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Sum Yee, Chan

Alexander Carl, Christensen, Quintana

Andrea Carolina, Ramirez Salaverria

BACHELOR THESIS

EKOLOGINIO ŽENKLINIMO ĮTAKA KETINIMUI PIRKTI SKALBINIŲ PRIEŽIŪROS PRIEMONES	***ECO-LABELING INFLUENCE ON CONSUMERS' INTENTION TO BUY LAUNDRY CARE PRODUCTS***

Sum Yee Chan_____

Andrea Carolina Ramirez Salaverria _____

Alexander Carl Christensen Quintana _____

Supervisor Prof. Elzė Rudienė _____

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SUMMARY IN ENGLISH

The aim of the bachelor thesis was to analyse scientific literature and to execute empirical research on eco-labels and their influence on consumer purchasing decisions. This academic paper consists of four parts: An analysis of literature sources, research methodology, analysis of empirical research, and conclusions and recommendations.

The literature analysis was conducted on previous studies and literature pertaining. It covered types of eco-labels and their influences on consumers as well as the barriers, limitations, and advantages of adaptation.

For analytical section, awareness and perception were found to have impacts on the intention to purchase. There is also a difference existing between consumers' intention to purchase and actual purchasing behaviours of eco-labelled laundry product. Correlation between these factors and education level was found. However, no correlation between age and these factors were found. Rating differences were spotted when comparing respondents with and without kids.

The research performed unveiled correlations between respondents with kids and the four constructs as well as relationships between education and the number of eco-labels recognized. Lithuanian respondents were found to have low levels of awareness of eco-labels as well as felt confused as to the meanings and implications of eco-labels.

SUMMARY IN LITHUANIAN

Šio bakalauro darbo tikslas buvo išanalizuoti mokslinės literatūros šaltinius ir atlikti empirinį tyrimą apie skirtingus ekologinius ženklinimus ir jų įtaką vartotojų pirkimo sprendimui. Šį mokslinį darbą sudaro keturios dalys: mokslinės literatūros analizė, tyrimo metodologija, empirinio tyrimo analizė, išvados ir rekomendacijos.

Mokslinės literatūros analizės dalyje buvo nagrinėjami ankstesni moksliniai darbai. Buvo išanalizuotos skirtingos ekologinio ženklinimo rūšys, jų įtaka vartotojams, jų adaptavimo privalumai ir trūkumai.

Analitinėje dalyje buvo atrasta, jog sąmoningumas ir suvokimas turi įtakos ketinimui pirkti. Taip pat pastebima, kad egzistuoja nesutapimai tarp vartotojų ketinimo pirkti ir pirkimo elgsenos ekologiškai paženklintų skalbinių priemonių rinkoje. Buvo atrasta koreliacija tarp šių veiksnių ir išsilavinimo lygio. Visgi koreliacija tarp amžiaus ir šių veiksnių nebuvo atrasta. Taip pat buvo atrastas vertinimų skirtumas, priklausomai nuo to ar respondentai turi vaikų.

Tyrimo rezultatai atskleidė, jog egzistuoja koreliacija tarp respondentų vaikų skaičiaus ir keturių konstruktų bei tarp išsilavinimo lygio ir atpažįstamų ekologinių ženklų skaičiaus. Taip pat rezultatai parodė, jog respondentai, gyvenantys Lietuvoje pasižymi žemu ekologinių ženklinimų sąmoningumo lygiu bei šių ženklinimų reikšmės ir implikacijos juos painioja.

VILNIUS UNIVERSITY
BUSINESS SCHOOL
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ANDREA CAROLINA, RAMIREZ SALAVERRIA
ALEXANDER CARL, CHRISTENSEN QUINTANA
SUM YEE, CHAN

ECO-LABELING INFLUENCE ON CONSUMERS' INTENTION TO BUY LAUNDRY CARE PRODUCTS

Supervisor Prof. Elzė Rudienė
Bachelor thesis prepared 2023, Vilnius
The thesis consists of 50 pages.
Number of tables at work 22 pcs.
Number of pictures at work 1 pc.
Number of literature and sources 58 pcs.

Short description:

The paper covers variety of eco-labels, advantages, and limitations of eco-label adoption for businesses. Qualitative research was done on the relationship between consumers' awareness of eco-labels, perceptions towards eco-labels, intention to purchase and actual purchasing behaviours.

Problem, goal, and tasks of the work:

There is a lack of information about factors that impact Lithuanian consumers 'intention to purchase available for companies of the Lithuanian market who wish to adopt eco-labels.

Research methods used in the work:

Quantitative Method.

Research and results obtained:

Subjectively measured level of awareness of eco-labels and perception towards eco-labels have positive impacts on consumers' intention to purchase. Difference exists in ranking between groups with and without kids.

Conclusions of the work:

Awareness and intention to purchase have a big impact on consumers' intention to purchase. Companies should address the lack of awareness within Lithuanian consumers and adopt the insights in their marketing and product development processes.

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INTRODUCTION

Relevance of the topic. In modern society, laundry care products have become a necessity for many families globally. Due to factors like the increase in hygiene awareness, income, and education level, especially in low-developed countries, the laundry market has been growing progressively. For companies who wish to gain a place in this rapidly growing market, being able to differentiate themselves from other competitors becomes crucial. In recent years, green consumerism has forced companies to increase their awareness of quality and sustainability during product development. Eco-labels became an effective tool to communicate with consumers and drive the profitability of companies.

Problem. EU research shows Lithuanian consumers have low awareness. There is also a lack of existing research that focuses on Lithuanian consumers and their intention to purchase eco-labelled products. Companies might lack related information when considering the adoption of eco-labels for laundry care products or during their entry into the Lithuanian market. The research can help companies to understand more about characteristics of Lithuanian consumers factors that might impact their selection of eco-labelled laundry care products, identify potential customer groups, and adopt the insight into the marketing and product developing processes.

Related Literatures. Previous studies and literature sources were used to grasp the history, scope, and problems of the subject. A summarization of these studies is included in this research. The majority of the studies found there were issues with consumer awareness and perception of eco-labels which affected their intention to buy and purchasing habits. Additionally, there were barriers and limitations to businesses and companies in adopting the eco-label for their products.

Level of Research. While considerable research has been conducted on the topics including, consumers' perception of eco-labels and the relationship between eco-labels and consumers' intention to buy, this term paper represents a meticulous examination and analysis of existing literature specifically focused on the application of different eco-labels in the laundry care market.

Research Methods. In this paper, the quantitative research method is used to consumers 'perception towards eco-label, consumers' subjective level of awareness towards eco-labels, intention to purchase and actual purchasing behaviours of eco-labelled laundry care products. Literature analysis was also used in the research. This method involves researching, reading, analysing previous literature, and then evaluating and summarizing it. Literature analysis helps

in understanding the history and nature of eco-labels and factors that might influence consumer purchasing behaviours and help identify gaps that could be covered by the current research.

Justification of research methods. As there are not much research done on this topic that focus mainly on the Lithuanian market, qualitative research method can be used for conducting exploratory research and gain generalised information of Lithuanian consumers' awareness about eco-labels, perception towards its, intention to purchase and actual purchasing behaviours of eco-labelled laundry care products.

Structure of the research. The research is divided into three main sections: theoretical, methodological, and analytical. Theoretical section covers past research on influence of eco-label on consumers' intention to purchase, introductory information of laundry care products and market, and the benefits and limitations of the adoption of eco-labels for businesses. Methodological section covers selection of research instrument and data collection methods and their structures, as well as justifications. Analytical section focuses on the interpretation of survey results by conducting correlation and regression analysis. Respondents are also grouped based on demographic for more in-depth analysis. Lastly, conclusions and recommendations are drawn based on the summarised information.

Aims and Objectives. The primary aim of this term paper is to examine and analyse from a theoretical and analytical perspective the application of eco-labels and factors that might impact consumers' purchasing behaviours. Based on the information gathered, insight can help analyse could the adoption of eco-labels be beneficial. The specific objectives include:

1. To provide general information on eco-labels that are most commonly seen in Lithuania and their implications.
2. To analyse the advantages and limitations of the adaptation of eco-labels for businesses.
3. To determine the impact of level of awareness and perception towards eco-label on the intention to purchase eco-labelled laundry care products.
4. To provide insights and recommendations on the adoption of eco-labels for enterprises in the laundry care market

1. LITERATURE REVIEW

1.1. Laundry Products

1.1.1. History of Laundry Products

The evolution of human hygienic practices and technology improvements throughout the years is reflected in the history of laundry detergent.

Ancient Beginnings. In ancient times, people employed creative methods to clean their clothes, such as beating garments against rocks in streams or rubbing them with ashes and sand to remove dirt and stains (Tate, 2023). The earliest known reference to a laundry detergent date back to an ancient Sumerian tablet from 2200 to 2800 BC, which mentioned a soap formulation involving water, alkali (potash), fat, and cassia oil (Bajpai & Tyagi, 2007).

Soap Emerges. By the second century A.D., the knowledge of soap-making had spread to ancient Greece and Rome. Soap recipes evolved, incorporating fragrances and herbs to create a more pleasant scent. Moreover, the word "soap" itself derives from a Roman legend about Mount Sapo, where rainwater mixed with animal fat and ashes, led to the discovery of soap's cleaning properties (American Cleaning Institute, n.d.; Chagrin Valley Soap & Salve Company, 2014).

Soap in Europe. The technique of soap-making became established in Italy, Spain, and France in the seventh century, owing to the availability of raw materials such as olive oil for manufacturing Castile soap. However, after the fall of Rome, cleanliness declined significantly in Europe, leading to a millennium of poor hygiene and deadly plagues (American Cleaning Institute, n.d.; Chagrin Valley Soap & Salve Company, 2014).

Soap in England and America. The English began soap-making in the 12th century, and commercial soap production started in the American colonies around 1600, primarily as a household chore. It wasn't until the 17th century that cleanliness and bathing became fashionable once again, leading to improved cleanliness standards as soap became more widely accessible (American Cleaning Institute, n.d.; Encyclopedia.com, n.d.).

The Rise of Synthetic Detergents. The industrial manufacturing of soap remained largely unchanged until 1916 when the first synthetic detergent was developed in Germany during World War I. Due to shortages of traditional soap ingredients (fats), chemists synthesized detergents from alternative raw materials (Bajpai & Tyagi, 2007; A.S. Davidsohn, 2023). This seminal event marked the birth of contemporary detergents, and in the 1930s, commercially viable methods for creating fatty alcohols led to the rise of detergent brands, including German companies like BASF and DEFT, as well as the American giant Procter and

Gamble, renowned for its "Tide" brand (Chagrin Valley Soap & Salve Company, 2014; Tate, 2023).

From Soap to Detergents. The end of World War II accelerated the shift from conventional soap to synthetic detergents. Many American manufacturers that had previously been dedicated to war activities turned their attention to civilian items, such as the creation of laundry detergents utilising the most readily accessible component, tetra propylene Bajpai & Tyagi, 2007). This change, along with post-war economic success and the availability of reasonably priced washing machines, resulted in an increase in detergent sales. By 1953, detergent sales had surpassed those of traditional soap (Encyclopedia.com, n.d.). Synthetic detergents proved to be more effective, especially in challenging scenarios like hard water and tenacious stains, resulting in a gradual move from soap to detergents in the laundry business throughout the 1940s and 1950s, with both liquid and powdered versions becoming popular ME Group UK, n.d.).

Innovations and Environmental Concerns. The 1960s saw the addition of phosphates to boost detergent cleaning power, while stain removers and pre-treatments were introduced. In addition, in 1970, all-in-one laundry products were introduced to the market (ME Group UK, n.d.). However, environmental concerns, such as algae blooms in rivers, prompted the creation of biodegradable and eco-friendly detergents in the late 20th century. (Tate, 2023).

High-Efficiency, Modern Innovations, and Sustainability. Laundry products such as high-efficiency (HE) detergents, and those containing fragrances and additives catered to various preferences and skin sensitivities, offering specialised stain removers, fabric softeners, and colour protectors have become increasingly popular among consumers since the early 21st century (ME Group UK, n.d.). Due to the rising demand for more sustainable laundry products, companies are emphasizing sustainability in their products. Among their attempts to do this are the supply of concentrated detergents, the use of biodegradable ingredients on their products, the reduction of packaging waste, and the lowering of the environmental impact of transportation Grand View Research, 2023).

1.1.2. Overview of the Laundry Care Market

Definition of the laundry care market. Laundry care products can include detergents, fabric softeners, scent boosters, stain removers, etcetera. These products can exist in different forms, including but not limited to power, pods, tablets, liquids, and capsules. They also vary in terms of scents and target clothes with specific colours and fabric types. Therefore, it is common for consumers who have a high awareness of laundry care to acquire serval different detergents at the same time.

Revenue of the laundry care market worldwide by country. As mentioned, the laundry care market includes all detergents purchased by customers with the objective of cleaning and caring for textiles, primarily clothes and bedding, in whatever form it may take including tablets, power, or liquids. According to Statista's (2023) study, the country with the greatest revenue in the laundry care industry in 2022 was the United States, with USD 14,660.25 million. China is second with USD 12,315.55 million, followed by India with USD 5,185.56 million.

In Europe, Germany, France, and Italy are placed eighth, ninth, and eleventh, respectively. Germany had a revenue of $2,703.9 million US dollars, France of $2,463.69 million US dollars, and Italy of $2,125.36 million US dollars. In Latin America, Brazil and Mexico rank in the top ten. Brazil came in sixth position with a revenue of $2,980.85 million US dollars, while Mexico came in seventh place with a revenue of $2,732.37 million US dollars (Statista, 2023).

Current market size and projected growth. According to a report conducted by Grand View Research in 2021, the worth of the global laundry care market was valued at 96.7 billion US dollars, which is approximately 90.6 billion euros, and is expected to grow continuously at a compound annual growth rate of 4.5% between 2022 and 2028 (Grand View Research, 2023). Statista estimated the worth of the global laundry care market to be 104 billion US dollars, approximately 97.6 billion euros, with a compound annual growth rate of 3.33% between 2023 and 2028 (Statista, 2023). Due to the increase in population and increase in awareness of hygiene caused by factors like increased levels of education and wealth globally, it is reasonable to expect continuous growth in the laundry care market in the long term. In fact, based on the forecasting reports mentioned above, the laundry care market will reach approximately 115 to 123 billion euros in 2028. Grand View Research, 2023)

Factors contributing to the revenue of the market. The laundry care market is projected to grow due to factors such as population growth and increased levels of education. However, the trajectory of this industry is heavily impacted by a variety of factors and events, the most recent and quite critical of which is the global spread of the COVID-19 pandemic. Surprisingly, this occurrence had a moderate beneficial influence on the industry, as consumer demand increased. This rise can be attributed to increased consumer knowledge of the crucial importance of cleaning and disinfecting their houses and clothing to reduce the risk of catching COVID-19. Another important factor favourably contributing to the increase of revenue for the laundry care product market is the expansion of the real estate industry. As there are more renting units, such as Airbnb's or residential units for short-term rental, there is a greater

requirement for sanitation and cleanliness, which extends to textiles such as bedsheets (Grand View Research, 2023).

The report further highlights that in certain markets, such as in the United States, the factors that are contributing to its expansion are attributed to increasing awareness regarding personal hygiene, a growing preference for strong odours in household cleaning products, and a rising demand for organic, safer, and environmentally friendly detergents (Grand View Research, 2023). To address these demands and preferences, leading players such as Unilever's Persil and Breeze, P&G's Ariel, and Henkel, are doing research and development of new products as well as adjusting existing ones to meet the needs and preferences of consumers. For instance, Procter & Gamble (P&G) took a ground-breaking step in 2021 by partnering with NASA to start developing a detergent that requires no water at all for cleaning textiles. Unilever, meanwhile, announced the production of the first paper-based laundry detergent container in 2021 (Future Market Insights , 2023). Both firms demonstrated their commitment to sustainability through these developments.

1.2. Eco-labels

In the complex landscape of product marketing and consumer decision-making, businesses frequently employ the process of launching labels for their products. This labelling process serves multiple purposes, including conveying differences from competitors, how the product is relevant to consumers, its perceived quality and popularity, and knowledge diffusion (Rusko & Korauš, 2013). Therefore, a label, defined by Rusko & Korauš (2013) as "a marking designation, printing of a logo, or pictogram"; becomes a symbol representing the high and reliable quality of a brand's products. It also denotes that the products result from extensive research and development and are protected as a registered trademark.

In a century marked by an increasing awareness of environmental sustainability, consumers are shifting their focus to daily products. Eco-labels, which are voluntary marks placed on product packaging or in e-catalogues usually after following a thorough environmental evaluation, serve the purpose of expressing the environmental effect of a product to buyers. Through them, consumers can quickly and easily identify those products and make more sustainable choices. Eco-labels are also used by businesses to monitor performance as well as promote and sell a product's environmental credentials. Furthermore, significantly for governments, these instruments motivate producers and consumers to shift their behaviour towards long-term sustainability UN Environment Programme, n.d.).

Rusko & Korauš (2013) further explains that eco-labels are a subset of environmental markings that adhere to certain requirements such as "complexity, impartiality, and reliability". While environmental marks reflect a product's or service's whole environmental preference based on its life cycle, eco-labels serve as a representation of environmental policy within this framework. In addition, the authors highlight that the eco-labelling process is based on eco-labelling systems, which are "certification schemes managed by so-called third impartial parties operating in-between producer, importer, and consumer." As a result, eco-labelling can be defined as a voluntary tool that businesses or manufacturers may only use if they meet specific criteria to label their products in order to convey quality differences, safety benefits, environmental impact, and encourage customer adoption (Rusko & Korauš, 2013).

According to the UNEP (n.d.), eco-labels gained worldwide recognition at the World Summit on Sustainable Development (ten years after the 1992 United Nations Conference on Environment and Development in Rio de Janeiro). In this same Summit, international stakeholders reaffirmed their commitment to "Agenda 21". Furthermore, stakeholders agreed to the Johannesburg Plan of Implementation (JPOI) to accomplish this. The JPOI aimed to increase consumer awareness and consumption of sustainable products by developing eco-labels that would be adopted voluntarily, effectively, transparently, could be verified, and were not misleading or discriminatory in any way to the consumer and the sustainability of the consumption and production of the good (UN Environment Programme, n.d.).

Due to this initiative and the rising purchase motivation of consumers for environmentally friendly products, a proliferation of green labels happened. According to Richard Ferris (2022), "there are 260 active sustainability standards across 15 different business sectors". However, the question arose: how many of these were truly sustainable, legitimate, and fair, especially given the increased risk of greenwashing? To solve this problem, ISO International Standards created universally agreed-upon and harmonised standards and labelling systems in order to ensure a legitimate and equal playing field (International Organization for Standardization, 2019). They designed three kinds of environmental label standards:

Type I environmental labelling (ISO 14024: 1999). Also known as "classic eco-label" or "eco-labelling schemes". To be eligible for this mark or logo, products or services must meet fully a set of standardised multi-criteria specified by independent experts and stakeholder groups. Type I also assesses a product's environmental quality in comparison to other products with comparable performance during its whole life cycle. Another distinguishing feature is that it is a time-limited certification. Therefore, it is always needed to

apply again for the certificate after a certain period of time (Ferris, 2022). Furthermore, this form of ISO is often given by an unbiased approved third-party organisation and is frequently backed by governments. As well, it is multi-sectoral (UN Environment Programme, n.d.; Sustain Plan, n.d.). Some examples of eco-labels of this kind are EU Eco-label, Nordic Swan, Der Blaue Engel, and Fair Trade (Rusko & Korauš, 2013).

Type II self-declared environmental label (ISO 14021: 1999). Developed by manufacturers, marketers, and resellers themselves for products or services. It does not require an independent third party to verify such certifications. Due to this, and the fact that entities do not always verify their products, there are questions about its validity if it is unverified. Also, these self-declarations must provide exact and specific information on the environmental area they are focusing on, such as recyclability (Rusko & Korauš, 2013; Ferris, 2022). Overall, according to ISO (2019), this is intended for "products and services where there are neither criteria nor labelling schemes".

Type III environmental declaration (ISO 14025:2006). This type is a product environmental declaration (EPD) that provides more thorough and comprehensive quantitative information "for specific aspects of products or services using a whole life cycle approach" (International Organization for Standardization, 2019), making it simpler to independently research and draw conclusions about the products or service's overall sustainability (Sustain Plan, n.d.). In addition, this type may or may not be third-party certified, and it does not certify any specific quality of a product or service. However, due to its quantified environmental information on the life cycle of a product, it can be used to compare similar products or services (Ferris, 2022).

Other types of environmental labels. According to Rusko & Korauš (2013), other standardised types of labels that are not part of ISO 14000 are those *focused on one sector granted by institutions* like Energy Star or Energy labels used in the EU for households' products, and those that are granted *by private entities* (usually NGOs) like forestry Stewardship Council (FSC).

1.2.1. Common Eco-labels

Nowadays, there are numerous types of eco-labels available today, each offering distinct insights into the health and environmental aspects of the goods they promote. Understanding the nuances of these eco-labels is critical for customers trying to align their regimens with environmentally friendly and healthy practices. Some of the most common eco-labels for household and personal products in the market are the following:

AllergyCertified. This international allergy label was founded in Denmark with the aim of informing any customer who is seeking goods that reduce the likelihood of experiencing skin allergies to know which items to buy and which have the lowest risks. AllergyCertified besides checking for allergens, also examines all contaminants, including carcinogens and hormone-disrupting substances (AllergyCertified, n.d.).

To be eligible for this certification, a product must either be free of or have a maximum concentration of the ingredients and impurities specified on their website. Some of the prohibited substances are perfume (allergenic), H350 (may cause cancer), and H360 (may harm fertility or the unborn child). Following that, the company must submit the product formulation and components concentration, the raw material safety data sheets (MSDS) and technical data sheets (TDS), the raw material dossier, and a 100% composition breakdown for raw materials. Then, the product is subjected to a toxicological and risk assessment, as well as a sample test. If all of the criteria are met, the product is certified (AllergyCertified, n.d.).

Asthma Allergy Nordic (Blue Label). This label is backed up from 2018 by the Asthma-Allergy Denmark, the Asthma and Allergy Association in Sweden, and the Norwegian Asthma and Allergy Association. These three organizations created *Asthma Allergy Nordic* with the aim of assisting customers with making safe and active decisions about skin allergies (Asthma Allergy Nordic, n.d.). Moreover, it is an excellent international benchmark for individuals who have a skin allergy or wish to reduce the risk of developing skin allergies in themselves or their families Asthma Allergy Nordic, n.d.). In addition, according to Asthma Allergy Nordic (n.d.), its label can be found in more than 70 countries and the product categories where the label can be located are: cosmetic products, laundry and cleaning detergents, paper and hygiene products, duvets, and paint.

Furthermore, the Asthma Allergy Nordic label signifies the product has been thoroughly evaluated throughout its production process by qualified professionals with expertise in toxicology, health, chemistry, biology, and skin allergy. It also assures that it is free of perfume and other allergens like etheric oils. To receive this certification, a product's natural extracts must be entirely cleaned of certain allergenic components, and natural pollutants must not exceed the Asthma Allergy Nordic threshold level (Asthma Allergy Nordic, n.d.).

Asthma & Allergy Friendly. This certificate is affiliated with the Asthma and Allergy Foundation of America (AAFA) for the United States of America, and Allergy Standards Limited (ASL) for the rest of the globe Asthma & Allergy Friendly, n.d.). The purpose of this certificate is to assist consumers in making educated purchasing decisions when choosing

allergen-free household items including dehumidifiers, flooring, laundry, toys, and paint (Asthma & Allergy Friendly, n.d.).

Asthma & Allergy Friendly sets rigorous standards for each of the product categories for which the certificate is granted. To develop these standards, the AAFA and ASL conduct market research, review scientific research and clinical studies, and conduct experimental product testing. The proposed standard is next examined by the AAFA's independent medical scientific council, then again by the AAFA and ASL directors before being enacted. (Asthma and Allergy Foundation of America, 2019)

To receive this certification for a product, the product and the company are evaluated to see whether they are a good fit for the certificate. Then, the products must be tested by independent labs and must adhere to the rigorous requirements set by Asthma & Allergy Friendly. If the product passes successfully, it is awarded the certificate with a unique certification code (Asthma and Allergy Foundation of America, 2019).

The Allergy UK Seal of Approval. This seal of approval, which was established in 1995, has turned into a worldwide recognised product certification. It is being utilised in 135 countries by over 100 firms on a wide range of goods that have been subjected to rigorous independent scientific testing, showing their effectiveness in decreasing or eliminating allergens from indoor environments. Furthermore, it acts as an endorsement for products that are free of allergens that might cause undesirable reactions and that have undergone independent clinical examination and assessment to ensure they are suitable for allergy sufferers. In addition, leading scientists and allergy specialists methodically created the criteria for getting this accreditation, tailoring them to match the unique requirements of each product category (Allergy UK, n.d.).

EU Eco-label. According to the European Commission (n.d.), “The EU Eco-label is the official voluntary label for environmental excellence”. This is because the EU Eco-label is recognised globally as a certification that supports customers in recognising goods and services that have been proven to be environmentally and health-friendly via standardised methods and scientific validation developed by the European Commission and Member States in collaboration with industry, consumer organizations and environmental NGOs. Furthermore, this label is the only ISO 14024 Type 1 eco-labelling method in the EU. This indicates that it is trustworthy because of its strict standards for reducing environmental impact across the whole manufacturing cycle (from raw materials to end-of-life) and because it has been third-party verified to fulfil the criteria (Environment European Commission, n.d.). Moreover, the EU eco-label is not limited to a single product category but has grown over time to include new

product categories, each with its own set of criteria that addresses its own features. Some product categories are electronic equipment, furniture and mattresses, cleaning, clothing and textiles, and personal and animal care products (Environment European Commission, n.d.).

1.2.2. Eco-labelling and Consumer Behaviour

The impact of eco-labelling on customer behaviour is debated. A study by Riskos et al. (2021) indicated that there is a direct influence on customer behaviour and can be used as a unique marketing and advertising tool. Other studies have found that multiple factors culminating in a general lack of awareness prevent eco-labels from impacting consumer behaviour (Gunne & Matto, 2017). There is a recurring agreement among various studies that education and awareness of eco-labels must be increased before they can be considered more influential in consumer behaviour (Panopoulos et al., 2023). Certain demographics, however, have been shown to be more receptive to eco-labelling when purchasing (Sultana, 2011). There is a belief that culture can contribute to how much an eco-label influences a consumer (Gunne & Matto, 2017).

In a study conducted by Hashim et al. (2018), it was discovered that social influence plays a significant role in shaping consumer purchasing behaviour, particularly in the context of green purchases. The researchers identified that opinions from peers and social recognition were the driving factors for sustainable purchasing. Consequently, it can be inferred that many consumers prefer to be regarded as leading an environmentally conscious and friendly lifestyle in the eyes of their peers. This is typically reflected in their purchasing habits (Hashim et al., 2018)

This pursuit to be seen and accepted for using environmentally friendly products allows eco-labels to be used as a marketing instrument. They act as a tool or beacon, informing the consumer how a product impacts the environment and thereby influencing their purchasing decisions (Hashim et al., 2018). The eco-label can be seen to bring value to the product, validating the consumer and making them feel a sense of prestige from the purchase (Gunne & Matto, 2017). Furthermore, beyond its marketing role, the eco-label serves as an essential source of information. In some cases, it may be the primary tool for educating consumers about the environmental footprint of a product.

In the context of current marketing trends, Panopoulos et al. (2023) suggest that younger generations, such as Gen Z, are more susceptible to the effects of social marketing. Among the numerous strategies, influencer marketing is thought to be a key marketing instrument to further increase sustainable consumer purchasing behaviour. From the younger

generations, Gen Z is considered to be the most concerned about the environment and also for being the most active on social media platforms. (Panopoulos et al., 2023).

Currently, the focus for sustainable marketing lies on production and legislation, or in sales and marketing; with the consumer not to be considered the primary focus (Aasmäe, 2021). Over the past three decades, eco-labels have been the primary tool of sustainable marketing. However, the situation is changing, and there is now an abundance of eco-labels available to customers, although with a scarcity of alternative information sources (Kostova & Ivanova, 2021).

Previous research can be contradictory regarding eco-labels and consumer behaviour. Some studies report that too little is understood regarding the effects of eco-labels on customer behaviour or that even if eco-labels are recognized it does not mean the customer will purchase the product (Gunne & Matto, 2017). Other studies exhibit results that eco-labels positively influence customer behaviour, or that if customers were given greater knowledge regarding eco-labels, they would be more likely to purchase these products (Riskos et al., 2021). Different approaches in these studies can be attributed to the varied results, thus hindering the creation of a clear and concise result. A consensus can be made that consumers view eco-labels favourably (European Economic and Social Committee, 2016). When consumers are faced with identical products, environmental factors may be the decisive factor that influences the final decision.

Consumer's trust in eco-labels is paramount. When consumers lack trust in the brand, origin country, or had a previous bad experience with a product, the results can be muddled (Gunne & Matto, 2017). Unfortunately, the increasing number of diverse available eco-labels has allowed for the growth of misconceptions, enabling consumers to place their trust in labels that may not be genuinely valid. For many consumers, eco-labels are their major source of information, and their trust and confidence are based on the legitimacy of these labels (van der Ven, 2019).

To ensure the continued effectiveness of eco-labels in fulfilling their purpose, proactive measures must be taken. This involves ensuring the validity of eco-labels, actively combating misinformation, and addressing the issue of fake labels. This would also encompass the profusion of eco-labels as this issue has been identified as a primary source of misinformation and consumer confusion (Sharma & Kushwaha, 2019).

Another factor that is thought to influence consumer behaviour regarding eco-labels is culture. Gunne & Matto (2017) highlight that the majority of previous studies about consumer behaviour and eco-labels have originated from industrialized countries. The various results

compiled in these studies may show that consumers' perception of eco-labels varies from culture to culture. However, the results cannot quite be determined due to the lack of information and studies done on this specific aspect.

Cultures that exhibit more environmental concern in general are more inclined to recognize an eco-label and its meaning (Kostova & Ivanova, 2021). In various studies on eco-labels, consumer awareness of different eco-labels is most prevalent in cultures that are also more environmentally aware and practice sustainability on a larger scale (Gunne & Matto, 2017).

1.2.3. Importance of Eco-labels from a Business Perspective

The rise of green consumerism. With growing concerns about the environment, more consumers are turning towards products with eco-labelling as environmentally friendly shopping becomes more popular. Eco-labels, beyond being perceived as mere sales instruments, are now seamlessly integrated into marketing strategies and function as effective communication tools in the marketplace (Hashim et al., 2018). As an increasing number of consumers actively seek to change their habits to those that are more environmentally friendly, they look for these messages on their products. In essence, the eco-label can serve as a symbol of the respective needs or wants of the consumer. Also, it serves to identify the product that carries the respective values the consumer desires. Some studies have indicated that eco-labelling can have a significant impact on consumer purchasing behaviour (GÖKIRMAKLI et al., 2017). Eco-labels can be a deciding factor in a customer’s purchase choice or can help the customer maintain their desire for green shopping habits.

One survey conducted by Iraldo & Barberio (2017) provided evidence that businesses saw the **added value from eco-labels** as indicators of their own eco-innovation efforts. During the process of certification, companies were finding opportunities within their operations and processes to become more efficient and implement cost-saving procedures. In this context, the eco-label can be seen as the first step for many companies in transitioning to eco-friendly operations (Kostova & Ivanova, 2021). It is widely acknowledged that a company that invests time in researching an eco-label is beginning to recognize sustainable long-term changes that may be implemented within its own production operations.

Moreover, eco-labels play a crucial role in bridging the information gap between environmentally friendly product producers and consumers making environmentally minded purchases (Iraldo & Barberio, 2017). Functioning as a guide, eco-labels lead consumers to products and producers that match their own requirements or wants. Businesses leverage eco-

labels as a communication and marketing tool to further attract the market share of environmentally focused consumers. Social marketing has also been demonstrated to be very effective in shaping consumers' purchasing habits towards green habits (Kostova & Ivanova, 2021). This marketing strategy may be enhanced further by using eco-labels.

Businesses considering adopting eco-labels for their products would most likely have to alter some aspects of their products in order to be able to implement them. The decision to apply eco-labels is dependent on whether such an action is viewed as rewarding. As a result, if the business determines it is worthy, it must be financially prepared to bear probable short-term profit losses during production adjustments while anticipating the achievement of greater long-term goals. Another motivation for a business to embrace eco-labels includes the chance to **charge a premium price and potentially gain access to a broader market** (Iraldo & Barberio, 2017). With various levels of government also concentrating on environmental policies, there are opportunities for businesses to align with these green policies. Fiscal incentives for businesses to greenwash their operations are strongly recommended (Kostova & Ivanova, 2021).

Another significant advantage that businesses can find from using eco-labels is the enhancement of their competitive advantage. Companies point to eco-labels as instrumental in increasing consumer interest in their products and services. Furthermore, companies reported that eco-labels **allowed them access to new markets** and customer segments that were previously unattainable. Additionally, eco-labels contributed to maintaining a foothold in markets where they had been struggling (Iraldo & Barberio, 2017). Some cultures have shown a willingness to pay a premium for green products (GÖKIRMAKLI et al., 2017). In turn, eco-labels can help customers save money. For example, with energy products, those with eco-labels tend to waste fewer resources in operation and cost less to use overall (Kostova & Ivanova, 2021). This can be observed in a company's transition to renewable energy or energy-efficient machinery.

Increase in company environmental knowledge. Some companies stated that by attaining an eco-label, they had set and achieved environmental targets based on their newly acquired environmental knowledge. (Iraldo & Barberio, 2017). By increasing their own environmental knowledge in the process of achieving the eco-label, organizations also reported being able to set and implement their own standards in their production and operational processes. Beyond setting these standards, this new-found environmental knowledge translated into other tangible benefits, especially in terms of energy efficiency. Companies reported

significant improvements in energy, water, and waste efficiency - not only fostering environmentally friendly practices but also yielding cost savings (Sultana, 2011).

Currently, the majority of companies join the eco-labelling movement in response to intense environmental-based pressure from external groups. If more companies are to participate in eco-labelling and sustainable operations, financial incentives and government subsidiaries are indispensable (Sultana, 2011). Incentives towards certifiable and valid eco-labels may also curb consumer confusion (Vilaça, 2022).

1.2.4. Limitations of the Adaptation of Eco-labels in Businesses

A choice between short-term profitability and sustainability. Many eco-label criteria require businesses to modify their operations, resulting in a temporary rise in development and production expenses. This, in turn, leads to a drop in revenue until changes are implemented. Simultaneously, businesses would also have to allocate large portions of time dedicated to reviewing the criteria and studying how this may be implemented into their business and operations (Iraldo & Barberio, 2017).

While there are other eco-labels that a business can obtain through less burdensome methods, opting for these labels may jeopardise the company's credibility (van der Ven, 2019). The perception of a business adopting a dubious eco-label for their products might have a detrimental impact on consumer purchase intention (Vilaça, 2022), potentially discouraging companies from seeking eco-labels at all.

Companies have been found to be averse to eco-labels as the obstacles when applying are quite daunting. Acquiring eco-labels needs a large amount of documentation and may entail substantial expenses only to implement the necessary changes (Iraldo & Barberio, 2017). These challenges don't necessarily mean only slow application procedures, but there is also a lack of acknowledgement for becoming environmentally conscious from governments, retailers, public institutions, or consumers. The high implementation costs connected with eco-labels, along with the current perceived payoff or the daunting nature of the process, may deter companies from pursuing this strategy. The rigorous process of obtaining a credible eco-label can easily be offset by the consumers' inability to distinguish between a credible label and one that is superficial or privately created (van der Ven, 2019).

Cost, labour and technology demanding. Companies complained that in the initial stages of applying, hidden costs were seen as a deterrent. These additional costs include hiring consultants, testing procedures, and employee training (Iraldo & Barberio, 2017).

A continuous challenge faced by eco-labels is maintaining a balance between scientific and credible sets of criteria while ensuring that these criteria are feasible for companies to obtain for their products and manufacturing process. The demanding criteria for some eco-labels, as well as the expense of verification, time, and needed investments, can all impede adoption For smaller companies, the cost of adoption is a formidable issue, while for larger companies, there are barriers in the form of technical considerations, competence gaps, and a lack of both internal and external resources and support (Iraldo et al., 2020).

Uncertain return on investment. According to Gökirmakli et al. (2017), consumers also prefer not paying extra for a product especially when it comes to environmental products as they have been shown to not be as strong or as effective as other products (GÖKIRMAKLI et al., 2017). Besides high price being a critical factor in consumer intention, brand loyalty can also be a significant factor in the purchase decision. Consumers can also value quality, familiarity, and what product is perceived as healthier. Another barrier to eco-labels lies in the time of consumers, consumers may not feel as though they have the time or knowledge to make more informed decisions (Vilaça, 2022).

Another limitation comes from **consumer confusion**. The various types of eco-labels and their differences have contributed to general confusion as to what each label means (Gunne & Matto, 2017). Without better government incentives and community programs to educate consumers, research is often left to the individual to gather their own knowledge. A general lack of knowledge combined with a variety of eco-labels can lead to confusion and misinformation. In addition, the large number of different eco-labels not only serves to further confuse consumers, but some may develop preconceived notions and ideas that strip the label of their credibility (European Economic and Social Committee, 2016).

Moreover, the ambiguity of some labels and their unclear purpose or meaning can add to consumer confusion. There is a pressing need for a strong emphasis on ensuring the credibility and validity of eco-labels, accompanied by a mindful approach to prevent a deluge of different ones. It is worth noting that there are 458 eco-labels in 197 countries, covering 25 sectors of industry (Geneix, 2015). The problem of ambiguity is created when valid eco-labels are awarded by an impartial and unbiased third party that grades on predetermined criteria, while some manufacturers place labels that are uncertified (Gosselt et al., 2019). This creates confusion for consumers who struggle to distinguish between a certified eco-label and one that is not genuine.

Multiple studies have reported findings or come to conclusions that eco-label profusion is correlated with consumer confusion regarding eco-labels (Gunne & Matto, 2017). The

consensus is that the deluge of different labels and their meanings is the primary cause of customer confusion. To combat this issue, it is suggested that there be a reduction in the number of various eco-labels displayed on products. A potential solution could involve government sponsorship of a singular label or fewer labels, thereby incentivizing companies to actively pursue an eco-label for their products. The streamlining of labels would contribute to combating customer confusion and promoting objective knowledge, a more focused and comprehensible approach. This approach not only makes it easier for customers to comprehend what each label stands for, but it also disarms false narratives and misconceptions that consumers perceive about the multitude of eco-labels that there are now. Currently, consumers are susceptible to misinformation due to the profusion of eco-labels and their various meanings. This results in eco-labels being limited to the consumer's knowledge of the different labels. (European Economic and Social Committee, 2016)

1.2.5. Greenwashing

Due to the growing demand for green products, a circumstance has developed that has been deemed as "Greenwashing." Studies have defined the term as a promotion or advertisement that deceives the customer about the product's environmental benefits (Aasmäe, 2021). Other definitions include companies having a dismal and unsatisfactory environmental performance while simultaneously communicating that the company is performing acceptably and satisfactorily (Vilaça, 2022). Due to the profusion of environmental disinformation as well as irreputable companies attempting to penetrate the green market by supplying products perceived to be green but are not, consumers have become increasingly sceptical of the authenticity of a company or product's environmental claims (Gatti et al., 2019). Greenwashing has exploded in the last two decades, correlating with the rise of environmental concern.

Greenwashing is akin to false advertising since it is the process of misleading consumers about a product's environmental benefits (Gatti et al., 2019). It can also be attributed to a company's communication such as misleading claims regarding products or a company's environmental practices. It can be construed as a marketing technique as well, as companies attempt to gain green consumers (Aasmäe, 2021). The term greenwashing can be used in multiple situations to define the same practice of deceiving green consumers, either through communication as in advertisements or through the production of products that are not environmentally friendly. Some consequences of greenwashing have been found to include increased customer scepticism. This is attributed to companies engaging in greenwashing

having an already poor environmental performance, consumers tend to witness a growing gap between the company's advertising and its performance (Vilaça, 2022).

Eco-labels may be the solution to greenwashing but may also be contributing to the issue simultaneously (Aasmäe, 2021). Proper regulation regarding eco-labels can inhibit this issue but the increased use of fake eco-labelling has been a constant crux. For now, no advertising or greenwashing participation is shown to be more beneficial to a company. Deceitful advertising has contributed to consumers having poor attitudes to greenwashed ads and brands. Consumers believing, they are being deceived by a greenwashed product lose trust in the product and brand. This consumer scepticism can be a contributing factor to the consumer purchasing decision. It has been found that when consumers detect greenwashing, it triggers a negative attitude, making it harder for them to recognize the benefits of green products, and often leading to the rejection and dismissal of the product (Vilaça, 2022).

1.2.6. Previous Research on Eco-labelling and Consumer Behaviours

This section summarizes previous literature and studies done that are associated with eco-labels and consumers. The studies contained the term "eco-labels" or "eco-labelling." The purpose of this section was to collect, analyse and summarize previous literature using literature research methods.

Riskos et al. (2021) state "that the credibility of eco-labels positively affected the consumer's attitude towards a green product purchase". Supporting hypotheses were also validated in the study, such as the credibility of eco-labels positively correlating with eco-label involvement, and attitudes towards green product purchases having a positive correlation with green purchase behaviour and eco-label involvement. Most importantly in this study, eco-label involvement has been found to have a positive relationship with green purchasing behaviour. Previous research held a contrary perspective in that there was an asymmetrical relationship between green attitude and green purchasing behaviour (Riskos et al., 2021).

For companies, Iraldo & Barberio (2017) found that the EU eco-label effects are not effective in regard to increasing sales. The demand for eco-labelled products, specifically the EU eco-label, was not enough to offset the cost of attaining this label for their products. Companies perceive the lack of consumer awareness and lack of promotion from public and national institutions to be the main causes of the absence of market demand. Moreover, the authors went on to summarize what suggestions could be implemented to drive companies to obtain the EU eco-label, to further increase the appeal of obtaining it. These suggestions included raising public awareness through informative and educational campaigns on local and

national levels. Financial incentives are another suggestion due to the cost and complexity that comes with licensing and verification with the EU eco-label. This is a much more complex suggestion as the question of where to apply these financial incentives, such as in market costs or administrative costs, is difficult to answer.

Kostova & Ivanova (2021) found that the eco-labels are serving their original purpose of being an informative tool for consumers. Additionally, the eco-label serves to reduce the imbalanced information consumers receive when dealing with environmental aspects of products. However, the authors found that while a small portion of the consumers used the eco-label in their purchasing decision, a significant portion of the consumers do not consider the eco-label in their purchasing decisions. The exclusion of the eco-label from the consumer purchasing decision is attributed to the relationship between higher costs with eco-labelled products. Depending on the product, a fraction of consumers do not see price as a barrier but as enticement due to them seeing the eco-labelled product as of higher quality (Sharma & Kushwaha, 2019). Most consumers, as previously discussed tend to adhere to established behaviour. Meaning that the consumer may make purchases in accordance with social norms as well as their own previous purchasing habits (Kostova & Ivanova, 2021).

Sultana (2011) finds that the higher the education level, the higher the level of environmental awareness in a consumer as well as that there is no difference between the level of awareness regarding the eco-label and level of education, but the consumers' overall awareness of the eco-label was dismal. Gender was found to not affect environmental awareness or level of awareness with the eco-label. The author encourages future research to delve into the issues of lack of awareness of the eco-label and what can be done to raise awareness (Sultana, 2011).

Lastly, Gunne & Matto (2017) found that consumers wished to be more informed regarding eco-labels which revealed a conflict between consumer requests for information and the dearth of progress in providing consumers with this sought-after information. Those consumers who did search for information on eco-labels would purchase more green products. Additionally, the researchers discovered that the level of knowledge, rather than objective knowledge, had no difference or impact on the levels of confusion consumers had regarding eco-labels. This means, the higher the level of confusion a consumer feels with eco-labels, there are more chances for a negative effect on green purchasing behaviour. Thus, the authors recommend that consumer confusion be reduced. To achieve this, it should start with the root cause of confusion, which is attributed to the profusion of eco-labels (Gunne & Matto, 2017).

2. RESEARCH METHODOLOGY

2.1. Aim, Objectives, and Conceptual Model

The **aim of the research** is to examine and understand the relationships between consumers' awareness and perception towards eco-labels, as well as to investigate consumers' intention to purchase eco-labelled laundry care products from a theoretical, quantitative, and analytical perspective.

The **objectives of the research** are shown as follows:

1. To evaluate consumers' subjective and objective knowledge of eco-labelling.
2. To measure consumers' perceptions of eco-labels across three dimensions: health/safety, environmental impacts, and animal welfare.
3. To quantify consumers' intention to purchase eco-labelled laundry care products.
4. To identify the underlying factors influencing consumers' intention to purchase eco-labeled laundry care products and their subsequent purchasing behaviors.
5. To use the information gathered to formulate recommendations for businesses seeking to boost the effectiveness of eco-labeling strategies for laundry care products.

The problem of the research. Despite the rising importance of eco-labels in promoting environmental sustainability, their usefulness in influencing consumer decisions has received little attention, particularly in markets like Lithuania. This lack of knowledge presents challenges for businesses considering placing eco-labels on laundry care goods or entering the Lithuanian market. Therefore, the problem to be solved in this research is how consumer's awareness and perception towards eco-labels influence consumer's intention to buy and later on purchasing behavior.

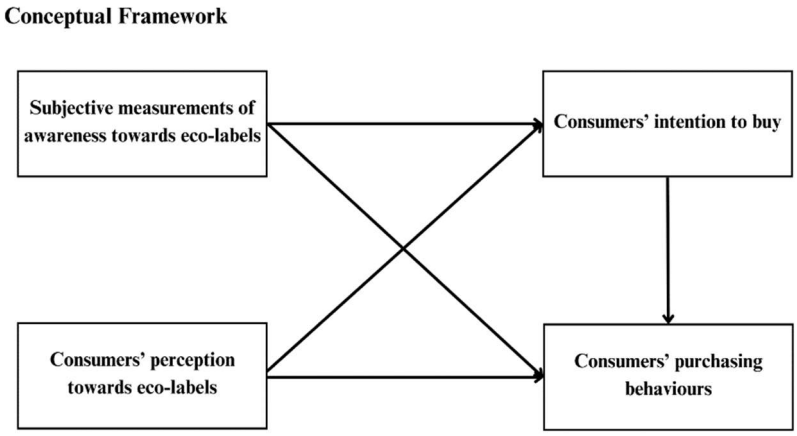
Conceptual model and variables. According to the conceptual model designed (***Figure 1***), *independent variables* include:

- "Consumers' subjective measurements of awareness towards eco-labels"
- "Consumers' perception towards eco-labels"

While *dependent variables* include:

- "Consumers' intention to buy."
- "Consumers' purchasing behaviors."

Figure 1 *Conceptual Research Framework*



Source: Prepared by the authors and based on research results

Subjective measurement of consumers' awareness of eco-labels. This independent variable explores the subjective and personal characteristics of how consumers evaluate their own level of knowledge, familiarity, and comprehension of the environmental information provided by eco-labels on diverse items, specifically on laundry care products.

Gunne & Matto (2017) states that some studies have found that multiple factors culminating in a general lack of awareness prevent eco-labels from impacting consumer behaviour. Moreover, previous studies on consumer awareness have concluded that there needs to be an increase in education and awareness programs regarding the eco-label to further increase its effectiveness in a role that influences the consumer's decision to purchase (Gunne & Matto, 2017). Even still, the eco-label has been shown to act as a tool guiding and informing the customer on the product's environmental impacts (Hashim et al., 2018). This information allows us to evaluate consumers' awareness and differentiate the impacts of different eco-labels. Furthermore, eco-labels have been found to be a valid marketing tool that acts as a beacon and have been spreading awareness for decades (Sharma & Kushwaha, 2019). Having been allowed to influence consumers for some time in different products, this study will also gauge consumer awareness. In different industries such as food and agriculture, the eco-label has been shown to influence consumer purchasing decisions (Sharma & Kushwaha, 2019). Currently, there is a lack of research that focuses on awareness of Lithuanian consumers of eco-label used in the laundry care market.

Consumers' perception towards eco-labels. This independent variable comprises consumers' attitudes, beliefs, and general assessment of eco-labels. In addition, this variable is critical in understanding how consumers interpret and respond to the information provided by

eco-labels on products, influencing their decision-making processes and behaviours. Thus, this information can be used on our research to predict whether eco-labelling is generally impacting consumers' intention to buy positively or negatively. Since greenwashing has contributed to consumer negativity about eco-labels when that consumer is confused by the profusion of eco-labels (Vilaça, 2022). This profusion in labels can cause consumers to see the label as less credible. Also, negative perceptions are further increased through deceitful eco-labels which can lead to the consumer failing to distinguish between a credible label and a fraudulent one (van der Ven, 2019). Other studies suggest that the eco-label has an influence on the consumer purchase (Hashim et al., 2018). In different industries and products, eco-labels have been found to have varying perceptions to consumers such as seeing the product to be of a higher quality or in giving positive feeling to feeling confused by the different labels (Sharma & Kushwaha, 2019). Therefore, this variable's section covers three different aspects, health (also known as safety), environmental impact, and animal welfare; all of which have been seen to have been influenced by eco-labels (Sharma & Kushwaha, 2019). As eco-labels cover a wide range of varieties, consumers have related and perceived them differently. This study will be able to add an analysis on Lithuanian consumers' perception.

Consumers' intention to buy is influenced by awareness and perception. At the same time, it also has an impact on consumers' purchasing behaviors. The eco-label has been shown to have an impact on consumer purchasing in certain cases (Hashim et al., 2018). This can be done either negatively or positively. Eco-labels can also have a negative effect on consumer purchasing in certain cases where consumer confusion or misinformation are prevalent (Vilaça, 2022). Non-credible eco-labels have harmed consumers perception and have had negative influences on consumer intention to buy. For some products in industries, such as cleaning supplies, eco-labelled products are not seen as effective as their counterparty's further harming the consumers intention to buy (Gunne & Matto, 2017). According to Vilaça (2022), consumers believing they are being deceived by a greenwashed product lose trust in the product and brand. This consumer scepticism can be a contributing factor to the consumer purchasing decision. It has further been found that when consumers detect greenwashing, it triggers a negative attitude, making it harder for them to recognize the benefits of green products, and often leading to the rejection and dismissal of the product. Other studies have shown the eco-label has a positive influence on consumer intention to purchase; for example, some consumers give more preference to eco-labelled products or are willing to pay a higher price as they believe it is of higher quality (Sharma & Kushwaha, 2019). Similar studies exhibit results that eco-labels positively influence customer behaviour, or that if customers were given greater

knowledge regarding eco-labels, they would be more likely to purchase these products (Riskos et al., 2021).

Consumers' purchasing behaviors are measured and used for comparison with consumers 'intention to buy. The reason is that intention to purchase might not always lead to actual consumption behaviors due to factors and barriers like affordability, accessibility, and number of choices. These choices can include credibility and the confusion a consumer may face over the amounts of various eco-labels (Vilaça, 2022). Consumer purchasing behavior is also influenced by familiarity since consumers prefer buying products, they are familiar and knowledgeable about (Iraldo et al., 2020). Furthermore, price has a divisive influence as some studies have shown the consumer to show an aversion to higher priced eco-labeled goods and other showing consumers willing to pay more to maintain their own environmental agenda or they perceive the eco-labeled product to be of higher quality (Sharma & Kushwaha, 2019). Gauging the consumer's purchasing behaviors in this study can help identify factors such as affordability, green motivation, and so forth.

2.2. The Procedure and Instrument of Data Collection

Research method and justification. The paper adopts an inductive research theory. Inductive research theory focuses on gathering data, identifying patterns, and developing a conclusion based on them. The goal of inductive research theory is not to test a hypothesis but to develop a theory. Among all the inductive research methods, the qualitative research strategy is one of the most widely used (Zikmund et al., 2009). Currently, there is very little research that covers the green consumption behaviors of Lithuanian consumers. Compared with the qualitative research method, the quantitative research strategy has a strong emphasis on quantity, frequency, and intensity. Therefore, the adaptation of a quantitative research method in this research allows us to develop a general knowledge of Lithuanian consumers, including their perception of different eco-labels, their level of awareness and their intention to purchase eco-labelled laundry care products.

Research instrument. Online questionnaires were used to collect the necessary data. For creating the online questionnaire, Google Forms was used. The questionnaire was active between 8th and 25th November 2023. As English is the chosen language of this paper, and taking inclusivity of respondents who are non-Lithuanian speakers into consideration, the questionnaire is in English. For data analyses, the data was first organized, then cleaned by using Microsoft excel, and later analyzed using SPSS IBM software.

Justification of the chosen research instrument. Online questionnaires are often used by scholars in research with a focus on the influence of different variables and consumers' willingness to pay or intention to buy (Hultman et al., 2015). Online questionnaires also help *eliminate the limitation of geographical locations* and allows researchers to reach targeted population across the country, that helps minimize error and increases diversity of respondents. Furthermore, compared with paper questionnaires, online questionnaires are filled in electronically by customers, it can *reduce the occurrence of error* happening when being transcribed from paper to computer (Zikmund et al., 2009). On top of that, online questionnaires are *low cost* and *less labor demanding*. Google forms is an entirely free platform and distributing them online can be done efficiently from anywhere of the world with limited human resources. Moreover, as respondents are able to fill in an online survey at the time and place that suit them best, it can increase their willingness to response.

Limitation of the chosen research instrument. On contrast of the advantages of online survey mentioned above, one of the limitations of it is the limited ability to gather information from specified respondents, as the aim of quantitative survey is to provide insights that is generally applicable on a large, targeted population via collecting and summarizing data from an intensive quantity of responses. As respondents are only required to answer the available questions on the survey, researchers are unable to ask any follow-up questions to gain a more in-depth understanding of respondents' answers. Furthermore, as the survey is distributed online, respondents are answering them solely, without further assistance and explanation from researchers throughout the whole process. In some circumstances, respondents might interpret the questions differently than what researchers intended to, or encounter difficulty understanding the questions due to language barrier or other reasons, causing potential inaccuracy in their responses. Aim at minimizing occurrence of the error, the questions were constructed in simple wording and in a straight-forward approach.

Data analysis methods. Questions of constructs were grouped, and the means were computed and used for further analysis. To determine and form linear regression models of the relationship between dependent variables and multiple independent variables, linear regression was used. To determine the strength of relationship between two variables, Spearman's rank correlation coefficient and Pearson Correlation Coefficient were used. On top of that, independent sample t test was used to analyze the differences between groups.

Structure of the questionnaire. Aligned with the conceptual framework mentioned in **Figure 1**, the questionnaire comprised of the following 6 sections.

Section 1 encompassed 1 **screening question**. It was used to precisely identify the target population among all the respondents, consumers who have purchased laundry products within the past 6 months. A *dichotomous question* was used here to avoid confusion and ensure the target population is selected amongst all the respondents.

Section 2 was the assessment **of no. of eco-label recognized** and the **level of awareness of Lithuanian consumers** towards eco-labeling. To objectively measure respondents' awareness about eco-labels, respondents were required to answer a *multiple-choice question* and select all the eco-labels that they can recognize. The eco-labels that can be found on laundry care products in Lithuania were included. Similar practices include research conducted by the EU regarding consumers' awareness about the EU Eco-label (European Commission, 2023). Later, respondents are required to subjectively rate their awareness of eco-labels. The questions were question 6 and 7 subtracted from a survey conducted by **Lund University School of Economics and Management**. The research aims to analyse the influence of subjective and objective knowledge of eco-labels on consumers' green purchasing practices. These two questions orientated on consumers' awareness about eco-labels, which are strongly related to the objectives of this research, and therefore were adopted and incorporated into the current survey. For these two questions, *semantic differential* and *Likert methods* were used respectively.

Section 3 focused on consumer **perception towards eco-labeling**. The measuring of perception towards eco-labels was based on questions developed by Ueasangkomsate and Salinee Santiteerakul (2016). As the research poses a strong focus on consumers' attitudes and intention to buy organic foods for sustainability, the measurement originally covered 5 aspects, including food safety, health, environmental impact, animal welfare, and local origin. The adaptability of questions was considered, due to the difference in the nature of food and laundry care products. Thus, health, environmental impact, and animal welfare were adopted in the survey. And since the strong correlation between health and safety of laundry care products, the health section is also renamed to health/safety. Questions and the wordings are mildly adjusted based on product nature and with the intention to make it easier for respondents to understand.

Section 4 was consumers' **consumption behaviors and intention to buy eco-labelled laundry care products**. The questions are also based on the same research developed by Ueasangkomsate and Salinee Santiteerakul (2016). In the original research, intention to buy original food was measured, therefore, questions were adopted with minor adjustments for easier understanding and alignment. These questions helped reveal the underlying motives

behind consumers' intention to purchase eco-labeled laundry products and provide insights on their willingness to purchase and pay more.

Section 5 aimed to identify consumers' purchasing behaviors. The questions are based on questions developed by Qinghua Zhu et al., (2018). The original research orientated in the green food consumption intention, behaviors and influencing factors among Chinese consumers. Therefore, objects in the questions have been changed from green food to eco-labeled laundry care products due to the different orientations between the two research.

For section 3 to section 5, *Likert method* was used. Statements were paired with scales of five response categories, ranging from "strongly disagree" to "strongly agree". This allows us to measure the respondents' level of agreeableness towards each statement and provide insights that are clear and understandable. On the other hand, one of the limitation of Likert method is that it is more *time consuming* for respondents to answer compared with other itemized scales, for example semantic differential method, as they are required to read the statements and understand thoroughly before they can proceed and select the answers that most reflect their agreeableness towards each and every statement (Malhotra & Birks, 2007).

Lastly, section 6 encompasses multiple **general demographic questions**, including sex, age, educational level, personal monthly net income, and whether the respondents have any kid(s). They are collected and used for analyzing potential correlations between these factors and other variables. Nominal scales were used for sex and educational level. Ordinal scales were used for age and income. Regarding whether the respondents have any kid (s), a *dichotomous question* was used. From all of the demographic indicators, education background and age were given emphasis due to previous studies mentioning them as being relevant factors influencing eco-label awareness. Education background indicator had the primarily goal to validate and determine if the findings from Sultana (2011) were applicable to this research, which suggested that "the higher the education level, the higher the level of environmental awareness in a consumer. Additionally, that there is no difference between the level of awareness regarding the eco-label and level of education". While **age range** goal was mainly to assess if the study by Panopoulos et al. (2023), which stated that younger generations exhibit greater environmental concern than their older counterparts, is applicable to this research.

2.3.Sampling and Data Collection

The **target population** is consumers who have purchased laundry care products in the past six months. The population size is unknown, and therefore, the population size is assumed to be large, which is above 100,000.

Sample size estimation. Many methods can be used to estimate the sample size. In this research paper, the sample size estimation was calculated using the *Cochran's Formula* as shown in **Equation 1.** N is the estimated sample size. Z is the standard error associated with the chosen level of confidence. For this paper, the confidence level of the research is set to be 95%. Therefore, the value of *Z* is 1.96. *p* is the estimated percentage in population, which is normally assumed to be 50%. *e* is the acceptable sample error, which is 8%. Based on calculation, the sample size was estimated to be 150.

Equation 1

Cochran's formula used to calculate the sample size.

$$N = \frac{Z^2 p(1-p)}{e^2}$$

Sample selection method. *Convenience sampling* is used to collect data from respondents. Samples were selected randomly. Social media was used as the main distribution channel. Links directing to the survey were distributed on internal social media of workplace and other social media platforms like Facebook groups (Foreigners in Vilnius).

Date collection frequency. Data is only collected once due to the following reason as consumers' level of awareness, perception, and intention to buy are unlikely to change within a short period of time.

Limitations of convenient sampling. Firstly, *random sampling error*. As surveys were distributed in a way that is the most convenient for researchers and the selected samples are merely a faction of the target population, the selected samples could be an imperfect representation of the target population. Secondly, *respondent error* could also occur. It could be caused by respondents' inability to answer accurately due to the lack of knowledge, unstable mental or physical state, or inability to recall the correct memory. It could also be caused by respondents' unwillingness to answer in a way that best reflects their motives and behaviors. The research focuses on the aspects of eco-labeling, which could be associated by many with values and ideas like sustainability, anti-animal cruelty, and green consumerism. The wish to avoid being associated with negative labels or the wish to create a positive image of themselves might cause respondents to provide inaccurate answers (Birks & Malhotra, 2007).

3. ANALYTICAL SECTION

3.1. Demographic Indicators of Respondents

A demographic data section was included in the survey in order to acquire a thorough picture of the research population and to ensure the validity and applicability of the findings. Demographic data is used to describe the population of survey respondents, gain a better understanding of why they answered the way they did, and gain useful insights into the different profiles that comprise the research sample (Cooper & Schindler, 2014). As a result, the purpose of this subsection is to offer information on essential demographic parameters such as gender, age, personal monthly income after taxes, educational background, country of residence, and whether or not they are parents. Furthermore, these demographic parameters were chosen since most of them were identified as essential aspects in the authors' investigations throughout the literature review.

The survey was distributed online and 187 people responded to the survey within the designated period. After the screening question" Have you purchased any laundry supplies in the past 6 months? e.g. detergents, cloth softeners", the number of valid responses dropped to 164. This screening questionnaire helped to ensure that participants met the desired characteristics for this research (Tracy, 2020). Of those 164 respondents that passed the screening question, 7 respondents were filtered due to age below 18 years old and providing irrelevant answers in certain questions. In the end, 157 valid responses were collected and used for further analysis.

Sex. Respondents were required to indicate whether they were female or male. As shown in **Table 1**, 61 out of 157 respondents in the survey identified as male, whereas 96 respondents identified as female. That is, men make up 38.9% of the 157 total respondents, while women make up 61.1% of the 157 total respondents. Thus, this means that the respondent based is predominantly female as it is more than the 50%.

Table 1 *Respondents' sex*

Sex	**Frequency**	**Valid Percent**
Male	61	38.9
Female	96	61.1
Total	**157**	**100.0**

Source: Prepared by the authors and based on research results

Age range. Respondents were asked to select an age group from the following options: 18 or younger, 19-24 years old, 25-34 years old, 35-44 years old, 45-54 years old, 55-64 years old, and 65 or older.

The survey findings revealed that 6 respondents were 18 or younger, 79 respondents were 19-24 years old, 51 respondents were 25-34 years old, 15 respondents were 35-44 years old, 4 respondents were 55-64 years old, and 3 were 65 or older. Totaling 163 respondents.

Two significant edits occurred throughout the analysis and calculation of the data. The first was to exclude the 6 respondents who indicated they were **18 or younger** from the whole survey given that they were minors. The second was that while editing the data, age groups of **55-64 and 65 or older** were combined due to insufficient data collected from these age groups. This merger aimed to maximize the reliability and representativeness of the results.

Following these two major edits, the results, as shown in **Table 2**, show that respondents aged 19-24 account for 79 (50.3% of all 157 total respondents), respondents who are 25-34 account for 51 (32.5% of all 157 total respondents), respondents ranging from 35-44 account for 15 (9.6% of all 157 total respondents), respondents in the ages 45-54 account for 5 (3.2% of all 157 total respondents), and respondents in the age range of 55 years or older account for 5 (3.2% of all 157 total respondents).

Table 2 *Respondents' age range*

Age ranges	**Frequency**	**Valid Percent**
19 – 24	79	50.3
25 – 34	51	32.5
35 – 44	15	9.6
45 – 54	5	3.2
55 or older	7	4.5
Total	**157**	**100.0**

Source: Prepared by the authors and based on research results

Based on these findings, as shown in **Table 2**, respondents aged 19-24 years old were the most prevalent age group, accounting for 50.3%, followed by those aged 25-34 at 32.5%. This implies that at least 80% of responses are from the younger generations, such as Generation Z or Millennials The higher prevalence of younger respondents could be attributed to the survey's distribution primarily through social media and company communication

channels, where the audience tends to be younger. In contrast, the least prevalent age groups were 45-54 years old, accounting for 3.2% of all responses, and 55 or older, accounting for 4.5%.

Monthly personal income (after tax/neto/net). Another demographic indicator asked was the respondents' monthly personal income after taxes, also known as net income. Within this question, respondents were provided with the following options: below 1000 euro, 1001 – 1500 euro, 1501 – 2000 euro, 2001 – 2500 euro, and above 2500 euro.

As shown in **Table 3**, respondents with a monthly personal net income below 1000 euro accounted for 49 out of the 157 total respondents, constituting 31.2% of all 157 total respondents. Those indicating a monthly personal income of 1001 – 15000 euros numbered 63 respondents representing 40.1% of all 157 total respondents. Additionally, 27 respondents specified earning monthly after-taxes of 15001 – 2000 euros, equivalent to 17.2% of all 157 total respondents. Moreover, only 7 respondents selected 2001 – 2500 euro as their monthly personal net income, constituting 4.5% of all 157 respondents. The highest monthly personal income after taxes (Neto) was chosen by 11 respondents, equivalent to 7% of all 157 total respondents.

Table 3 *Respondents' monthly personal income after taxes (net income/Neto)*

Monthly personal net income ranges	**Frequency**	**Valid Percent**
Below 1000 euro	49	31.2
1001 – 1500 euro	63	40.1
1501 – 2000 euro	27	17.2
2001 – 2500 euro	7	4.5
Above 2500 euro	11	7.0
Total	**157**	**100.0**

Source: Prepared by the authors and based on research results

Based in these results, it can be stated that 40.1% of respondents receive monthly wages ranging from 1001 to 1500 euros after taxes, making this the most prevalent income category. The second most common income category is less than 1000 euros, accounting for 31.2% of respondents, followed by the range of 1501 to 2000 euros, accounting for 17.2% of respondents. Furthermore, only 11.5% of respondents earn more than 2001 euros every month.

Surprisingly, responders earning more than 2500 euros outnumber those earning between 2001 and 2500 euros by 3.5%.

Educational background. Respondents were required to specify their highest educational background, being able to choose among the options of High school or below, College/Bachelor's degree/ Vocational training, Master's degree, and Doctoral degree.

In the survey's findings, as presented in **Table 4**, it was discovered that out of the 157 total respondents, 29 indicated a high school or below educational background, representing 18.5% of all 157 total respondents. The option College/bachelor's degree/ Vocational training was the most frequently chosen out of the four options, with 95 respondents indicating this as their highest educational background, equaling 60.5% of all 157 total respondents. 31 respondents specified their educational background as a master's degree, accounting for 19.7% of all 157 total respondents. The last available option, a Doctoral degree, was chosen only by 2 respondents, equaling 1.3%.

Table 4 *Respondents' highest educational background*

Educational background	**Frequency**	**Valid Percent**
High School or below	29	18.5
College / Bachelor's Degree / Vocational Training	95	60.5
Master's Degree	31	19.7
Doctoral Degree	2	1.3
Total	**157**	**100.0**

Source: Prepared by the authors and based on research results

These findings reveals that the most prevalent educational background is college, bachelor's degree, or vocational training background since 60.5% of respondents have indicated they have done one of this, while the least prevalent is PhD (doctoral) degree with just 1.3% respondents out of the 157 total respondents. Moreover, the second most prevalent educational background is master's degree with 19.7% and the third is high school or below with 18.5% out of all 157 respondents. Interestingly, there is only 1.2% difference of prevalence.

Country of residence. Another demographic indicator is the country of residence. In this question, respondents were required to specify if they reside in Lithuania or another country, and if another, state which country.

Upon reviewing the survey results, it was discovered that out of the 157 respondents, 13 respondents were from a different country other than Lithuania. Within these 13 respondents, each individual stated he or she resided in one of these countries: Estonia, Italy, Netherlands, Norway, and Portugal. For El Salvador, there were 2 respondents, while for the United States and Morocco, both had 3 respondents each.

Due to insufficient data collected from these other countries, they have been combined into one group named "Another country", which constitutes 8.9% of all 157 total respondents. Moreover, as illustrated in **Table 5**, it was discovered that out of the 157 respondents, 144 reside in Lithuania, accounting for 91.1%.

This distribution can be attributed to the survey being primarily shared among Lithuanians, expats living in Lithuania, companies within Lithuania, and social media groups targeting residents in Lithuania. However, it is possible that the individuals who indicated residence in a country other than Lithuania may have come across the survey in one of those groups or social media channels and participated accordingly.

Table 5 *Respondents' country of residence*

Country of residence	**Frequency**	**Valid Percent**
Lithuania	144	91.1
Another country	13	8.9
Total	**157**	**100.0**

Source: Prepared by the authors and based on research results

Kids. The last demographic indicator was whether respondents have kids or not. As shown in **Table ,** 33 respondents answered that they do have a kid (s), constituting 21% of all the 157 total respondents. Meanwhile, 124 respondents answered that they do not have kids, equaling 79% of all the 157 total respondents.

Table 6 *Respondents' answers on whether they have kids or not*

Do you have kids?	**Frequency**	**Valid Percent**
Yes	33	21.0
No	124	79.0
Total	**157**	**100.0**

Source: Prepared by the authors and based on research results

These findings imply that the majority of respondents are childless, which might be attributed to the sample's youth, with 50.3% falling in the 19-24 age group and 32.5% falling in the 25-34 age group, with a total of 82.8% of respondents falling in the younger demographic.

3.2. Reliability of Constructs and Computing Variables

Constructs from the research are reliable according to Cronbach's Alpha reliability coefficients (Original tables depicting Cronbach's Alpha coefficients are found in Annex 2 section). As shown in **Table** , the lowest Cronbach's Alpha coefficient amongst the 4 constructs was subjective measurement of awareness, amounted to .738, while the highest coefficient reaching was intention to purchase, amounted to .932. The Cronbach's Alpha coefficients of all constructs are between .6 and .95, therefore it is concluded that all of the them are found to be reliable. As such, the data can be further used for testing and analysing.

Table 7 *Cronbach's Alpha coefficients of each tested construct*

Measured construct	Cronbach's Alpha coefficients
Subjective Measurement of Awareness	.738
Perception towards Eco-labels	.894
Intention to Purchase	.932
Purchasing Behaviours	.916

Source: Prepared by the authors and based upon research results

For the research to continue to be tested, it is necessary to figure the variables. The average means of each construct must be summed into one average. This results in 9 different items measured in perception combined into 1 variable; Intention to Purchase had 8 items that

were combined into 1 variable; Purchasing behaviors had 4 items which were combined into 1 variable.

3.3. Descriptive Statistics

The framework comprises of 4 constructs, “subjective measurements”, “perception of eco-labels”, “intention to purchase”, and “purchasing behaviors”. These constructs consist of 2, 9, 8, and 4 questions respectively. Each question was measured using 5 points Likert scale ranging from strongly disagree to strongly agree. The means of the constructs are as shown in **Table 8.**

Table 8 *Comparison of means*

Scale	Mean
Subjective Measurements	2.3471
Perception towards Eco-labels	3.5117
Intention to Purchase	3.4260
Purchasing Behaviours	2.9586

Source: Prepared by the authors and based upon research results

Looking into

Table , the mean of the constructs is distributed amongst 3, which is the mid-point of the 5-points Likert scale. The average gained from combining all other means is 3.060. This indicates a lower tendency of having outliners and extreme values in the data set. The highest mean was found to be “Perception towards eco-labels” with a mean of 3.5117, which is slightly above the mid-point. It indicates that population tends to have a positive view towards eco-labels. The mean of “Intention to purchase” is also above the mid-point, which is 3.4260. The result tells that people have the intention and are considering purchasing eco-labeled products given the opportunity. However, when it comes to “purchasing behaviours”, the mean of the construct was recorded at 2.9586, showing that when it comes to actual or past purchasing decisions performed, respondents do not behave in the way they intend to. A gap between intention to purchase and actual purchasing behaviours could possible exist due to factors like product availability, financial situation, brand loyalty, pricing of other similar products, and many others. Lastly, the mean of “Subjective measurements of awareness towards eco-labels” recorded to be the lowest, approximately 2.3471. It indicates that the respondents tend to

perceive themselves as not very knowledgeable and believe themselves to have moderate level of confusion when it comes to eco-labels.

Before the data gathered can be used for further testing and analyzing, it is essential to first perform normality tests to ensure that the data is normally distributed. There are various ways to test the normality of the data including the use of graphs and conducting analytical test like Kolmogorov-Smirnova and Shapiro-Wilk (Das & Imon, 2016). For the data to be considered as normally distributed, the level of significance of either Shapiro-Wilk or Kolmogorov-Smirnov tests should be above .05, which is equals to the chosen level of significance for this research. The results of the tests are as shown in ***Table*** . As the level of significance of all constructs are below 0.05, the data gathered are proven to be normally distributed.

Table 9 *Tests of normality*

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Perception towards eco-labels	.141	157	<.001	.919	157	<.001
Intention to Purchase	.118	157	<.001	.957	157	<.001
Purchasing behaviours	.117	157	<.001	.948	157	<.001
Subjective Measurements of Awareness towards Eco-labels	.123	157	<.001	.956	157	<.001

Source: Prepared by the authors and based upon research results

However, as mentioned, normality of data can also be tested and evaluated through graphical methods, for example normal Quantile-Quantile Plot (Q-Q plots) were used in this case. Data that are normally distributed will be in close proximity and form a diagonal line. Points that deviate from a diagonal line in a non-linear pattern indicate data that are not normally distributed. Based on the normal Q-Q plots (Seen in Annex 2), the data of the constructs were considered to be normally distributed.

Regression. To prove the independent variables, have influence on the dependent variables, the level of significance of ANOVA test shall be below .05. If the level of significance is above 0.05, the reliability of the model is unclear. The coefficient of determination, R square in the model summary **Table 10**, shows the proportion of variation in

the dependent variable that is accounted for or explained by the independent variables (Zhang, 2018). For the effect size to be considered as large, it shall be at least above 0.25.

Table 10 *Regression of intention to purchase eco-labelled laundry care products*

Coefficients					
	Unstandardised B	Coefficients Std. Error	Standardised Coefficients Beta	T	Sig.
Constant	**.0857**	.273		3.137	.002
Subjective	**.217**	.074	**.266**	3.995	**<.001**
Perception	**.586**	0.080	**.488**	7.336	**<.001**

a. Dependent variable: intention to purchase

Source: Prepared by the authors and based upon research results

As mentioned in 2.1, the independent variables of "intention to purchase eco-labeled products" are "Subjective measurement of awareness towards eco-labels" and "Perception towards eco-labels". The level of significance of ANOVA test is below .001, which means the independents variables are significance to the dependent variable. Furthermore, the coefficient of determination (R Square) was 0.393. It indicated that the independent variables could explain 39.3% of the variance of intention to purchase eco-labeled products, showing a strong effect size of the independent variables. Moving on to the coefficients table, the level significance of both "subjective measure of awareness towards eco-labels" and "perception towards eco-labels" were both below <.001, therefore, both independent variables were considered to be significant to the dependent variable. The results **Table 10** showed that compared with the perceived level of awareness of consumers ($\beta = 0.266$), the perception consumers have towards eco-labels ($\beta = 0.488$) can have a bigger impact on their intention to purchase eco-labelled products. There is also a weak correlation between "Subjective measurement of awareness towards eco-labels" and "perception towards eco-labels" indicated by the result of .329 of Pearson correlation test. The intention to purchase could be estimated using **Equation 2**.

Equation 2 *Intention to purchase eco-labeled products.*

$$Intention\ to\ purchase = 0.857 + 0.217 \times Subjective\ measurements + 0.586 \times Perception$$

Moving on to “Purchasing behaviours of eco-labeled laundry care products”. Its independent variables are “subjective measure of awareness towards eco-labels”, “perception towards eco-labels”, and “intention to purchase”. The level of significance of ANOVA test was <.001, which means that the data are a good fit. The independent variables have large effect size (R2 = 0.654) on the “Purchasing behaviors of eco-labeled laundry care products” and are able to explain 65.4% of the variance of the “Purchasing behaviors of eco-labeled laundry care products”. In **Table** can the level of significance of “subjective measure of awareness towards eco-labels”, “perception towards eco-labels”, and “intention to purchase” be found, which are <0.001, 0.356, and <0.001 respectively. As the level of confidence of the research was set to be .95, “Perception towards eco-labels” (P = .356) was proven to have no significant direct relationship with “purchasing behaviors of eco-labeled laundry care products”. Among the remaining two variables, “Intention to purchase” (β = 0.727) was proven to have a bigger impact on “purchasing behaviors” than “Subjective measurement of awareness towards eco-labels (β = 0.211). Purchasing behaviors of eco-labeled laundry care products can be predicted using **Equation 3**.

Table 11 *Regression of purchasing behaviors of eco-labelled laundry care products.*

Coefficients					
	Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
Constant	-.205	.253		-.808	.420
Subjective measurement	.205	.051	.211	3.984	<.001
Perception	-.077	.084	-.054	-.926	.356
Intention	.862	.072	.727	11.899	<.001

a. Dependent variable: Purchasing behaviors of eco-labeled laundry care products

Source: Prepared by the authors and based upon research results

Equation 3 *Purchasing behaviors of eco-labeled laundry care products.*

$$Purchasing\ behaviours = -0.205 + 0.205 \times Subjective\ measurement\ of\ awareness - 0.077 \times Perception + 0.862 \times Intention\ to\ purchase$$

When looking into the correlation between "Perception" and "Purchasing behaviors, significant correlation between two could be observed (P = <0.001). The Pearson correlation coefficient was 0.433, which indicated an average correlation between the two variables. The negative value of the standardized coefficients beta in regression could be due to the effect of other independent variables have on "Perception towards eco-labeling".

Recognition of Eco-labels. Respondents in the survey provided in this study were asked whether they recognized any of six different eco-labels. There was also an option for not recognizing any of the choices. This question was created with the objective of observing how many and of which eco-labels respondents recognized. The six various labels taken are The ECARF label, the Asthma Allergy Nordic label, the Allergy Certified label, the EU Eco-label, the Cleanright.eu label, and the British Allergy Foundation label. The below **Table** shows the frequency of responses to these individual labels.

Table 12 *Frequencies of Eco-label Recognition*

Eco-Label	Have you ever seen this eco-label?	Frequency	Percent	Valid Percent	Cumulative Percent
ECARF	No	114	72.6	72.6	72.6
	Yes	43	27.4	**27.4**	100
	Total	157	100	100	
ASTHMA Allergy Nordic	No	140	89.2	89.2	89.2
	Yes	17	10.8	**10.8**	100
	Total	157	100	100	
Allergy Certificate	No	112	71.3	71.3	71.3
	Yes	45	28.7	28.7	100
	Total	157	100	100	
EU Eco-Label	No	76	48.8	48.4	48.4
	Yes	81	51.6	**51.6**	100

	Total	157	100	100	
Cleaneu	No	133	84.7	84.7	84.7
	Yes	24	15.3	**15.3**	100
	Total	157	100	100	

Table 12 continuation

British Allergy Foundation	No	139	88.5	88.5	88.5
	Yes	18	11.5	**11.5**	100
	Total	157	100	100	
None	No	110	70.1	**70.1**	70.1
	Yes	47	29.9	**29.9**	100
	Total	157	100	100	

Source: Prepared by the authors and based upon research results

These labels used in this question are considered to be most commonly found in Lithuanian supermarkets. Of 157 valid responses, 47 respondents stated they recognized none of these labels. These respondents account for approximately 29% of the total respondents. Almost a third of those valid responses that answered to purchasing laundry products do not recognize any eco-labels. However, 111 respondents, approximately 70% of the total answered that they have seen at least one eco-label.

When questioned about identifying various eco-labels, the most recognizable label to respondents in the survey was the EU Eco-label. In total 81 respondents recognized this label which accounted for approximately 51% of the 157 respondents. The significance between EU eco-label and other eco-labels could be due to its long history. As this label has been around for more than thirty years, the duration is likely to increase the likelihood of consumers having seen the EU eco-label and their ability to recognize it. The EU eco-label is also a label that has independent parties who are responsible for compliance and criteria (Environment European Commission, n.d.). As previously discussed, potential consumers worry about the validity of various eco-labels and prefer those that are independently reviewed and certified (Iraldo, Griesshammer, & Kahlenborn, 2020). The EU eco-label having had the time to garner recognition and acting as a valid label can be potential factors for its increased recognizability. Furthermore, taking into consideration that majority of the respondents reside within the

European Union, it is likely for people to notice the EU eco-label due to their relation and familiarity with the European Union caused by cognitive bias like mere-exposure effects, hence the higher rate of being noticed and recognized.

The Asthma Allergy Nordic label and the British Allergy Foundation label were both among the least seen labels. The Asthma Allergy label had 17 respondents (10%) of the total population stated that they had seen the label. This can be attributed possibly to the label being considered relatively new as its inception was in 2018. Mitigating factors for this label is that it is present in over 70 countries and certified through different organizations. 18 of all respondents (11%) stated they had seen the British Allergy Foundation label. This label has had the time and exposure from its creation to gather consumer attention yet seems to not be very recognizable in the region surveyed.

The ECARF label and the Allergy Certified label were found to have respective responses of 43 respondents (27%) for the former and the latter having 45 (28%) respondents. Both achieved respectable recognition in accordance with the results of the survey and both are independently certified, a possible correlation explaining the results. The Cleanright.eu label were recognized by 24 respondents (15%) of the total population. As this is a newer label from 2004 which may explain its lower recognition results. Overall, the labels that scored the best were established eco-labels available in dozens of countries with independent organizations certifying their criteria. The recognition results for the EU Eco-label suggest that the initiatives and partnerships the label has undergone have worked in cultivating recognition amongst consumers. Still a significant number of respondents can be seen to recognize none of the labels.

Table 6 *Group statistics of the mean of constructs and average no. of eco-label recognized amongst respondents with and without kid(s)*

Group Statistics					
	Do you have kid(s)?	N	Mean	Std. Deviation	Std. Error Mean
No. of labels recognized	Yes	33	1.5758	1.41488	.24630
	No	124	1.4113	1.57218	.14119
Subjective Awareness	Yes	33	2.6667	1.02825	.17899
	No	124	2.2621	1.09593	.09842
	Yes	33	3.7306	.53362	.09289

Perception towards eco-labels	No	124	3.4534	.77998	.07004
Intention to purchase	Yes	33	3.7955	.64486	.11225
	No	124	3.3276	.92525	.08309
Purchasing behaviors	Yes	33	3.3182	1.04072	.18117
	No	124	2.8629	1.04733	.09405

Source: Prepared by the authors and based upon research results

Table 7 *Results of the independent samples tests between respondents with and without kid(s) and the means of constructs, and average no. of label recognized.*

Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	One-sided P
No. of labels recognized	EV assumed	.177	**.675**	.545	155	.293
	EV not assumed			.579	54.942	.282
Subjective Awareness	EV assumed	.348	**.556**	1.908	155	**.029**
	EV not assumed			1.981	53.013	.026
Perception towards eco-labels	EV assumed	6.160	**.014**	1.923	155	.028
	EV not assumed			2.383	72.627	**.010**
Intention to purchase	EV assumed	7.453	**.007**	2.730	155	.004
	EV not assumed			3.350	71.117	**<.001**
Purchasing behaviors	EV assumed	.011	**.918**	2.222	155	**.014**

	EV not assumed			2.230	50.617	.015

*EV = Equal Variances

Source: Prepared by the authors and based upon research results

Overall, the means of "subjective measure of awareness towards eco-labels", "perception towards eco-labels", intention to purchase eco-labelled products", and purchasing behaviours of eco-labelled products" differ between groups of respondents who have at least 1 kid and have no kids, except when it comes to the average number of eco-labels, they were able to recognise.

Subjective measurement of awareness towards eco-labels. For respondents who have kids (M=2.67), they tend to perceive themselves as more knowledgeable compare with people who have no kids (M=2.26) t(155)=1.908 p=0.029 Cohen's d=0.374. It could be due to respondents are indeed more knowledgeable. Respondents could also perceive themselves as someone more knowledgeable and with higher awareness in terms of eco-label due to their social image as parents, as it could be related to values like being responsible and having higher concern and awareness in regards of health and safety.

No. of eco-label recognised. Although two groups' subjective level of awareness differ, as mentioned earlier, the average number of eco-label recognised by groups of respondents with kid(s) (M=1.58) does not differ from the group of respondents who have no kids (M=1.41) t(155)=.545 p=0.293 Cohen's d=0.107. It means the average number of eco-labels recognised by both groups are considered to be the same and objectively two groups should share similar level of awareness.

Perception towards eco-labels. Respondents with kids (M=3.73) have a more positive perception towards eco-label compared to respondents who have no kids (M=3.45) t(72.637)=2.383 p=0.010 Cohen's d=0.377 by 0.47, which is 13.6% higher. Therefore, they have higher tendency of having a more positive view towards eco-labelled products and consider them as safer, more environmental and animals friendly.

Intention to purchase. When it comes to the intention to purchase eco-labelled laundry care products, respondents with kid(s) (M = 3.33) have higher intention to purchase compare to respondents who do not have kids (M=3.80) t(155)=2.73 p=.001 Cohen's d=0.875. They are more inclined to purchase eco-labelled products as often as possible due to health, environmental and animal welfare concerns even if it might cost more.

Purchasing behaviours. During the calculation of regression of purchasing behaviours, intention to purchase was proven to be correlated to purchasing behaviours and have a huge impact on it compared to other constructs in the same model. The results of independent sample t test also confirmed that the mean of purchasing behaviours of respondents with kid(s) (M=2.86) differs from and is higher than the mean of respondents who have no kid (M=3.32) t(155)=2.22 p=..014 Cohen's d=.435 by 0.46, which equals to approximately 16%. This indicates that respondents with kids purchase.

Summing up, although the number of eco-labels recognised by both groups do not differ, respondents with kids typically perceive themselves as with higher awareness towards eco-labels, have a higher intention to purchase eco-labelled laundry care products, and do purchase more eco-labelled laundry care products. This could be the result of various factors including children are more prone to allergies which might increase their awareness, intention and actual purchasing behaviours of laundry care products, or the need to meet the social expectation of parents.

Table 15 *Correlation between the number of labels recognized and subjective knowledge.*

		Labels	Subjective Knowledge
No. of Labels	Pearson Correlation	1	.352
	Sig. (2-tailed)		<.001
	N	157	157
Subjective Knowledge	Pearson Correlation	.352	1
	Sig. (2-tailed)	<.001	
	N	157	157

** Correlation is significant at the 0.01 level (2-tailed)

Source: Prepared by the authors and based upon research results

The result of Pearson correlation in the above **Table** suggests that a moderate positive correlation (r (157) = .352, p = <.001) exists between the number of labels respondents were able to recognise and their subjective evaluation of awareness towards eco-labels. The correlation indicates the more labels' respondents can recognise, the higher they evaluated their awareness and knowledge regarding eco-labels, vice and versa.

Table 8 *Correlation between age and perception*

Spearman's rho			What is your age range?	Perception
	What is your age range?	Correlation Coefficient	1.000	.051
		Sig. (1-tailed)		.265

Table 16 continuation…

		N	157	157
	Perception	Correlation Coefficient	.051	1.000
		Sig. (1-tailed)	.265	
		N	157	157

Source: Prepared by the authors and based upon research results

The above **Table 8** shows the one-way probability using Spearman's rank-order correlation coefficient that showcases the relationship between age range and perception. In this table, the age of the respondent has a weak positive association with consumer's perception of eco-labels *(r =.051, p=<0.265)*. The older a respondent gets, then the more positive levels of perception they exhibit. This can be attributed possibly to gaining more knowledge on eco-labels as people age.

Table 9 *Correlation between age range and intention to purchase eco-labelled products.*

Spearman's rho			What is your age range?	Intention
	What is your age range?	Correlation Coefficient	1.000	.062
		Sig. (1-tailed)		.222
		N	157	157
	Intention	Correlation Coefficient	.062	1.000
		Sig. (1-tailed)	.222	

		N	157	157

Source: Prepared by the authors and based upon research results

In the above **Table 9**, it can be seen the one-way probability with Spearman's rank-order correlation coefficient that highlights the relationship between age range and intention to purchase eco-labelled products. Age range has a weak positive association with a consumer's intentions to purchase eco-labelled products *(r = .062, p=<0.222)*. The older a respondent gets the more they intend to purchase eco-labelled products. This can be attributed to different factors, such as, change in purchasing habits due to sensitive skin, becoming more environmentally aware and others.

Table 1810 *Correlation between age range and purchasing behaviors.*

Spearman's rho			What is your age range?	Purchasing behaviors
	What is your age range?	Correlation Coefficient	1.000	.064
		Sig. (1-tailed)		.214
		N	157	157
	Purchasing behaviors	Correlation Coefficient	.064	1.000
		Sig. (1-tailed)	.214	
		N	157	157

Source: Prepared by the authors and based upon research results

Table 1810 shows the one-way probability using Spearman's rank-order correlation coefficient spotlighting the relationship between age range and purchasing behaviours of consumers in regard to eco-labelled products. Age range again is shown to have a weak positive association with purchasing behaviours of consumers *(r = .064, p=<0.214)*. If the older the respondent is then the more eco-labelled oriented purchasing behaviours increase.

Table 1911 *Correlation between educational level and subjective measurement of awareness*

Spearman's rho			Subjective measurement of awareness	What is your educational background?
	Subjective measurement of awareness	Correlation Coefficient	1.000	.321
		Sig. (1-tailed)		<.001
		N	157	157
	What is your educational background?	Correlation Coefficient	.321	1.000
		Sig. (1-tailed)	<.001	
		N	157	157

Source: Prepared by the authors and based upon research results

Table 1911 shows the results of Spearman's rank-order correlation coefficient, which indicates a weak positive correlation between level of education and subjective measurement of awareness towards eco-labels *($r_s(155) = .321, p = <.001$)*. The higher is one 'level of education, the higher is their self-evaluated of awareness towards eco-labels. This could be due to higher exposure to things like sustainably living and green consumerism causing them to have or perceived themselves to have a higher level of awareness in terms of eco-label.

Table 2012 *Correlation between educational level and perception towards eco-labels*

Spearman's rho			Perception towards eco-labels	What is your educational background?
	Perception towards eco-labels	Correlation Coefficient	1.000	.167
		Sig. (1-tailed)		.019
		N	157	157
	What is your educational background?	Correlation Coefficient	.167	1.000
		Sig. (1-tailed)	.019	

		N	157	157

Source: Prepared by the authors and based upon research results

Table *2012* shows the results of Spearman's rank-order correlation, which indicates a very weak positive correlation between level of education and their perception towards eco-labels ($r_s(155) = .167$, p = .019s). The higher is the level of education, the higher is their perception towards eco-labels.

Table 2113 *Correlation between educational level and intention to purchase eco-labelled laundry care products.*

Spearman's rho			Intention to purchase	What is your educational background?
	Intention to purchase	Correlation Coefficient	1.000	.252
		Sig. (1-tailed)		<.001
		N	157	157
	What is your educational background?	Correlation Coefficient	.252	1.000
		Sig. (1-tailed)	<.001	
		N	157	157

Source: Prepared by the authors and based upon research results

Table 2113 shows the results of Spearman's rank-order correlation, which indicates a very weak correlation between level of education and intention to purchase eco-labelled laundry care products ($r_s(155) = .252$, p = <.001). The higher is the level of education, the higher is the intention to purchase eco-labelled laundry care products.

Table 2214 *Correlation between educational level and purchasing behaviors of eco-labelled laundry care products.*

Spearman's rho			Purchasing Behaviors	What is your educational background?
	Purchasing Behaviors	Correlation Coefficient	1.000	.225
		Sig. (1-tailed)		.002
		N	157	157
	What is your educational background?	Correlation Coefficient	.225	1.000
		Sig. (1-tailed)	.002	
		N	157	157

Source: Prepared by the authors and based upon research results

Table 2214 shows the results of Spearman's rank-order correlation, which indicates a very weak correlation between level of education and purchasing behaviours of eco-labelled laundry care products ($rs(155) = .225$, $p = .002$). The higher the level of education, the higher the tendency of purchasing behaviours of eco-labelled laundry care products.

3.4. Summary of Findings

The most critical data from the survey findings were used to develop solutions. According to the study results, Lithuanian consumers' perception of eco-labelled items has a greater influence than their subjective levels of awareness when it comes to the relationship between customer intention to purchase eco-labelled products. Companies can utilise this information while deciding whether or not to adopt eco-labels for laundry care products. It could also assist enterprises and corporations decide which eco-labels to put on their products that customers perceive positively, i.e. as a reputable eco-label.

Furthermore, according to the research, perception has a higher influence than awareness on the intention to purchase eco-labelled products, implying that corporations who do not wish to spend on educational campaigns may not have to. If consumers' perception of eco-labels has a greater impact on their purchase intent, resources would be better spent ensuring the selected eco-label has a higher level of perception rather than aiming to enhance consumer awareness levels. Moreover, the perception of eco-labelled products was found to

have a positive correlation with eco-labelled product purchase behaviour. When it came to regression, there was no significance; the reason might be redundancy, implying that perception alone may influence customer purchase behaviours. Thus, companies intending to do research into consumer purchasing habits can note this for their due process of selecting an eco-label for their product.

Additionally, in the survey, Lithuanian consumers were shown to have a higher level of perception of eco-labelled products, indicating that they regarded eco-labels positively. Businesses can benefit from this data in the future since it gives vital insights to potential consumer segments. Having a more positive view can help with positive feedback from adopting an eco-label leading to an increase in intentions to purchase eco-labelled products.

Another important finding for businesses or organisations is that Lithuanian consumers show a higher level of intention to purchase eco-labelled items when given the option. Increasing the number of eco-labelled products on the market could boost demand for a company's products.

There were also correlations discovered between education level and perception, awareness, intention to purchase, and purchasing behaviours. The higher the stated degree of education, the higher the values for each of the other four factors. This information may be used by businesses and enterprises for marketing objectives, such as targeting university students as a consumer base.

Further insights garnered from the survey revealed that Lithuanian consumers do not perceive themselves to be knowledgeable regarding eco-labels and tend to be moderately confused as to the meanings and information behind eco-labels. It is suggested that informative measures are taken when penetrating the market with eco-labelled products.

There was a gap found in the relationship between intention to purchase eco-labelled products and purchasing behaviours of eco-labelled products. This could exist due to a various reasons and factors such as lack of availability, price, brand loyalty or other reasons. Businesses can use this insight when researching markets in Lithuania.

The research in this study found that there is a difference in respondents with children than respondents without children. Respondents with children are more aware and have higher eco-labelled purchasing behaviour than those without children. There was, however, no difference in the number of eco-labels recognized. This indicates that the level of subjective awareness is subjective and can be attributed by factors such as societal expectations concerning parents. Through exhibiting higher levels of intention to purchase eco-labelled

products than respondents without kids. Campaigns or eco-labels should target people with kids (Use colours like baby blue, include pictures of babies).

Age was found to have no correlation with the four constructs. The number of eco-labels recognized correlated with respondents' subjective awareness levels. Of the various eco-labels, the EU eco-label was the most recognized. The cause of this could be an exposure effect.

CONCLUSIONS AND RECOMMENDATIONS

Based on insights gathered from the theoretical and analytical parts, the following **conclusions** answering to the research's objectives are drawn:

1. Due to the rising demand for eco-labelled personal products from consumers, companies have started looking to adapt eco-labels and use them for their advantage. However, as the demand grows for these products, there is a fast growth of the types of eco-labels. Some of them certified and others not. As a result, it can make consumers doubt an eco-label's credibility. To avoid this problem, ISO developed three types of standards. The two most popular are those that are certified by unbiased third-parties or those developed by companies and that should be verified but never is. From this, the most popular in the European Union is the famous EU Eco-label among others. After analysing the survey results, it was confirmed that Lithuanian consumers are more aware to the EU Eco-label than any of the others asked. Thus, businesses should leverage this knowledge and seek to apply for the EU Eco-label for their products. As this eco-label not only certifies laundry products, but other categories too.
2. For businesses, adopting eco-labels could create extra value to their products and allow them to charge a price premium. During the adaptation process, companies can acquire skills and knowledge in regards of sustainability, which could be applied to other business aspects and help them to cut costs and operate more sustainably. Providing customers with eco-labelled products can improve brand image and differentiate them from competitors and increase brand image. It leads to the expansion of consumer's base due to the possibility to serve targeted niched consumer group. Furthermore, governments might provide taxation incentives to encourage sustainable behaviours from companies. Disadvantages could include high adaptation barriers as it could be labour, and cost demanding in the initial period. Companies might therefore have to compromise short-term profit. Long-term costs might also occur due to dynamic regulation changes. Return of investment is not guaranteed as consumers' reaction to new products is uncertain and consumers might lack the ability to distinguish between creditable and non-creditable eco-labels.
3. Previous literature identified consumers' confusion about eco-label could lead to decrease in trust and lower their intention to purchase eco-labelled products. The results in the analytical part confirmed that level of awareness and perception towards eco-labels have positive impacts on consumers' intention to purchase eco-labelled laundry care products.

Amongst the two independent variables, perception has a stronger impact on the intention to purchase.

Recommendations for future research. For whom might be interested in continuing research in this direction can further identify potential factors that impact consumers 'intention to purchase and make comparisons between consumers from different cultures.

1. Investigate the effect of social variables in affecting customers' views towards eco-labels, such as social norms, peer influence, and social media. As well, examine how social connections and online networks influence the adoption of eco-friendly purchasing behaviours.
2. Evaluate the impact of digital platforms and e-commerce on customer awareness and attitudes of eco-labels. Additionally, investigate how online reviews, product descriptions, and virtual platforms influence long-term purchase decisions.
3. Research the connection between eco-labels, brand loyalty, and brand reputation.

Recommendations for businesses.

1. As research shows Lithuanian consumers have low awareness and correlation exists between it and intention to purchase, stakeholders of eco-labels such as businesses, organizations, and government bodies should launch educational campaigns.
2. With the data retrieved from the study businesses can formulate plans and strategies when adapting eco-labels to products for Lithuanian consumers.
3. Companies considering the adaptation of eco-labels on laundry care products should use the information gathered in this study and chose credible eco-labels as credible eco-labels will have a positive effect on consumers.
4. Companies looking to adapt eco-labels for their products will have more success targeting those Lithuanian consumers with children. The levels of awareness and perception along with purchasing behavior were higher than those Lithuanian consumers without children.

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APPENDIXES

Appendix 1 Survey Questions

Appendix 2 Normal Q-Q Plots of Constructs

Figure 2 *Normal Q-Q Plot of Subjective Measurement of Awareness towards Eco-Labels*

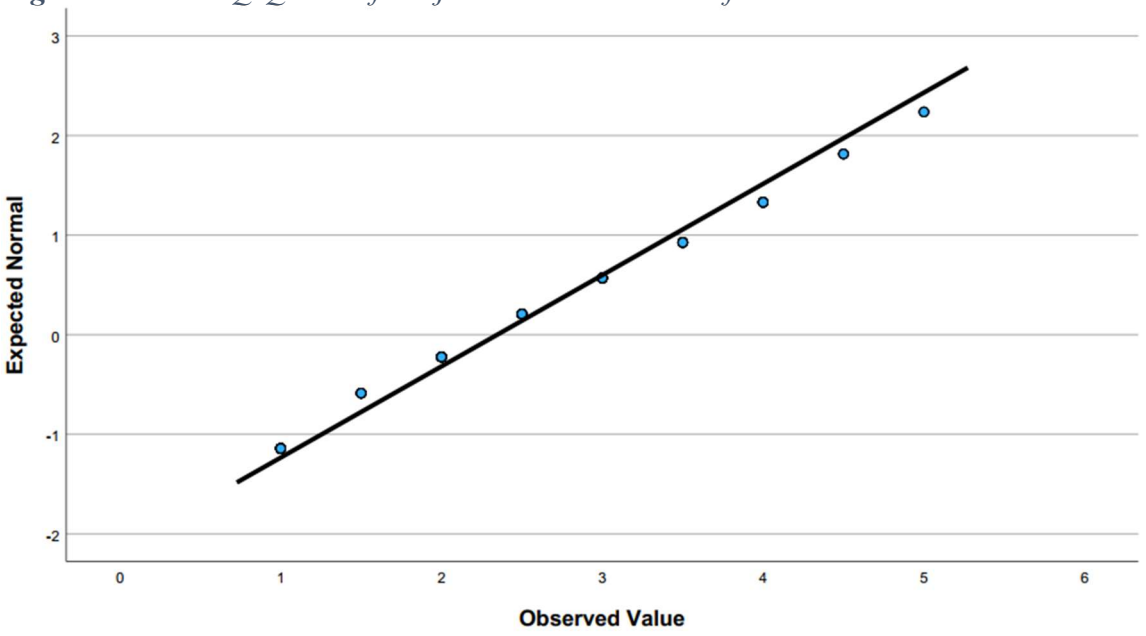

Figure 3 *Normal Q-Q Plot of Perception towards Eco-Labels*

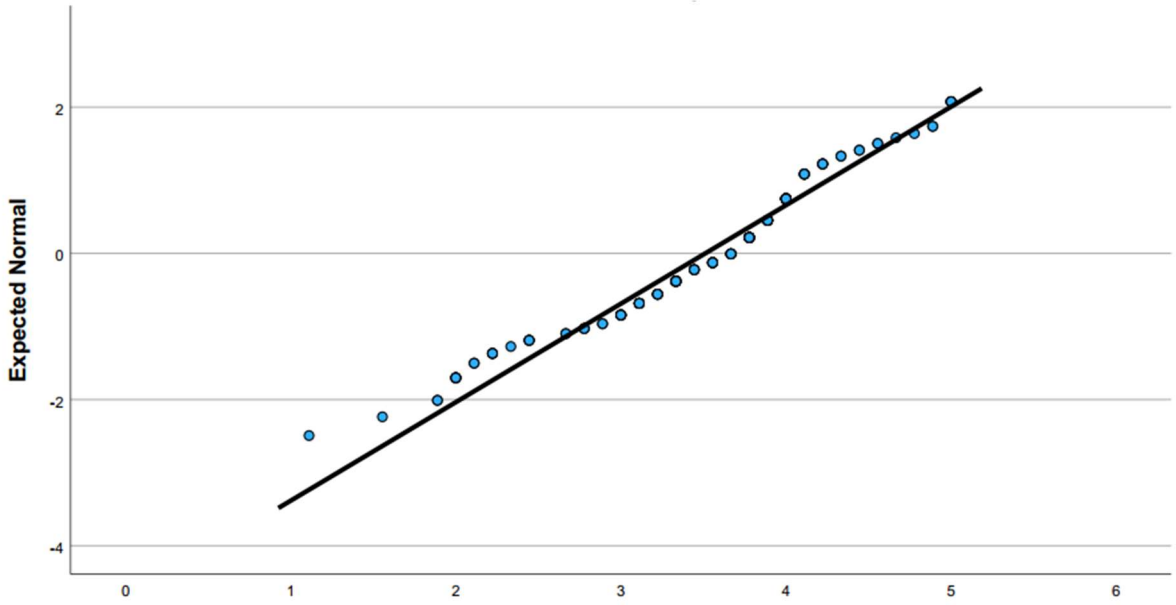

Figure 4 *Normal Q-Q Plot of Intention to Purchase Eco-Labelled Laundry Care Products*

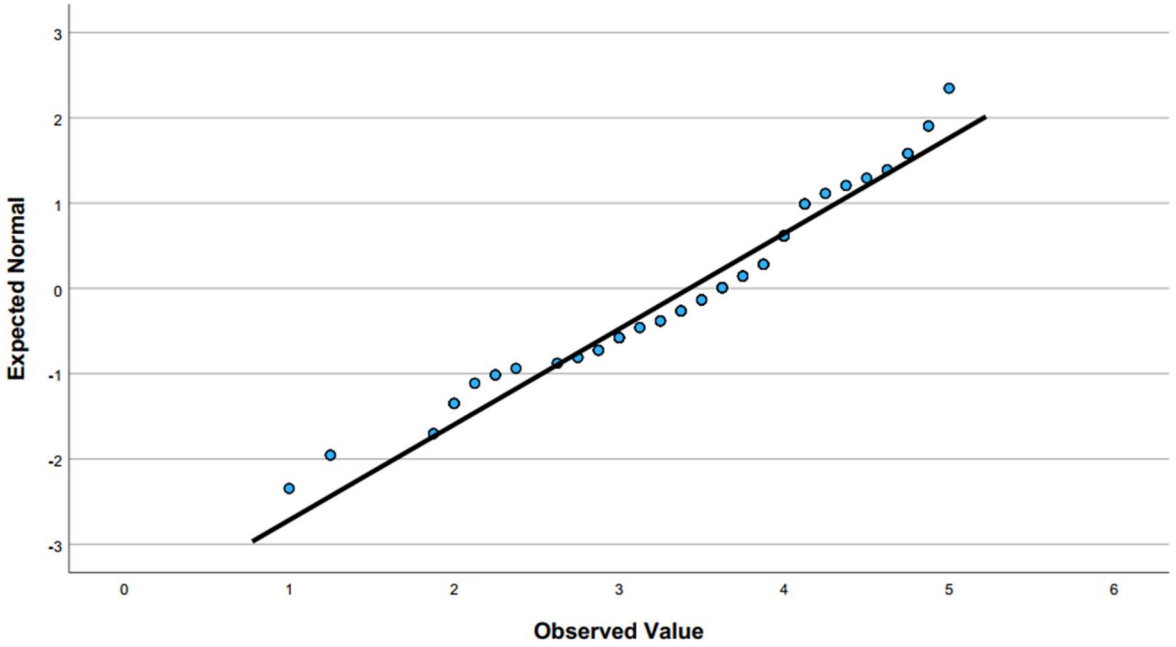

Figure 5 *Normal Q-Q Plot of Purchasing Behaviors of Eco-Labelled Laundry Care Products*