environmentally conscious behaviors (Taylor, 2022).

In conclusion, to overcome the barriers to eco-friendly purchasing in relation to eco-labels, it is necessary to address consumer concerns and provide clear and transparent information about the environmental attributes of labeled products by utilizing a reputable and well-known eco-label brand. In addition, managers should implement strategies such as price incentives, targeted marketing

campaigns, increased product availability, and educational campaigns to encourage consumers to make sustainable purchases.

8.0 Limitations and Future Research

In the following sections we discuss the limitations connected to our research and suggest further research topics to broaden and explain the topic of sustainable purchasing with regards to eco-labels.

8.1 Limitations

There are several limitations in this study that should be considered. One significant limitation is the lack of generalizability. The sampling technique used, a non-probability convenience sample, restricts the ability to generalize the findings to the entire population. The respondents were chosen based on convenience, which may not accurately represent the population (Malhotra, 2010). Furthermore, the study's design as considered a controlled laboratory experiment limits its external validity, meaning that the results may not be directly applicable to real-world scenarios as they would be in a field experiment (Malhotra, 2010). Additionally, it is worth noting that the majority of respondents in the study were young females (71%), which may introduce potential biases related to age and gender. Despite these limitations and the inability to generalize the findings, the study has provided valuable contributions by generating ideas, insights, and hypotheses (Malhotra, 2010).

Furthermore, our study lacked control over individuals' preferences concerning the product presented (day cream). It is possible that some participants had prior knowledge with the specific product when answering the questionnaire, potentially introducing bias into their responses. Additionally, the nature of the product itself leans towards a more feminine category, suggesting the presence of potential gender-based differences in preferences that could have influenced the outcomes. Another limitation to consider, is that the day cream used in the study was a fictitious product, which may have affected the overall experimental context

and the participants' behaviors as less realistic, and thus resulting in a reduced ecological validity of the experiment (Schmuckler, 2001).

Moreover, the study solely examined the impact of a single established eco-label, specifically the Nordic Swan eco-label, rather than comparing it to other eco-labels operating under the same underlying scheme. By choosing the eco-label that showed the highest recognition among Norwegian consumers, there is a possibility that the outcomes could have been different if alternative eco-labels had been included. Nevertheless, our intention was to highlight the eco-label that was already familiar to the majority of Norwegians, which led us to employ the Nordic Swan eco-label.

Looking back on our study, we realize that we should have conducted additional analyses to deeper evaluate the relationship between the variables. As mentioned earlier, the relationship between an established eco-label and purchase behavior might be affected by other explanatory variables. This was demonstrated by the fact that we obtained contradicting results for H4a compared to H1 and H3c – thus, additional explanatory variables should have been examined. Further, in the body of literature, we examined a correlation between knowledge and trust in purchasing behavior (Jiang et al., 2008); therefore, environmental knowledge should have been included as a variable in the context of our study, as it could be a crucial factor in the relationship between eco-labels and purchase behavior among consumers.

In addition, when we examined our mediation analysis, we realized that our model was too simplistic to completely comprehend the relationship. Therefore, we propose that we should have conducted a serial mediation analysis with more variables, which would have allowed us to examine the sequential causal mechanisms by estimating the indirect effects of each mediator in the chain. This would have enabled us to acquire a deeper understanding of the particular pathways through which an established eco-label influences purchasing behavior. Further, the presence of both significant direct and indirect effects, as revealed by the mediation analysis of H4b, emphasizes the importance of contemplating multiple pathways or mechanisms by which the independent variable influences the dependent variable. It suggests that the mediator does not completely explain

the relationship between the independent and dependent variables, and that additional factors or pathways may be involved. Therefore, additional research may be required to investigate the exact mechanisms underlying the direct and indirect effects.

8.2 Future Research

Because we only evaluated one type of industry and product in this study, it may be advantageous to test other product categories and industries in the future to determine the unique effects of eco-labels in each context. Thus, researchers will be able to examine how product-specific characteristics such as product complexity, perceived health benefits, and functionality interact with eco-labels to promote sustainable purchasing behavior. Consequently, it may be beneficial to replicate our study with a larger sample of products from a variety of product categories and industries in order to determine whether and why distinctions exist between product types and industries.

Additionally, it may be advisable to conduct a comparable investigation utilizing various eco-labels. In our experiment, we specifically focused on the Nordic Swan eco-label and a fictitious label. To gain a comprehensive understanding, future research should explore the impact of other eco-labels and identify the factors that influence the perception of each specific label. This effect can be better understood by investigating how various factors, such as certification bodies, transparency in labeling, and industry-specific standards, contribute to the overall effect. In addition, future research should investigate the cognitive process underlying consumers' perceptions of eco-labels by examining how consumers process and evaluate the information presented on eco-labels.

Moreover, in our study, we utilized various price levels (high versus low). However, since we utilized fixed prices to represent high and low values, we were unable to determine the specific price point that consumers perceive as high or low. Therefore, future research could aim to identify the exact price that should be considered as high or low in terms of consumer perception. Additionally, incorporating diverse study designs, such as a qualitative research approach

consisting of focus groups or in-depth interviews, could be an excellent method for gaining a deeper comprehension of this concept.

Furthermore, our study discovered an independent and significant impact of a high price level on perceived quality. Therefore, in product categories where a higher perception of quality is desirable, it would have been advantageous to explore how different price points could be employed to enhance the perception of quality. Moreover, our findings suggest that established eco-labels are most effective in combination with a high price level in influencing perceived quality, rather than perceived trust and purchase behavior. This opens up avenues for future research to examine the impact of eco-labels when combined with factors other than price. Consequently, it is essential to investigate other factors that influence the relationship between eco-labels and purchase behavior, as this relationship has shown mixed results and is influenced by various factors not addressed in this study (Dangi et al., 2020; Sharma & Kushwaha, 2019).

To gain a deeper understanding of consumers' purchase behavior in response to eco-labels, it may be beneficial to observe consumers in a real-world purchasing scenario. Several researchers argue that there is a significant difference between what consumers claim to value and what they actually do in the real-world market environment (Auger et al., 2008; O'Rourke & Ringer, 2015). Thus, future research could conduct a study as a field experiment under genuine market conditions to potentially address these issues (Malhotra, 2010). In addition, it would be advantageous to extend the research to determine whether eco-labels influence post-purchase behaviors such as product usage, disposal, and word-of-mouth recommendations. Further, future research should investigate the purchase context in both online and offline retail environments to determine whether there are differences between environments.

Lastly, the majority of survey respondents are Norwegian. In order to further validate the results, it may be beneficial to conduct a cross-cultural study to examine how eco-labels influence consumer behavior in various cultural contexts. Thus, future research may investigate whether cultural factors moderate the relationship between eco-labels, perceived trust, quality, price, and purchasing behavior.

9.0 Conclusion

In conclusion, the research conducted for our master's thesis contributes to topics related to eco-labels and sustainable consumption and identifies how perceived trust, quality, and price influence purchasing behavior among consumers. Due to the increasing number of consumers who prefer and are willing to purchase eco-friendly products opens up a business opportunity to meet consumer requirements. Consequently, our findings imply that eco-labels could be used as a marketing tool to increase sustainable consumption and purchasing, hence, contribute to reducing the overall environmental impact.

To answer our research question: based on the results highlighted in our master's thesis, it is recommended to use well-known, consumer-trusted organic certification labels on products as opposed to unestablished and unknown labels for the product type investigated in our study. Organizations that own an organic labeling scheme should take measures to increase consumer awareness and knowledge of the label and shape consumer perceptions and attitudes about the scheme's underlying standards and control regime. Moreover, due to the increased price consciousness among consumers, managers should consider the price of eco-labeled products in order to justify a high price.

In summary, by leveraging the possibilities of well-established eco-labels, businesses can unlock the potential of sustainable consumption and pave the way for a greener future – thereby transforming a label into action.

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Appendices

Appendix 1: Pre-test Questionnaire

This survey is a pre-test for our Master Thesis at BI Norwegian Business School. The survey is completely anonymous, and the data collected will be used solely for the purpose of conducting research. The survey should take no more than 2-3 minutes to complete. We are extremely grateful for your contribution of valuable insight for us.

Before we begin, we need to confirm that you agree to the use of your responses in our study:

- I consent to participate in the study

Q1: How important is sustainability when making a purchase?
(*ranging from 1=not important at all to 7=extremely important*)

Q2: How important is sustainability when making a purchase from the following industries/types of products?

(*ranging from 1=not important at all to 7=extremely important*)

- Food
- Health care
- Self care
- Clothing
- Beauty products
- Electronics
- Interior
- Jewelry
- Household cleaning supplies

Q3: How important is sustainable labeling when purchasing products from the following industries/types of products?

(*ranging from 1=not important at all to 7=extremely important*)

- Food
- Health care
- Self care
- Clothing
- Beauty products
- Electronics

- Interior
- Jewelry
- Household cleaning supplies

Q4: Which of the following eco-labels are you familiar with?

(Possible to select several options)

- Nordic Swan (Svanemerket)
- EU-Ecolabel
- Nyt Norge
- Eco-Lighthouse (Miljøfyrtårn)
- FSC (Forest Stewardship Council)
- Ø-merket
- Energy Star
- Other *(Open-ended question)*



Q5: Which of the following eco-labels do you place emphasis on when purchasing products?

(Possible to select several options)

- Nordic Swan (Svanemerket)
- EU-Ecolabel
- Nyt Norge
- Eco-Lighthouse (Miljøfyrtårn)
- FSC (Forest Stewardship Council)
- Ø-merket
- Energy Star
- Other *(Open-ended question)*



Q6: How much higher/lower do you perceive the quality of a product that has an eco-label? *(ranging from 1=much lower to 7=much higher)*

Q7: How much higher/lower do you expect the price of a product that has an eco-label to be? *(ranging from 1=much lower to 7=much higher)*

Q8: How more/less satisfied do you feel if a product has an eco-label? *(ranging from 1=not satisfied at all to 7=very satisfied)*

Q9: When choosing between different products, how important is it that a product has an eco-label? *(ranging from 1=not important at all to 7=extremely important)*

Q10: How often do you continue to purchase the same product because it has an eco-label? *(ranging from 1=never to 7=always)*

Q11: How old are you? (in years)
(Open-ended question)

Q12: Gender:

- Male
- Female
- Non-binary / third gender
- Prefer not to say

–Finished–

Appendix 2: Pre-test Results

Descriptive Statistics from Pre-test

Q1: How important is sustainability when making a purchase?

N	Minimum	Maximum	Mean	Std. Deviation
74	1	7	4.20	1.260

Q2: How important is sustainability when making a purchase from the following industries/types of products?

Industries/types of products	N	Minimum	Maximum	Mean	Std. Deviation
Food	74	1	7	4.70	1.279
Health Care	74	1	7	4.46	1.714
Self Care	74	1	7	4.39	1.524
Clothing	74	1	7	4.38	1.421
Beauty Products	74	1	7	4.20	1.767
Electronics	74	1	7	3.59	1.805
Interior	74	1	7	3.78	1.641
Jewelry	74	1	7	3.42	1.728
Household Cleaning Supplies	74	1	7	4.39	1.735

Q3: How important is sustainable labeling when purchasing products from the following industries/types of products?

Industries/types of products	N	Minimum	Maximum	Mean	Std. Deviation
Food	74	1	7	4.97	1.605
Health Care	74	1	7	4.55	1.729
Self Care	74	1	7	4.58	1.744
Clothing	74	1	7	4.66	1.754
Beauty Products	74	1	7	4.57	1.829
Electronics	74	1	7	4.04	2.003
Interior	74	1	7	3.92	1.929
Jewelry	74	1	7	3.69	1.965
Household Cleaning Supplies	74	1	7	4.74	1.866

Q4: Which of the following eco-labels are you familiar with?

Nordic Swan (Svanemerket)

	Frequency	Percent
Valid	73	98.64%
Missing	1	1.36%
Total	74	100%

EU-Ecolabel

	Frequency	Percent
Valid	14	18.91%
Missing	60	81.09%
Total	74	100%

Nyt Norge

	Frequency	Percent
Valid	69	93.24%
Missing	5	6.76%
Total	74	100%

Eco-Lighthouse (Miljøfyrtårn)

	Frequency	Percent
Valid	54	72.97%
Missing	20	27.03%
Total	74	100%

FSG (Forest Stewardship Council)

	Frequency	Percent
Valid	27	36.48%
Missing	47	63,52%
Total	74	100%

Ø-merket

	Frequency	Percent
Valid	58	78.37%
Missing	16	21.63%
Total	74	100%

Energy Star

	Frequency	Percent
Valid	14	18.91%
Missing	60	81.09%
Total	74	100%

Other (Open-ended question)

	Frequency	Percent
Valid	6	8.1%
Missing	68	91.9%
Total	74	100%

Q5: Which of the following eco-labels do you place emphasis on when purchasing products?

Nordic Swan (Svanemerket)		
	Frequency	Percent
Valid	48	64.86%
Missing	26	35.14%
Total	74	100%
EU-Ecolabel		
	Frequency	Percent
Valid	4	5.4%
Missing	70	94.6%
Total	74	100%
Nyt Norge		
	Frequency	Percent
Valid	61	82.43%
Missing	13	17.57%
Total	74	100%
Eco-Lighthouse (Miljøfyrtårn)		
	Frequency	Percent
Valid	27	36.48%
Missing	47	63.52
Total	74	100%
FSG (Forest Stewardship Council)		
	Frequency	Percent
Valid	9	12.16%
Missing	65	87.84%
Total	74	100%
Ø-merket		
	Frequency	Percent
Valid	32	43.24%
Missing	42	56.76%
Total	74	100%
Energy Star		
	Frequency	Percent
Valid	3	4.05%
Missing	71	95.95%
Total	74	100%
Other (Open-ended question)		
	Frequency	Percent
Valid	4	5.4%
Missing	70	94.6%
Total	74	100%

<i>Q6: How much higher/lower do you perceive the quality of a product that has an eco-label?</i>				
N	Minimum	Maximum	Mean	Std. Deviation
74	2	7	5.14	1.102

<i>Q7: How much higher/lower do you expect the price of a product that has an eco-label to be?</i>				
N	Minimum	Maximum	Mean	Std. Deviation
74	1	7	5.16	1.086

<i>Q8: How more/less satisfied do you feel if a product has an eco-label?</i>				
N	Minimum	Maximum	Mean	Std. Deviation
74	3	7	5.30	1.119

<i>Q9: When choosing between different products, how important is it that a product has an eco-label?</i>				
N	Minimum	Maximum	Mean	Std. Deviation
74	1	7	4.36	1.429

<i>Q10: How often do you continue to purchase the same product because it has an eco-label?</i>				
N	Minimum	Maximum	Mean	Std. Deviation
74	1	7	3.85	1.841

<i>Q11: How old are you? (in years)</i>				
N	Minimum	Maximum	Mean	Std. Deviation
74	21	69	30.76	12.840

<i>Q12: Gender:</i>			
	Frequency	Percent	
Male	24	32.4%	
Female	50	67.6%	
Non-binary / third gender	0	0%	
Prefer not to say	0	0%	
Total	74	100%	

Appendix 3: Pictures of the Fictive Products and Conditions

Condition 1: Eco-label: absent, Price: high



Condition 2: Eco-label: absent, Price: low



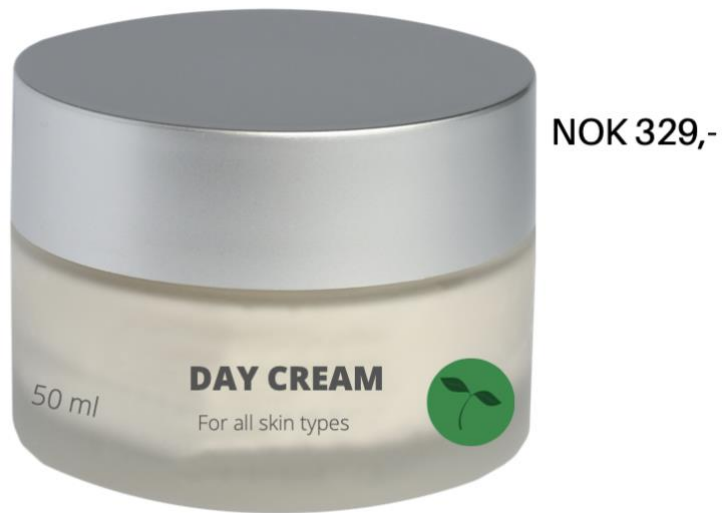
Condition 3: Eco-label: established, Price: high



Condition 4: Eco-label: established, Price: low



Condition 5: Eco-label: unestablished, Price: high



Condition 6: Eco-label: unestablished, Price: low



Appendix 4: Main Study Questionnaire

This survey is our main study for our Master Thesis at BI Norwegian Business School. The survey is completely anonymous, and the data collected will be used solely for the purpose of conducting research. The survey should take no longer than 2-3 minutes to complete. We are extremely grateful for your contribution of valuable insight for us.

If you have any questions regarding the survey, feel free to contact us at:

thea.ihle@hotmail.no and marievihle@gmail.com

Before we begin, we need to confirm that you agree to the use of your responses in our study:

- I consent to participate in the study (yes/no)

You are going to be presented with an example of a day cream. Imagine that you are going to purchase this product for yourself. Please answer the questions as truthfully and precisely as possible.

Each respondent is randomly presented to one of the 6 conditions

- *Condition 1: Eco-label: absent, price: high*
- *Condition 2: Eco-label: absent, price: low*
- *Condition 3: Established eco-label: present, price: high*
- *Condition 4: Established eco-label: present, price: low*
- *Condition 5: Unestablished eco-label: present, price: high*
- *Condition 6: Unestablished eco-label: present, price: low*

Please rate the following statements from 1-7: (*ranging from 1=completely disagree
7=completely agree*)

Q1: The product appears to be of good quality

Q2: The product seems to contain high-quality ingredients

–New slide–

Please rate the following statements from 1-7: (*ranging from 1=completely disagree
7=completely agree*)

Q3: The creator of this product has good intentions

Q4: I believe this product is good for my skin

Q5: The creator of this product has passed strict tests before issuing it

–New slide–

Please rate the following statements from 1-7: (*ranging from 1=completely disagree
7=completely agree*)

Q6: I believe that the price of the product is:

- Expensive
- Reasonable
- Appropriate
- Affordable

–New slide–

Please rate the following statements from 1-7: (*ranging from 1=completely disagree
7=completely agree*)

Q7: I would buy this product in the near future

Q8: I plan to buy this product on a regular basis

Q9: I do not buy products that harm the environment

–New slide–

Q10: How important are the following attributes when you consider a purchase of this type of product (as presented before)? (*ranging from 1=not important at all to
7=extremely important*)

- Product quality
- Price
- Environmental sustainability
- Product design
- Sensory aspects (e.g feel, scent)
- Functionality
- Convenience (e.g clear instructions for use)

–New slide–

Q11: How often do you use this type of product (day cream)?

- Daily
- Weekly
- Monthly
- Yearly
- Never

Q12: How often do you purchase this type of product (day cream)?

- Daily
- Weekly
- Monthly
- Yearly
- Never

–New slide–

Q13: How old are you? (in years)

(Open-ended question)

Q14: Gender:

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Q15: Employment status?

- Unemployed
- Part-time employed
- Full-time employed
- Self-employed

Q16: Highest completed education?

- Primary school
- High school or vocational education (yrkesfag) (3-year)
- College or university education of 4 years or less
- College or university education of more than 4 years

Thank you for taking part in this survey. Your responses are now collected.

–Finished–

Appendix 5: Variables in the Questionnaire

<i>Variables</i>	<i>Items</i>	<i>Scale</i>	<i>Literature</i>
Perceived Quality Q1-2	<p>“The product appears to be of good quality”</p> <p>“The product seems to contain high-quality ingredients”</p>	1-7	<i>Alavi et al. (2015)</i>
Perceived Trust Q3-5	<p>“The creator of this product has good intentions”</p> <p>“I believe this product is good for my skin”</p> <p>“The creator of this product has passed strict tests before issuing it”</p>	1-7	<i>Moussa & Touzani (2008)</i>
Perceived Price Q6	<p>“I believe that the price of the product is”:</p> <ul style="list-style-type: none"> • Expensive • Reasonable • Appropriate • Affordable 	1-7	<i>Chiang & Shawn Jang. (2007)</i>
Purchase Behavior Q7-8	<p>“I would buy this product in the near future”</p> <p>“I plan to buy this product on a regular basis”</p>	1-7	<i>Wee et al. (2014)</i>
Sustainable Purchase Behavior Q9	<p>“I do not buy products that harm the environment”</p>	1-7	<i>Taufique et al. (2017)</i>
Attribute Evaluations Q10	<p>“How important are the following attributes when you consider a purchase of this type of product (as presented before)?”</p>	1-7	<i>(Own scale)</i>

- Product quality
- Price
- Environmental sustainability
- Product design
- Sensory aspects (e.g. feel, scent)
- Functionality
- Convenience (e.g. clear instructions for use)

Demographics

Q11-16

How often do you use this type of product (day cream)?

Categorical measurement

(Own scale)

- Daily
- Weekly
- Monthly
- Yearly
- Never

How often do you purchase this type of product (day cream)?

- Daily
- Weekly
- Monthly
- Yearly
- Never

How old are you? (in years)

(Open-ended question)

Gender:

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Categorical measurement

Your employment status?

Categorical measurement

- Unemployed
- Part-time employed
- Full-time employed
- Self-employed

Highest completed education?

Categorical measurement

- Primary school
- High school or vocational education (yrkesfag) (3-year)
- College or university education of 4 years or less
- College or university education of more than 4 years

Appendix 6: Main Study – Descriptive of Sample

<i>N</i> = 399	<i>Item</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Mean</i>
Gender	Male	115	28.8%	
	Female	284	71%	
	Non-binary / third gender	0	0%	
	Prefer not to say	0	0%	
	Total	399	100%	
Age	20-64 years			
	Total	399	100%	28.14
Employment Status	Unemployed	7	1.7%	
	Part-time employed	129	32%	
	Full-time employed	262	65%	
	Self-employed	1	0.25%	
	Total	399	100%	
	Condition 1			
Highest Completed Education	Primary school	1	0.25%	
	High school or vocational education (yrkesfag) (3- year)	34	8.5%	
	College or university education of 4 years or less	196	49.1%	
	College or university education of more than 4 years	168	42.1%	
	Total	399	100%	
	Condition 1			
	Condition 1	65	16.2%	

Treatment	Condition 2	62	15.5%
Conditions	Condition 3	71	17.8%
	Condition 4	65	16.2%
	Condition 5	68	17%
	Condition 6	68	17%
	Total	399	100%

Q11: How often do you use this product (day cream)?

	Frequency	Percent
Daily	313	78%
Weekly	56	14%
Monthly	18	4.5%
Yearly	9	2.24%
Never	7	1.75%
Total	399	100%

Q12: How often do you buy this product (day cream)?

	Frequency	Percent
Daily	6	1.5%
Weekly	28	7.01%
Monthly	237	59.39%
Yearly	118	29.57%
Never	10	2.5%
Total	399	100%

Appendix 7: Main Study – Descriptive of Mean

<i>Variables (Mean)</i>	<i>Condition 1</i>	<i>Condition 2</i>	<i>Condition 3</i>	<i>Condition 4</i>	<i>Condition 5</i>	<i>Condition 6</i>
Perceived Quality	4.60	2.22	5.86	5.03	4.76	1.18
Perceived Trust	3.15	2.46	6.06	5.61	3.95	3.51
Perceived Price	4.01	3.80	5.00	3.54	4.13	3.72
Purchase Behavior	2.26	2.07	4.38	4.27	2.86	2.62

Appendix 8: Main Study – Descriptive of Sustainable Purchase Behavior

Q9: I do not buy products that harm the environment

Variable (Mean)	Condition 1	Condition 2	Condition 3	Condition 4	Condition 5	Condition 6	Total (overall mean)
Sustainable Purchase Behavior	4.49	4.50	5.25	5.06	4.82	4.84	4.82

Appendix 9: Main Study – Descriptive of Attribute Evaluations

Condition 1

<i>Attribute</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
Product quality	65	3	7	6.05	1.007
Price	65	2	7	5.14	1.248
Environmental sustainability	65	1	7	4.75	1.250
Product design	65	1	7	3.66	1.079
Sensory aspects	65	2	7	4.18	1.130
Functionality	65	3	7	5.18	0.9
Convenience	65	3	7	5.02	0.8

Condition 2

<i>Attribute</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
Product quality	62	3	7	6.13	0.914
Price	62	3	7	4.82	1.138
Environmental sustainability	62	1	7	4.77	1.247
Product design	62	1	7	3.84	1.119
Sensory aspects	62	1	7	4.31	1.195
Functionality	62	1	7	5.35	1.026
Convenience	62	2	7	5.16	0.891

Condition 3

<i>Attribute</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
Product quality	71	3	7	6.35	0.847
Price	71	2	7	4.72	1.149
Environmental sustainability	71	1	7	5.06	1.286
Product design	71	1	6	3.70	1.006
Sensory aspects	71	2	7	4.38	1.223
Functionality	71	2	7	5.32	1.066
Convenience	71	1	7	4.90	1.267

Condition 4

<i>Attribute</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
Product quality	65	3	7	6.31	0.846
Price	65	2	7	4.77	1.222
Environmental sustainability	65	2	7	5.09	1.296
Product design	65	2	7	3.72	1.083
Sensory aspects	65	2	7	4.31	1.131
Functionality	65	4	7	5.23	0.844
Convenience	65	2	7	4.98	1.923

Condition 5

<i>Attribute</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
Product quality	68	3	7	6.12	0.890
Price	68	1	7	4.87	1.233
Environmental sustainability	68	1	7	4.79	1.140
Product design	68	1	7	3.75	1.151
Sensory aspects	68	2	7	4.21	1.087
Functionality	68	4	7	5.21	0.89
Convenience	68	1	7	4.91	1.047

<i>Condition 6</i>					
<i>Attribute</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
Product quality	68	5	7	6.32	0.679
Price	68	3	7	4.94	1.077
Environmental sustainability	68	2	7	5.06	1.1077
Product design	68	1	7	3.87	1.233
Sensory aspects	68	2	7	4.38	1.197
Functionality	68	3	7	5.47	1.00
Convenience	68	3	7	5.16	0.908

Appendix 10: Reliability Statistics – Cronbach’s Alpha

Reliability Statistics			
Variables	Cronbach’s Alpha	Cronbach’s Alpha Based on Standardized Items	N of Items
Perceived Quality	.885	.886	2
Perceived Trust	.924	.925	3
Purchase Behavior	.965	.965	2

Appendix 11: Combined Variables

<i>Variables</i>	<i>Item</i>	<i>Scale</i>	<i>Questions merged</i>
Perceived Quality	<p>“The product appears to be of good quality”</p> <p>“The product seems to contain high-quality ingredients”</p>	1-7	Q 1-2
Perceived Trust	<p>“The creator of this product has good intentions”</p> <p>“I believe this product is good for my skin”</p> <p>“The creator of this product has passed strict tests before issuing it”</p>	1-7	Q 3-5
Purchase Behavior	<p>“I would buy this product in the near future”</p> <p>“I plan to buy this product on a regular basis”</p>	1-7	Q 7-8

Appendix 12: Linear Regression Analysis (H1)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.527 ^a	.277	.276	1.41663

a. Predictors: (Constant), Established Eco-label

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	305.862	1	305.862	152.862	<.001 ^b
	Residual	796.717	397	2.007		
	Total	1102.579	398			

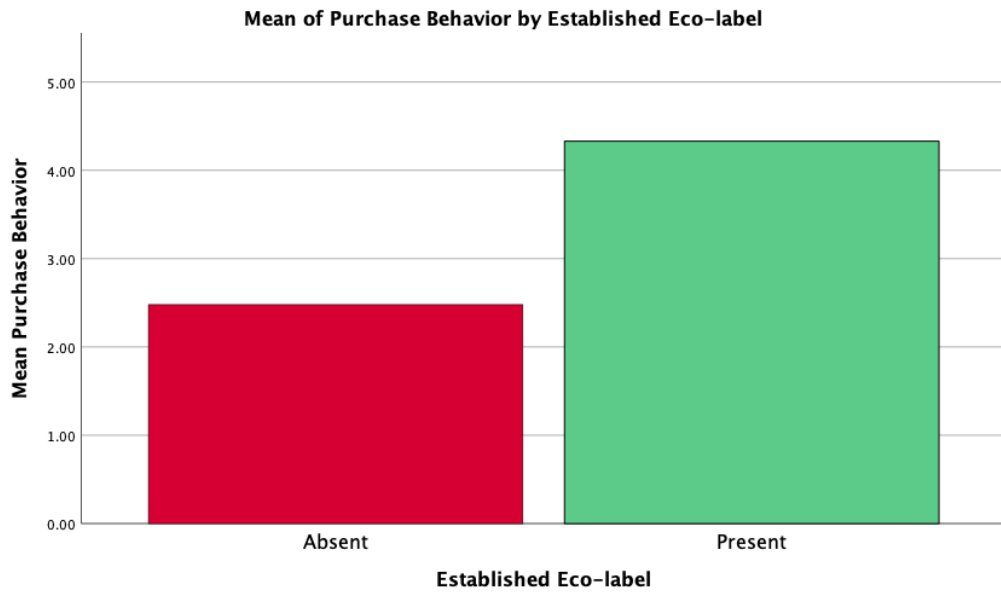
a. Dependent Variable: Purchase Behavior

b. Predictors: (Constant), Established Eco-label

Coefficients ^a						
Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.479	.087		28.435	<.001
	Established Eco-label	1.850	.150	.527	12.345	<.001

a. Dependent Variable: Purchase Behavior

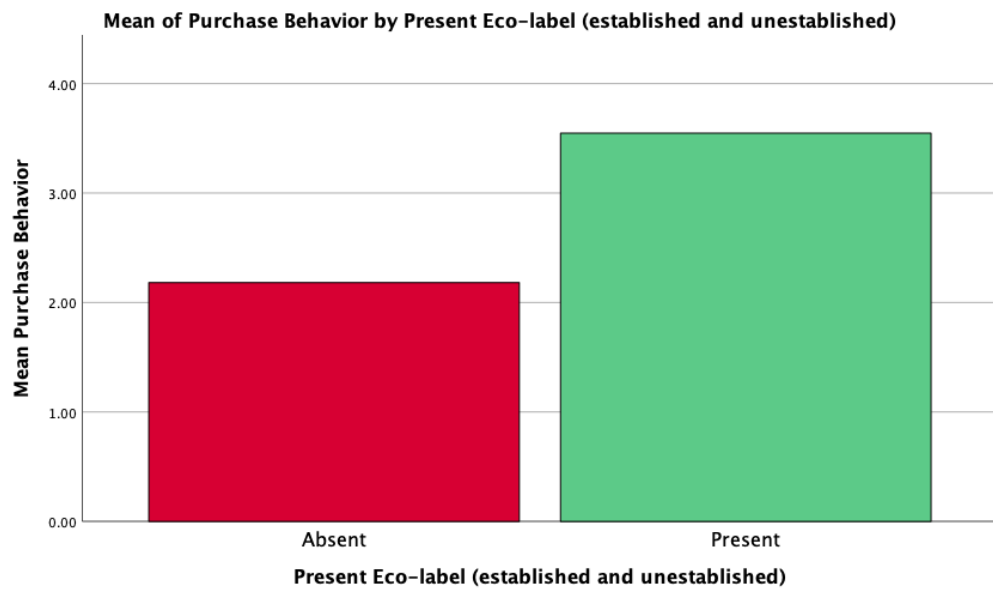
Appendix 12.1: Mean of Purchase Behavior by Established Eco-label



Appendix 12.2: Mean of Purchase Behavior by Unestablished Eco-label



Appendix 12.3: Mean of Purchase Behavior by Present Eco-label (established and unestablished)



Appendix 13: Linear Regression Analysis (H2a)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.179 ^a	.032	.029	1.69399

a. Predictors: (Constant), Unestablished Eco-label

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.498	1	37.498	13.067	<.001 ^b
	Residual	1139.238	397	2.870		
	Total	1176.736	398			

a. Dependent Variable: Perceived Trust

b. Predictors: (Constant), Unestablished Eco-label

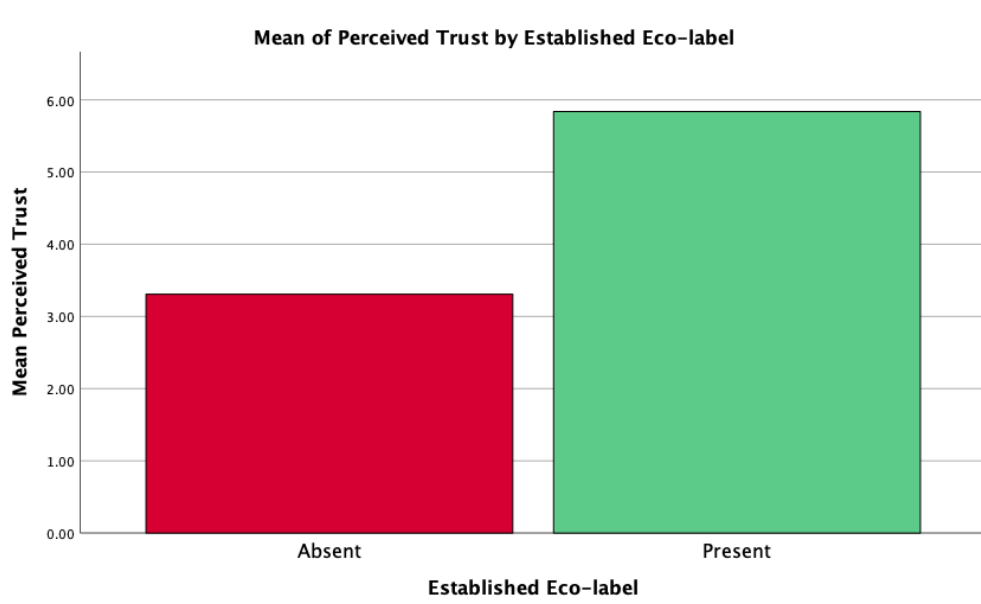
Coefficients ^a						
Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	4.384	.104		41.972	<.001
	Unestablished Eco-label	-.647	.179	-.179	-3.615	<.001

a. Dependent Variable: Perceived Trust

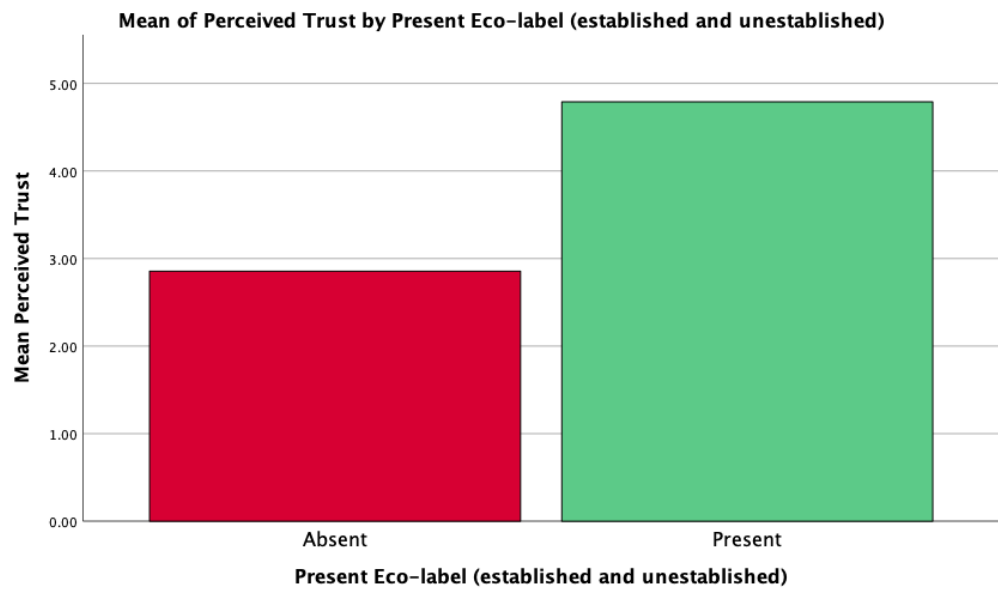
Appendix 13.1: Mean of Perceived Trust by Unestablished Eco-label



Appendix 13.2: Mean of Perceived Trust by Established Eco-label



Appendix 13.3: Mean of Perceived Trust by Present Eco-label (established and unestablished)



Appendix 14: Linear Regression Analysis (H2b)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.160 ^a	.026	.023	1.82456

a. Predictors: (Constant), Unestablished Eco-label

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.805	1	34.805	10.455	<.001 ^b
	Residual	1321.624	397	3.329		
	Total	1356.429	398			

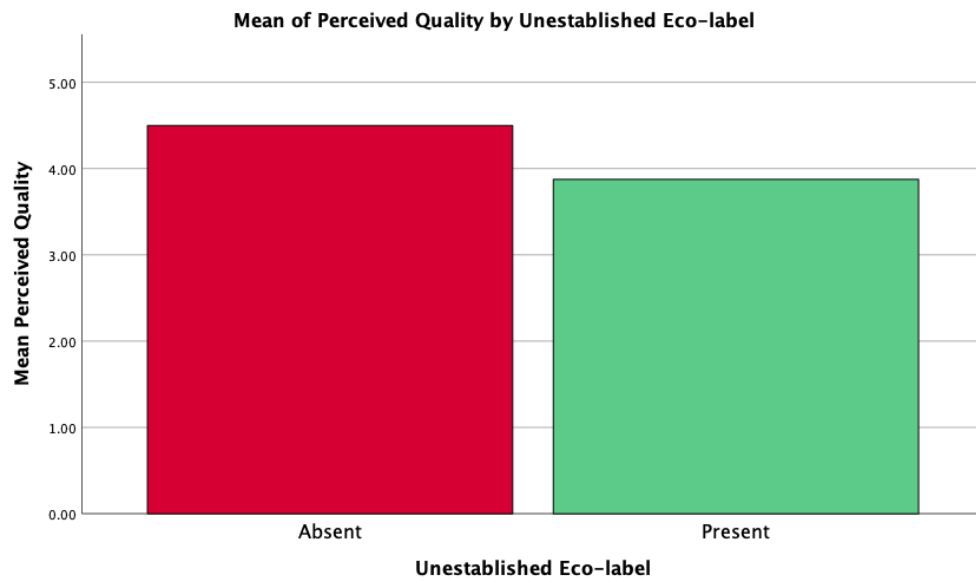
a. Dependent Variable: Perceived Quality

b. Predictors: (Constant), Unestablished Eco-label

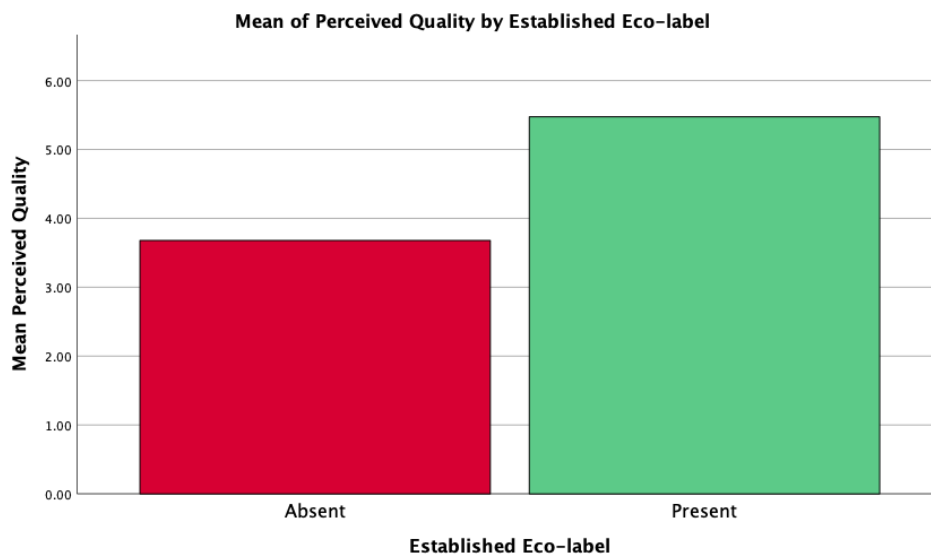
Coefficients ^a						
Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	4.498	.113		39.980	<.001
	Unestablished Eco-label	-.623	.193	-.160	-3.233	.001

a. Dependent Variable: Perceived Quality

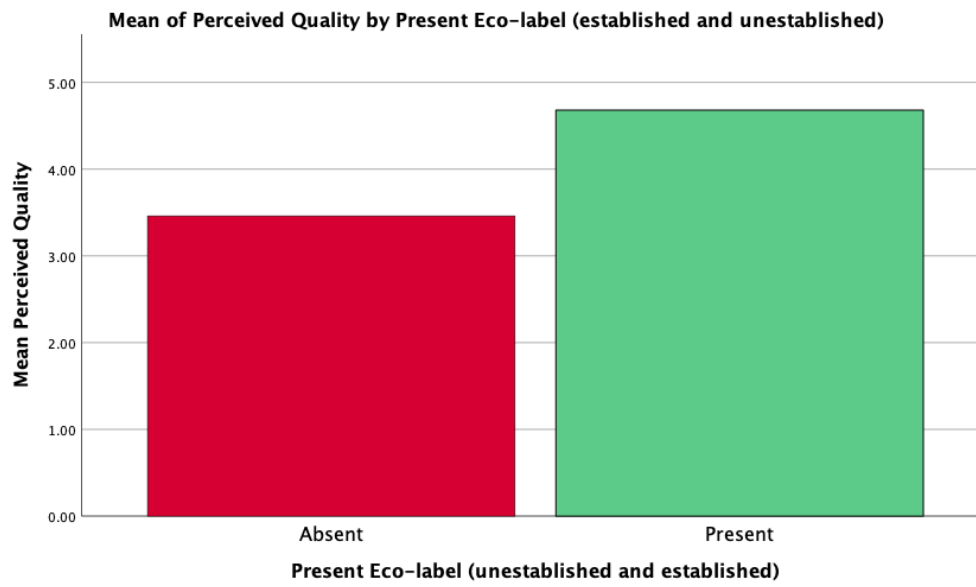
Appendix 14.1: Mean of Perceived Quality by Unestablished Eco-label



Appendix 14.2: Mean of Perceived Quality by Established Eco-label



Appendix 14.3: Mean of Perceived Quality by Present Eco-label (established and unestablished)



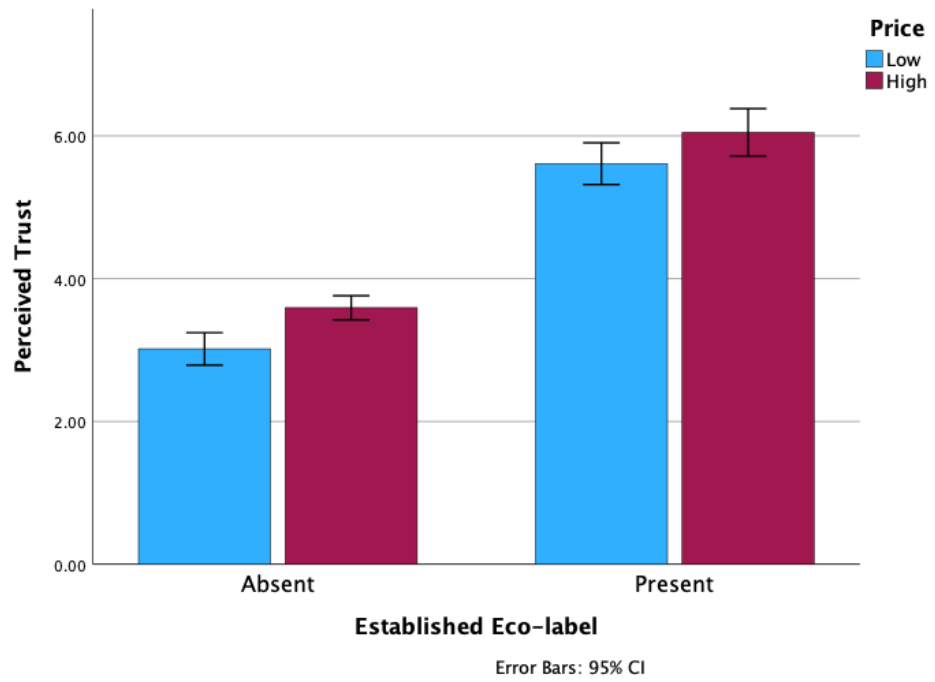
Appendix 15: Univariate Analysis of Variance (H3a)

Established Eco-label * High Price					
Dependent Variable: Perceived Trust					
Established Eco-label	High Price	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Absent	Low	3.016	.106	2.807	3.224
	High	3.592	.104	3.387	3.797
Present	Low	5.610	.150	5.315	5.905
	High	6.048	.144	5.764	6.332

Tests of Between-Subjects Effects						
Dependent Variable: Trust_All						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	599.599 ^a	3	199.853	136.772	<.001	.510
Intercept	7442.800	1	7442.800	5093.595	<.001	.928
Established Eco- label	568.935	1	568.935	389.360	<.001	.496
High Price	22.933	1	22.933	15.695	<.001	.038
Established Eco- label * High Price	.431	1	.431	.295	.587	.001
Error	577.177	395	1.461			
Total	8094.322	399				
Corrected Total	1176.736	398				

a. R Squared = .510 (Adjusted R Squared = .506)

Appendix 15.1: Results from Hypothesis H3a



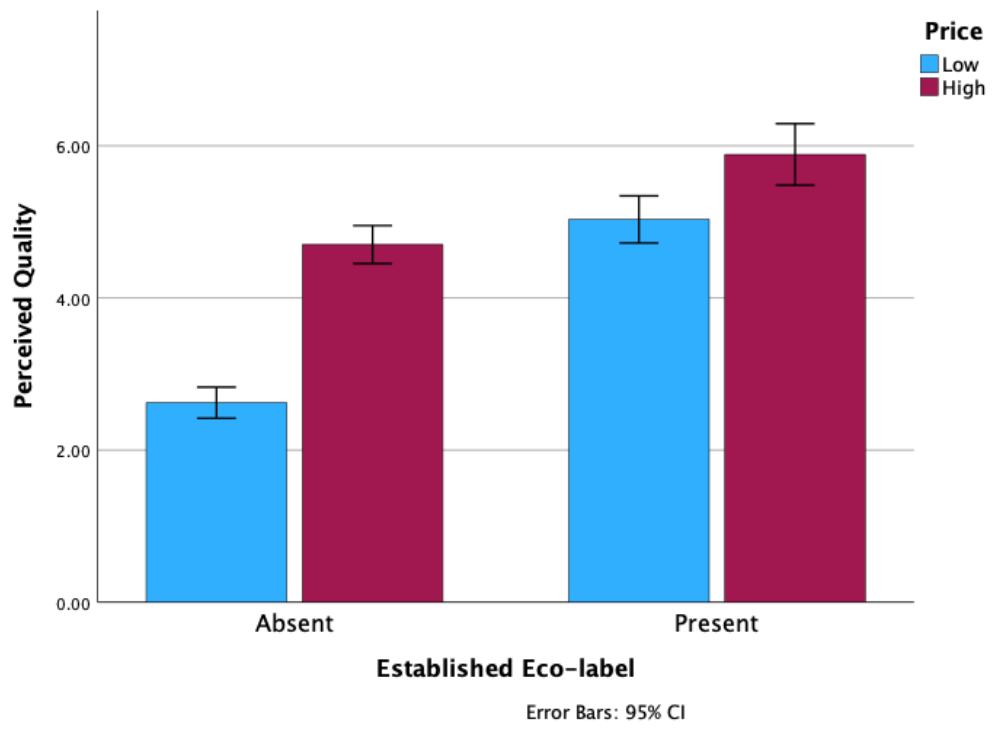
Appendix 16: Univariate Analysis of Variance (H3b)

Established Eco-Label * High Price					
Dependent Variable: Perceived Quality					
				95% Confidence Interval	
Established Eco-label	High Price	Mean	Std. Error	Lower Bound	Upper Bound
Absent	Low	2.623	.122	2.384	2.862
	High	4.701	.120	4.466	4.937
Present	Low	5.031	.172	4.693	5.369
	High	5.886	.166	5.560	6.211

Tests of Between-Subjects Effects						
Dependent Variable: Perceived Quality						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	597.814 ^a	3	199.271	103.758	<.001	.441
Intercept	7422.947	1	7422.947	3865.024	<.001	.907
Established Eco- label	287.825	1	287.825	149.866	<.001	.275
High Price	191.959	1	191.959	99.950	<.001	.202
Established Eco- label * High Price	33.394	1	33.394	17.388	<.001	.042
Error	758.615	395	1.921			
Total	8685.000	399				
Corrected Total	1356.429	398				

a. R Squared = .441 (Adjusted R Squared = .436)

Appendix 16.1: Results from Hypothesis H3b



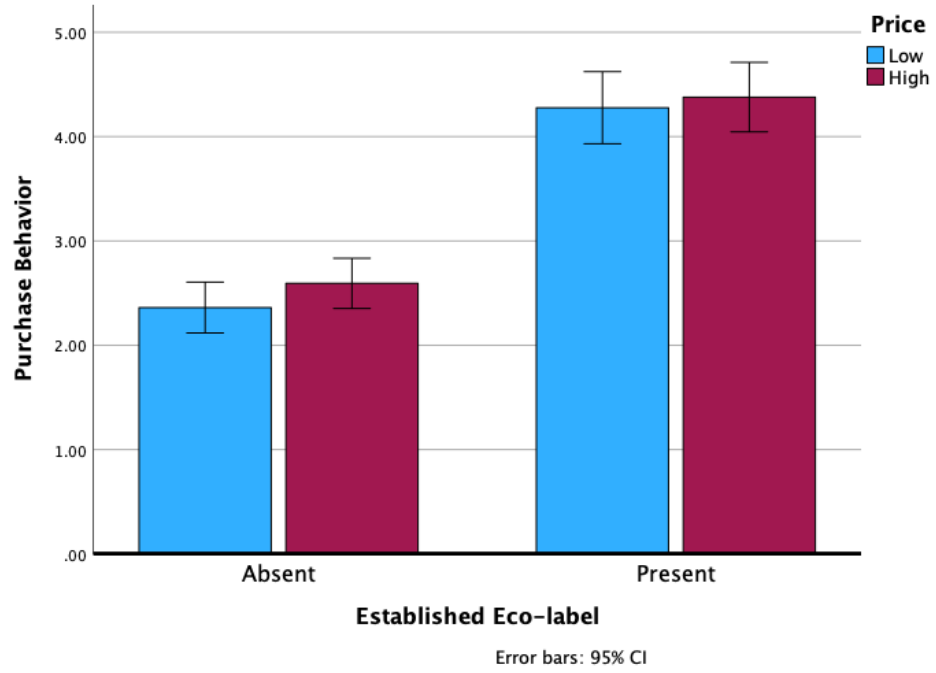
Appendix 17: Univariate Analysis of Variance (H3c)

Established Eco-label* High Price					
Dependent Variable: Purchase Behavior					
Established Eco-label	High Price	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Absent	Low	2.362	.124	2.117	2.606
	High	2.593	.122	2.353	2.834
Present	Low	4.277	.176	3.931	6.622
	High	4.379	.169	4.046	4.711

Tests of Between-Subjects Effects						
Dependent Variable: Purchase Behavior						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	309.754 ^a	3	103.251	51.442	<.001	.281
Intercept	4132.501	1	4132.501	2058.889	<.001	.839
Established Eco- label	305.519	1	305.519	152.215	<.001	.278
High Price	2.480	1	2.480	1.235	.267	.003
Established Eco- label * High Price	.378	1	.378	.188	.665	.000
Error	4950.000	395	2.007			
Total	8094.322	399				
Corrected Total	1102.579	398				

a. R Squared = .281 (Adjusted R Squared = .275)

Appendix 17.1: Results from Hypothesis H3c



Appendix 18: Mediation Analysis (H4a)

Established eco-label → *Perceived Trust* → *Purchase Behavior*:

Path A

X → M (Established Eco-label → Perceived Trust)

Regression Coefficients			
Path	Coeff	SE	P
a ₁	2.5287	.1307	.0000

Path B

M → Y (Perceived Trust → Purchase Behavior)

Regression Coefficients			
Path	Coeff	SE	P
b ₁	.7825	.0421	.0000

Path C:

X → Y (Established Eco-label → Purchase Behavior)

Regression Coefficients			
Path	Coeff	SE	P
c'	-.1283	.1530	.4022

Appendix 19: Mediation Analysis (H4b)

Established eco-label → *Perceived Quality* → *Purchase Behavior*:

Path A

X → M (Established Eco-label → Perceived Quality)

Regression Coefficients			
Path	Coeff	SE	P
a ₁	1.7960	.1736	.0000

Path B

M → Y (Perceived Quality → Purchase Behavior)

Regression Coefficients			
Path	Coeff	SE	P
b ₁	.4852	.0359	.0000

Path C:

X → Y (Established Eco-label → Purchase Behavior)

Regression Coefficients			
Path	Coeff	SE	P
c'	.9789	.1399	.0000

Appendix 20: Mediation Analysis Summary

Relationship	Total effect	Direct effect	Indirect effect	Conf. interval		T-statistic	Conclusion
				Lower	Upper		
Established Eco-label → Perceived Trust → Purchase Behavior	1.8505	-.1283	1.9787	1.5558	2.1451	12.3454	Indirect mediation
Established Eco-label → Perceived Quality → Purchase Behavior	1.8505	.9789	.8715	1.5558	2.1451	12.3454	Partial mediation