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The Impact of Sustainable Product Design on Consumer Purchase Decisions

Factors influencing consumer behavior

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ABSTRACT :

This study examines the factors influencing consumer behavior towards sustainable products. Here, the particular attention is given to trust in sustainability claims, supply chain transparency, and eco-label certifications with an aim to investigate how these factors effect on consumers purchasing decisions, their willingness to pay, and purchase intentions towards sustainable products. A quantitative research approach was adopted, and the data were collected through a structured questionnaire. The sample size was 250 respondents, where 224 valid responses were recorded and included in the dataset. The collected data was then analyzed using descriptive statistics, reliability analysis, factor analysis, correlation, and regression analysis. The findings showed that measurement of items was reliable and suitable for the analysis. The further results revealed that the trust in sustainability claims positively influenced the purchase decisions and supply chain transparency also positively affected the willingness of pay for sustainable products. Eco-label certifications significantly enhanced customer purchase intentions, which among other factors, turned out to be the strongest predictor of purchase intention. The study also found that sustainable consumer behavior is multidimensional and shaped by a combination of personal commitment, external influences, and trust-related factors. Finally, the study concluded that the customers are more likely to support sustainable products when the information is credible, transparent, and verifiable. The findings provide useful insights for business and marketers who are seeking to promote sustainable consumption and strength consumer confidence in sustainable products.

KEYWORDS: consumer behavior, sustainable consumption, trust, supply chain, willingness to pay, transparency

Contents

1.	Introduction	7
1.1.	Sustainability and Consumerism	8
1.2.	The Role of Sustainable Product Design	9
1.3.	The Importance of Consumer Trust and Transparency	10
1.4.	Objectives of the Study	12
1.5.	Thesis Structure	14
2.	Literature Review	16
2.1.	Consumer Behavior and Sustainable Consumption	18
2.2.	Factors Influencing Green Purchase Decisions	20
2.3.	The Impact of Sustainability Information on Consumers	25
2.4.	Sustainable Product Design and Consumer Trust	27
2.5.	Research Gaps	31
3.	Research Methodology	32
3.1.	Quantitative Method	32
3.2.	Research Approach	34
3.3.	Research Design	35
3.1.1.	Research Hypothesis	37
3.1.2.	Sampling Area and Size	37
3.4.	Data Collection	38
3.5.1.	The Assessment of the Quality of the Data	41
3.5.2.	Measurement of Variables	42
3.6.	Data Analysis	43
3.7.	Ethical Considerations	45
3.7.1.	Informed consent	45
3.7.2.	Data security and Confidentiality	46

4.	Results	47
4.1	Demographic data	47
4.2	Frequency Analysis	55
4.3	Reliability Analysis	65
	Factor Analysis	66
4.4	H1: Perceived trust in sustainable product design positively influences consumer purchase decisions.	69
4.5	H2: Supply chain transparency positively affects consumer willingness to pay for sustainable products.	73
4.6	H3: The presence of eco-label certifications significantly enhances consumer purchase intentions for sustainable products.	76
5.	Discussion	80
5.1.	Practical Implications	84
5.2.	Limitations of the study	85
6.	Conclusion	86
6.1.	Future Recommendations	87
	References	88
	Appendices	99
	Appendix 1: Survey Questionnaires	99

List of Figures

Figure 1: Research onion (Saunders et al., 2007)	34
Figure 2: Research Framework	36
Figure 3: Sampling process	38
Figure 5: Age	48
Figure 6: Gender	49
Figure 7: Marital Status	50
Figure 8: Educational Background	51
Figure 9: Yearly Income	52
Figure 10: Access information about sustainable products	53
Figure 11: Recommendation of sustainable products	55

List of Tables

Table 1: Age	47
Table 2 : Gender	48
Table 3: Marital Status	49
Table 4: Education level	50
Table 5: Income Level	51
Table 6: Access information about sustainable products	53
Table 7: Have you ever recommended a sustainable product to someone else	54
Table 8: I am willing to pay a premium for sustainable products	55
Table 9: I always consider a product's environmental impact before purchasing it	56
Table 10: Purchasing sustainable products improves my personal satisfaction	56
Table 11: Price significantly influences my decision to purchase sustainable products	57
Table 12: I prefer buying sustainably in specific product categories like food, clothing, electronics, or personal care products	57
Table 13: I trust the sustainability claims made by companies without skepticism	58
Table 14: Supply chain transparency is important to me when purchasing sustainable products	59

Table 15: I check for eco-labels or certifications before purchasing a product to verify its sustainability claims	59
Table 16: Positive reviews and recommendations on social media increase my trust in a brand's sustainability claims	60
Table 17: I have felt misled by companies' sustainability claims due to green-washing practices in the past	61
Table 18: I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence	61
Table 19: I am influenced by social media campaigns promoting sustainable products when making purchasing decisions	62
Table 20: I feel personally responsible for contributing to environmental sustainability	63
Table 21: I actively seek out information about the sustainability practices of brands before making a purchase	63
Table 22: I prefer to buy products from companies that demonstrate a commitment to sustainability in their operations and supply chain	64
Table 23: Reliability Analysis	65
Table 24: Reliability Statistics	65
Table 25: Communalities	66
Table 26: Total Variance Explained	67
Table 27: H1 Correlations	69
Table 28: Model Summary (H1)	71
Table 29: ANOVA H1	71
Table 30: Coefficients (H1)	71
Table 31: Correlations (H2)	73
Table 32: Model Summary (H2)	74
Table 33: Anova (H2)	74
Table 34: Coefficients (H2)	75
Table 35: Correlations (H3)	76
Table 36: Model Summary (H3)	77
Table 37: ANOVA (H3)	77
Table 38: Coefficients (H3)	78

1. Introduction

The business world has experienced fundamental changes during the twenty-first century because research findings from (Naciti, 2019) demonstrate that companies need to combine social and environmental and ethical elements into their strategic business planning. (Ranjbari et al., 2021) explain that this transition occurs because people now understand that sustainable development requires organizations to maintain equilibrium between economic and social and environmental aspects which together form sustainability's three fundamental elements. The research by (Yildiz Çankaya & Sezen, 2019) demonstrates that the three elements need to work together for organizations to achieve their objectives.

The concepts of sustainability and sustainable development have become essential for finding solutions to global issues which include climate change and resource depletion. (Ruggerio, 2021b) Points out that these concepts shape policy development across various sectors including agriculture and manufacturing which require environmental management solutions. The development of eco-design in the 1980s demonstrates that product designers must consider environmental sustainability as an essential element of their work. (Wei Lun Lee et al., 2023) and (Varžinskis et al., 2020) explain that eco-design functions to decrease environmental harm which occurs during the design process while it directs industrial sectors toward sustainable development.

Sustainability requires active solutions to three economic viability social equity environmental protection conflicts which need to be resolved. The strategic management of these dimensions (Eikelenboom & de Jong, 2019) emphasizes their crucial role in developing organizations that succeed in markets which value ethical conduct and environmental sustainability. Companies achieve two benefits when they implement eco-design practices together with their sustainability initiatives because they decrease their ecological impact while improving their brand value and business earnings according to (Alsayegh et al., 2020). (Singh & Sarkar, 2019) explain eco-design as an environmentally responsible method for developing safe sustainable products which create new possibilities through their end-of-life disposal. The holistic approach enables businesses to generate societal benefits while achieving operational safety in a world that undergoes rapid change (Vieira Nunhes et al.,

2021).. The study of (Martínez-Falcó et al., 2023) demonstrates that companies achieve sustainable development through their dedication to sustainability which enables them to maintain operational success while meeting environmental demands and stakeholder requirements.

1.1. Sustainability and Consumerism

Sustainability according to (Balasubramanian & Sheykhmaleki, 2024) refers to the responsible management of natural resources which supports the maintenance of ecological equilibrium. The concept has emerged as a fundamental component of multiple disciplines because marketing practices face difficulties with sustainability due to their core function of driving customer consumption (Khan et al., 2020). Marketers now understand that they must develop marketing strategies which work together with sustainable business operations. (Kemper & Ballantine, 2019) report that marketers now view the relationship between marketing practices and sustainability as an established concept which requires no further debate.

Sustainable development depends on consumer behaviour because it functions as a fundamental element of the process. Consumers drive the circularity movement which requires products to have extended lifespans while ensuring their correct disposal and reuse (Shiel et al., 2020). The method helps protect environmental resources which then affects customer buying preferences. Consumer behaviour research shows that social, economic, and cultural factors determine how people choose their products according to (Iskamto, 2021). The perception of organic products as safe and environmentally friendly content drives consumer attraction towards them according to (Dangi et al., 2020).

The emergence of industrialization together with mass production techniques resulted in major changes which drove people to consume more products. (Panizzut et al., 2021). Consumers possess the ability to select products which match their environmental beliefs according to the research conducted by (Golob & Kronegger, 2019). Companies which implement Corporate Social Responsibility (CSR) programs experience improved brand image

together with increased customer loyalty which results in sustained business success according to (Jung et al., 2020). The study conducted by (Burton & Eike, 2023) defines sustainable consumption practices. (Ribeiro et al., 2023) emphasize the role of consumers in prolonging product lifespans and facilitating reuse which proves essential for achieving sustainable development.

People advance toward permanent environmental balance when they implement sustainable practices into their marketing strategies and their consumption research. The research conducted by (Anaissi et al., 2024) shows that this transition demonstrates how consumer behavior has changed and how businesses now operate their organizations to pursue economic growth while protecting the environment. The study emphasizes how people must control their resource use because this practice helps achieve long-term sustainability goals which protect both economic systems and natural ecosystems.

1.2. The Role of Sustainable Product Design

According to (Bangsa & Schlegelmilch, 2020) sustainable products include items which create beneficial social and environmental effects through their biodegradable features and their packaging, which uses minimal materials. The indicators enable consumers to verify a product's environmental sustainability (Shiel et al., 2020). The Sustainable Product Design (SPD) process improves product sustainability from development until its final disposal. The research of (Mengistu et al., 2024) shows that sustainable product design (SPD) serves as an essential requirement for both sustainable manufacturing practices and customer satisfaction, thus becoming a central focus of contemporary product development processes.

As (Kim et al., 2020) study sustainable design now requires more complex design work because it must address product development and operational functions and disposal procedures. The complete product lifecycle assessment method establishes sustainability as a fundamental requirement that must be maintained throughout all product development stages. (Vilochani et al., 2023) emphasize that SPD is becoming more vital for manufacturers due to rising legal, market, and financial pressures to create environmentally friendly

products. Organizations achieve their sustainability goals through successful product development while gaining market advantage because their sustainable practices meet consumer needs (Golob & Kronegger, 2019).

According to (Schäfer & Löwer, 2020) Eco-design establishes environmental standards as fundamental requirements for product development activities. The trend shows how consumers today understand sustainability issues which affect their buying choices while companies must develop sustainable practices for New Product Development (NPD) work. (Delaney et al., 2022) assert that organizations must incorporate sustainability into their new product development processes to meet changing consumer demands. Companies achieve economic growth through sustainable product design which enables them to protect the environment while delivering permanent advantages to their enterprises and the earth (Anaissi et al., 2024).

Sustainable product design establishes itself as the essential method for businesses to satisfy customer requirements because it reduces environmental damage. The process requires complete evaluation of every aspect that exists in the product's existence starting from its design until its ultimate disposal according to (He et al., 2020). The implementation of sustainable design methods enables businesses to strengthen their market position while creating a better world. This method protects the environment while building brand trust and customer retention, which results in sustainable business growth.

1.3. The Importance of Consumer Trust and Transparency

Trust has always been a cornerstone of consumer behavior, especially in the field of e-commerce (Handoyo, 2024). Online shoppers experience uncertainty because they cannot examine physical products. The customers doubt the sellers and their products which causes them to hesitate according to (Mahliza, 2020). Trust functions as the crucial element that determines if customers will complete their transactions. Buying choices depends on three main factors which include perceived product value and product price and customer trust (Handoyo, 2024). Internet service providers face their most difficult challenge because users

increasingly trust online services less. (Hidayat et al., 2021) emphasize that building trust with online consumers is essential for creating a successful e-commerce system.

Trust exists as a relationship between people which goes beyond simple business transactions. People engage in trust relationships when they decide to rely on others who they expect will meet their commitments. (Pasaribu et al., 2024) explain that endorsements and recommendations can instill confidence in consumers, making them more likely to trust products and brands. People become willing to shop online when they perceive benefits, and they trust e-commerce platforms and sellers and products. (Sulistiyowati & Husda, 2023) Present the argument that online businesses need to establish trust and maintain a good reputation because these factors help them bring in new customers and keep existing ones, which requires methods that will increase customer trust. The organizations use open dialogues to provide accurate details about their product standards and shipping schedules, and customer assistance.

Trust-building depends on the ability to show transparent information to others. (Hanna et al., 2019) Describe price transparency as a mechanism that helps consumers understand and rationalize pricing strategies, reducing asymmetry between buyers and sellers. The authors define transparency as organizations' operational and decision-making information disclosure practices according to (Yang & Battocchio, 2021). The author shows how supply chain transparency creates trust and loyalty together with a better brand reputation according to (Holloway, 2024). Customers today demand companies to show complete transparency about their products and the methods used to create them according to the findings of (Kwan et al., 2021). The way people see transparency depends on their information processing skills and their past life experiences according to (Pozelli Sabio & Spers, 2022).

Brand integrity, which includes credibility and reliability and promise of fulfilment, serves as a foundation for establishing corporate ethical standards. (Cambier & Poncin, 2020)emphasize that brand transparency signals can enhance brand integrity in a consumer empowerment context. (Sansome et al., 2024) demonstrate that perceived brand transparency results in positive brand outcomes which strengthen consumer trust. In today's digital age, where information is readily available, consumers expect brands to be transparent about their practices and values. The transparency of their operations together with their

organizational values establishes trust between the company and its customers while creating consumer loyalty and advocacy (Mim et al., 2022).

1.4. Objectives of the Study

The thesis establishes a logical framework to demonstrate how sustainable product design elements link to research about consumer behavior. The sustainable product design elements which include eco-labels and transparency together with environmental responsibility create specific consumer perception outcomes. The trust levels that consumers establish for products depend on their product assessment, which leads to their buying decisions and their choice of payment methods. The research study uses an integrated approach that combines design features with human cognitive processes and resultant actions into one comprehensive framework.

The rise of sustainable consumer awareness has compelled companies to develop new products which fulfil their environmental objectives. Environmental sustainability comprises three main elements which include waste and emissions reduction, natural resource preservation, and sustainable supply chain operations. Companies must study how consumer perception interacts with outside elements to develop effective sustainability strategies through green product consumption which solves environmental issues. Consumers establish trust in sustainable products based on supply chain transparency and certification systems and eco-labels and practices used in developing green products. Research indicates that consumers possess environmental issue awareness, yet they fail to make sustainable purchases because they find products unaffordable or unavailable or they doubt product quality. Businesses need to identify sustainable product design elements which appeal to customers, such as environmentally friendly materials and packaging that can be reused.

This shows that understanding customer perception together with external factors leads to better sustainability strategies. The understanding of consumer behaviour in this situation functions as the main requirement for promoting sustainable consumption while designing products that meet environmental standards.

The aims of the research are outlined below,

To examine the impact of sustainable product design attributes on consumer purchase decisions.

To analyse the role of trust and transparency in influencing consumer behaviour.

To evaluate how consumer perceptions of sustainability affect willingness to purchase.

Incorporating sustainability into the design of consumer products is essential because of rising environmental issues and changing consumer tastes. Sustainable design includes multiple elements, such as choosing eco-friendly materials, conducting life cycle assessments, ensuring energy efficiency, enhancing durability, promoting recyclability, and minimizing waste. Buyers' choices are progressively inclined towards items with eco-friendly features because of worries regarding environmental issues linked to consumption. Eco-conscious consumers are ready to spend extra on products that reduce environmental harm, showcasing "Green Trust."

Studies show that purchasing eco-friendly products generates positive feelings in consumers, affecting their buying choices. Elements affecting consumers' perception encompass total environmental effect, sustainable manufacturing techniques, buying and disposal behaviours, informational standards, and certification marks. Incorporating eco-friendly criteria into product design boosts the perceived impact of environmental sustainability.

This study examines the current gaps in knowledge regarding how attributes of sustainable product design (transparency, trust, perceptions, environmental responsibilities, and personal preferences) influence consumer buying choices. Although earlier research has examined elements affecting consumer choices for sustainable products, they frequently neglect the combined effect of transparency, trust, perceptions, environmental duties, and personal preferences. This research aims to close this gap by examining how these factors interact influencing consumer decisions. The results will offer an important understanding of how companies can match their product design with consumer values to encourage sustainable consumption. This study enhances the creation of successful strategies aimed at promoting the use of environmentally friendly products by concentrating on design features.

The current research demonstrates that people practice sustainable consumption together with green purchasing behaviour, yet researchers still lack knowledge about how different

sustainable product design elements impact consumer decision-making. Existing studies tend to examine factors such as trust, transparency, or environmental concern in isolation. The existing research fails to provide a complete framework that connects design elements with actual consumer buying patterns. This study addresses this gap by combining sustainable product design features with psychological factors such as trust and perception to provide a more comprehensive explanation of consumer purchasing decisions.

The purpose of this study is to tap into the research opportunity by answering the research question:

How do sustainable product design attributes influence consumer purchase decisions?

1.5. Thesis Structure

The thesis uses five chapters to present research findings because this structure helps readers understand the research more effectively.

Chapter 1: Introduction

The research topic together with its background information and research problem definition and research objectives with research questions has been introduced in this chapter. The study establishes its conceptual framework through these elements.

Chapter 2: Literature Review

This chapter critically reviews existing literature on sustainable product design, consumer behaviour, trust, and transparency. The study identifies essential theoretical frameworks while it explains the research gaps that the study will address.

Chapter 3: Research Methodology

The chapter details the research design and data collection methods and sampling approach and variable measurement and analytical methods applied in the research work.

Chapter 4: Results and Analysis

The chapter presents study results which were obtained through statistical analysis, and it explains how these results connect to research objectives and existing literature.

Chapter 5: Conclusion and Recommendations

The chapter presents the key research findings while it explains theoretical and practical implications and research limitations and future research needs.

2. Literature Review

In recent times, the significance of sustainability has become more apparent across multiple industries, such as consumer product design. As buyers grow increasingly eco-aware, their buying choices are heavily shaped by the sustainability of the items. Sustainable product design reduces environmental effects while meeting the increasing demand for eco-friendly items, influencing consumer behavior, and buying intentions (Burke et al., 2023).

Sustainable product design requires several vital components which determine its complete environmental impact. The Environmental Impact assessment process requires organizations to minimize damage through their choice of sustainable materials and energy-saving technologies and recyclable packaging solutions. This method helps to reduce waste while protecting natural resources because it supports the greater mission of fighting climate change and building a circular economy (Chen, 2024).

Social Impact holds important value because sustainable design practices which enable people to repair their products create a culture that values long-term product use and product reuse. The process not only extends the usable life of products but also creates job opportunities because it supports local repair businesses while decreasing electronic waste. Sustainable products create economic benefits for customers while enhancing brand reputation, which results in increased customer loyalty and trust. Companies that adopt sustainable methods experience both revenue growth and increased investor interest which creates a market advantage for them (Roh et al., 2022).

The research investigates how environmentally sustainable products affect purchase decisions of consumers, particularly focusing on the younger demographic. The study conducted in Indonesia demonstrates how people become more environmentally conscious while developing sustainable consumption practices. The research investigates how eco-friendly products affect purchasing decisions through the study of green marketing strategies and customer views of environmental protection methods. The study investigates how Indonesia's Environmental Economic Instruments and other national regulations lead to greater use of sustainable products and services through their respective effects on business operations. The research study establishes a new research territory about green product

effects on young consumers while demonstrating how these products drive environmentally responsible consumer behavior (Daru et al., 2022).

Eco-friendly product design makes an impact on Consumer Buying Choices. The increased consumer preference for environmentally friendly products originates from better environmental understanding and their desire to protect sustainability. The implementation of sustainable business practices results in increased consumer trust which leads to improved brand equity and affects customer purchase decisions. The provision of clear sustainability information becomes essential because it significantly impacts customer decision-making processes for customers who seek environmentally friendly products. In general, sustainable product design is crucial in influencing consumer preferences, improving brand reputation, and supporting a more sustainable future (Kumar et al., 2021).

In the 21st century, the social, environmental, and ethical dimensions of the business sector have become more significant. The need for enrichment is broadened from societal, cultural, and ecological viewpoints to maintain sustainability; each business needs to find an equilibrium between economic, social, and environmental factors while effectively managing all three aspects. Corporate sustainability is achieved by combining these three elements, which enhance efficiency, support sustainable development, and boost shareholder value. The concepts of sustainability and sustainable development have become significant in scientific research regarding environmental issues, policies for environmental management, and areas such as industrial and agricultural production, among others (Ruggerio, 2021a).

In product design, incorporating environmental sustainability into product development is crucial. Eco design developed in the 1980s as the design community aimed to improve a product's environmental sustainability (Kim et al., 2020). Eco design is a concept intended to lead the planet towards a sustainable future. Eco design acts as an approach in the product and service sectors aimed at improving sustainability and reducing negative environmental impacts during the product design stage (Torkelis et al., 2024).

The bio-fore company defines eco-design as “the accountable creation and manufacturing of items that are safe and sustainable, ensuring that, whenever possible, the end of the product life cycle results in the emergence of something new”. Businesses should concentrate on their sustainability outcomes, which entails attaining favorable economic, social, and

environmental results over the long term. Sustainability management entails harmonizing the frequently opposing aims of the three pillars of sustainability: social, environmental, and economic objectives.

2.1. Consumer Behavior and Sustainable Consumption

In today's world, sustainability is believed to possess significant potential for encouraging ethical consumer habits. The objective of this research was to examine how sustainable behavior affects consumer intention to act ethically regarding political, social, and environmental aspects. Three factors, specifically social, economic, and environmental aspects of ecological depletion, are identified to have a notable and positive effect on the intention of participating in ethical customer behavior. Businesses aiming to actively engage eco-conscious consumers must grasp the intricacies of the decision-making process of ethically aware customers (Tomşa et al., 2021).

Traditional research on consumer behavior and sustainable consumption underscore's various important themes that affect how consumers interact with eco-friendly products and practices. The process of effective communication establishes a key element needed for promoting sustainability through sustainable consumption, which requires organizations to maintain authenticity and transparency while involving their audiences through consistent sustainability messages. Marketing communications serve as the essential link that creates consumer awareness through product information combined with educational content which motivates people to practice sustainable behaviors. To understand consumer behavior regarding corporate sustainability practices, researchers' study how consumers react to sustainability messages while companies need to understand consumer perspectives to develop effective business strategies. This process requires the application of psychological knowledge to create messages which connect with different consumer values that include both self-serving and selfless reasons (Yarimoglu & Binboga, 2019).

The existing research assessment of pro-sustainable behavior initiatives shows that organizations need to implement strategic programs which use social labelling and green marketing methods to develop sustainable environmental practices while enhancing their

communication abilities. The literature highlights the value of merging sustainability efforts with corporate brand identity to develop a unified narrative that appeals to consumers. Sustainable consumption and production patterns serve as essential requirements for reaching Sustainable Development Goals according to the United Nations because they protect current and future generations through sustainable consumer practices. The three essential components which drive sustainable consumption behavior in consumers include effective communication methods which establish consumer relationships together with dedicated marketing strategies (Kutty et al., 2020).

The previous studies indicate that consumers are seeking more engaging and immersive experiences, leading to increased popularity in product promotion, which includes both digital and physical elements (Kumar et al., 2024). This "phygital," or hybrid method, effectively and uniquely combines the digital and physical realms. Phygital marketing aids companies in merging physical and digital experiences to enhance customer engagement while seeking genuine interactions (Bonfanti et al., 2023). Businesses can enhance customer experiences by promoting tailored, innovative, real-time AR, VR, and IoT interactions (Banik & Gao, 2023). These intuitive approaches attract clients and establish brand trust by promoting transparency, personalization, innovation, and uniqueness that no print or digital media can rival (Harrington, 2023).

In physical marketing, multisensory experiences are employed to influence consumer behavior. Research reveals that integrating physical and digital touch points enhances the uniqueness and connection of the customer's experience (Batat, 2024). R in retail connects the gap between in-store and online shopping by allowing customers to view products in their actual environment. Computerized systems in the real world provide personalized recommendations based on client information, resulting in more unique purchasing behaviors. Because it can be applied in entirely different areas or industries and targeted consumer markets, physical marketing can serve as a versatile tool for any marketer. Digital methods might influence shopper engagement as businesses develop more avenues for communication with their customers (Khalid, 2024).

As (Kirti Sharma et al., 2023) agree, "customers' purchasing preferences for tangible goods may change based on the level of their involvement." The combined aspects of physical and

advanced holding permit enable multi-dimensional client engagement; thus, physical products provide enhanced brand interaction (Pires et al., 2024). Personalization, improvement, and immediate feedback enhance physical products' engagement and increase the likelihood of customers making repeat purchases (Hyun et al., 2024). Find that consumers who connect more with the company become closer to it and experience greater satisfaction with its services, thereby raising their chances of being loyal for a longer duration and making repeat purchases (Sharma et al., 2022). As customers become more reliant on brands, improved client interaction with phygital products appears to enhance brand trustworthiness.

The prevailing study conducted by (Fischer et al., 2021) seeks to consolidate the existing research on sustainable consumption communication and to point out future research pathways. The critics conducted a thorough literature review which analyzed various communication methods and their effectiveness in promoting sustainable consumption behavior. The results demonstrate that conventional communication techniques used by organizations to reach their target audience produce minimal changes in consumer behavior because these techniques focus on advertising small product improvements. The results emphasize the need for organizations to develop interactive communication methods which allow consumers to participate in sustainable living practices. The study shows that organizations need to implement communication strategies which provide information to their audience while motivating them to practice sustainable consumption.

2.2. Factors Influencing Green Purchase Decisions

The study conducted by (Zhuang et al., 2021) used meta-analysis to investigate all factors that affect consumers' eco-friendly purchasing decisions. The research method involved a complete literature review together with the assessment of 54 empirical studies through the Comprehensive Meta-Analysis 3.0 software. The research identified three categories of influencing factors which included cognitive dimensions individual consumer characteristics and social factors while applying both the enhanced Theory of Planned Behavior and the Attention Behavior Context theory. The results demonstrated that perceived green value, attitude, and green trust significantly enhance the intention to purchase green products,

whereas perceived behavioral control, perceived consumer effectiveness, and subjective norm also exert a positive effect on this intention. Collectivism positively influenced, while the perceived risk associated with green products adversely affected green purchasing intention. These findings offer important insights for businesses and environmental groups to develop marketing strategies and effectively advocate for green products.

The preceding study conducted by (Kavita Sharma et al., 2023a) has a precise writing survey to distinguish components impacting consumers' green buy deliberate and behavior and to supply key bits of knowledge for marketers¹. The audit taken after the Theory-Context-Characteristics-Methodology system, analyzing 151 experimental considers distributed between 2000 and 2021. The ponder recognizes variables affecting consumers' green buy deliberate and green buy behavior and recommends that green customer behavior is affected by social, individual, political, psychographic, and moral values, with natural demeanor, concern, information, subjective standard, and perceived consumer adequacy being the foremost considered factors affecting green buy behavior. The creators noted inconsistently investigate discoveries due to negating comes about, which political and moral components have a noteworthy relationship with green buy behavior.

The conventional study has pointed by (Li et al., 2024) examine the variables impacting green nourishment buy eagerly, centering on the mediating parts of client fulfilment and promoting. Methodologically, the inquire about likely utilizes an organized overview or survey to gather information from members, analyzing the connections between factors such as client fulfilment, promoting, and buy eagerly utilizing measurable models like relapse investigation. The discoveries recommend that client fulfilment and publicizing play noteworthy mediating parts in forming consumers eagerly to buy green nourishment. Particularly, it uncovers that higher client fulfilment and compelling promoting procedures upgrade consumers' positive demeanors toward green nourishment, in this manner expanding their buy eagerly. These come about highlighting the significance of businesses contributing to client fulfilment and focused on promoting green nourishment utilization among customers.

The traditional study considered by (Chowdhury & Alamgir, 2021) pointed to decide the basic components affecting green item buy purposeful among youthful customers in Bangladesh. The technique included conducting a formal survey study focusing on youthful Bangladeshi

buyers matured between 18 and 32 a long time, with 400 reactions analyzed utilizing halfway slightest square auxiliary condition modelling (PLS-SEM). The findings uncovered that youthful consumers' green buy purposeful is altogether decided by their demeanor, natural concern, and readiness to pay, whereas seen ethical commitment had an inconsequential effect. These comes about give key suggestions for marketers and policymakers looking for to advance green item utilization in Bangladesh by highlighting the significance of leveraging customer states of mind and natural mindfulness to cultivate feasible obtaining behaviors.

The prevailing study conducted by (Kaur et al., 2025) points to supply a comprehensive bibliometric investigation of green buyer behavior, centering on the variables that impact the selection of green items. The technique requires the analysis of a large dataset which contains major distribution records to identify patterns and discover influential writers and new research topics. The research findings demonstrate how three main factors, which include environmental awareness and social norms, and perceived advantages work together to decide whether consumers choose green products. The research reveals existing research limitations while it provides recommendations for implementing strategies that will improve green consumer behavior research which businesses can use to develop sustainable marketing practices and conduct their environmental protection efforts.

The research conducted by (Baca & Reshidi, 2025) demonstrates how green branding affects customer acquisition decisions through its traditional research methods. The study aims to understand how environmental marketing strategies influence consumer behavior while exploring the impact of green branding on purchasing decisions. The approach will use mixed-methods research design which combines qualitative research methods with quantitative research methods to create a complete understanding of consumer perceptions and behaviors towards green products. The discoveries might uncover that green branding essentially impacts buyer choices, with shoppers appearing inclination for brands that emphasize natural maintainability, driving to expanded brand devotion and readiness to pay a premium for eco-friendly items. By and large, the cogitate points to highlight the significance of joining green promoting procedures into trade hones to adjust with advancing buyer values and contribute to feasible utilization designs.

The preceding study piloted by (Sharma et al., 2025) points to establish a framework to identify components influencing millennial consumers' intentions and their willingness to pay for green energy by enhancing the theory of planned behavior. It incorporates three additional elements to strengthen beliefs regarding GE's costs, environmental issues, and green human capital into the current TBP framework. The quantitative method was employed to collect research data from 517 millennials. The data was analyzed using partial least squares structural equation modelling (PLS-SEM). Natural demeanor, inherent subjective standards belief nearly the cost of GE, and innate concern were identified as having a positive correlation with the consumer's intention to use GE and their willingness to pay for GE. It appears that perceived behavioral control had a negligible effect on millennial consumers' intention to use GE. This consideration makes logical sense and theoretical commitments by providing insights into the factors driving GE usage among millennial consumers. This inquiry also aids in the development of a viable improvement plan by suggesting topics for future policy formulation, considering India's distinct qualities. This can be a key consideration when developing a framework to understand the variables affecting millennial consumers' intentions and their willingness to pay for green energy products in the context of an emerging economy like India.

The traditional study evaluated by (Ji et al., 2025) the effect of careful utilization on tourists' green buy purposeful and investigated the intervening parts played by wellbeing awareness, moral self-identity, and natural awareness. Through an internet study, multi-source information was collected from sightseers over China, and Smart PLS SEM was utilized for investigation to suit the necessities of complex models and the testing of intervening impacts. The findings demonstrate that careful utilization straightforwardly upgrades green buy deliberate and applies a roundabout impact through the interceding parts of moral self-identity and natural awareness. Be that as it may, the effect of wellbeing awareness on green buy purposeful was insignificant. This consideration is the primary to interface careful utilization to tourists' green obtaining behavior, developing a basic system to investigate how careful utilization impacts green buy purposefully. Moreover, it confirms the fractional interceding parts of moral self-identity and natural awareness in this preparation. Tourism partners can utilize the proposed system to actualize techniques that advance tourists' green obtaining behavior, subsequently cultivating economic improvement.

The prior study complemented by (Attih, 2020) to look at the impact of green showcasing blend on shoppers buying choice of items. Information was obtained through a survey managed by the respondents. 369 respondents were chosen to employ a comfort inspection method. Three theories were defined and tried at the 0.05 level of centrality. Information gotten for ponder was dissected using graphic and inferential measurements. Expressive measurements included the utilization of tables, recurrence, and rate whereas theories were tried utilizing straightforward direct relapse to demonstrate. The discoveries of the uncovered positive noteworthy impact of green marketing-green items, green cost and green advancement on shoppers buy choice of items. Based on the discoveries of the consider, it was prescribed among others that producers of green items ought to persistently move forward the substance of their items to fulfil customer needs and needs with extra unused highlights to preserve tall quality to pull in support.

The conventional study conducted by (soleymanpor & norouzi, 2025) issue of ensuring the environment has caused buyers to re-examine the items they purchase. Consumers' wellbeing and natural concerns increment the request for natural green products. This viewpoint powers businesses to make natural green goods utilizing maintainable hones. There's a small inquiry about green showcasing apparatuses and consumers' subjective standards towards natural green items. This thinks about examining the impact of green showcasing apparatuses on their buy purposefully, concurring the figure of subjective standards of buyers. The factual populace of the current investigate comprises of the clients of the stores beneath the supervision of the Natural Affiliation of Iran found in Tehran. A add up to 250 clients were chosen as investigating tests. To check the theories of inquiry about SMART-PLS computer program, auxiliary condition investigation and halfway slightest squares (PLS) strategy were utilized. Agreeing to the comes about gotten from the way coefficient and t-statistics, it can be said that the impact of green promoting instruments (brand natural, natural name and natural publicizing) on the behavioral deliberate to purchase green concurring to the interceding part of positive and important subjective standards, since they gotten way coefficient is positive. Hence, supervisors of natural stores ought to pay consideration to recognize the foremost worthy green showcasing procedure in arranging to direct green shopping behavior and fulfil the wants and requests of clients.

2.3. The Impact of Sustainability Information on Consumers

Sustainability information significantly impacts consumer behavior by impacting acquiring choices and inclinations. Uncovering natural and social supportability data can improve consumers' readiness to create maintainable choices, such as picking for longer conveyance times or choosing eco-friendly products. Be that as it may, the adequacy of supportability data depends on whether it adjusts with consumers' existing concerns and values. Coordinate clients who effectively look for maintainability data are more likely to be impacted by it, whereas no direct clients may appear in small response. Generally, maintainability data can drive customer behavior towards more economical hones, but its effect shifts based on buyer engagement and awareness (Viet et al., 2023).

The conventional study conducted by (O'Rourke & Ringer, 2020) a research study on how supportability data influences consumer purchasing enthusiasm and how this effect varies by issue, product category, customer type, and data type analyze more than 40,000 online purchases on Good Guide.com and uncover an important impact of specific types of sustainability information on buying behavior, influencing various types of consumers, challenges, and product categories. Wellbeing appraisals in specific appeared on the most grounded impacts. Coordinate users—those who intentioned looked for out maintainability information—were most emphatically impacted by supportability data, with a normal buy purposeful rate increment of 1.15 rate focuses for each point increment in in general item score, detailed on a zero to ten scale. In any case, supportability data had on normal, no upshot on no direct clients, illustrating that basically giving more or superior data on maintainability issues will likely have constrained influence on changing standard customer behavior unless it is planned to associate into existing decision-making forms.

The purpose of the study conducted by (Baviskar et al., 2024) inquired about investigate customer conduct towards feasible item choices, emphasizing the impact of visual patterns. Utilizing a comprehensive study, we inspected viewpoints such as natural affect mindfulness amid buys, reusing hones, and responses to eco-labelling. The information, visualized through Python, uncovered an inclination for maintainable items among ecologically mindful customers. In any case, a catch 22 rises with the tireless inclination for non-reusable plastics, despite mindfulness of their natural effect. These findings emphasize the complexity of

shopper conduct and highlight the need for instruction and down-to-earth measures to cultivate really feasible choices. It contributes novel experiences into the elements of shopper decision-making within the setting of natural supportability.

The traditional study pointed by (Huang et al., 2024) to sustain the impacts of green showcasing on peer-to-peer (P2P) settlement consumers repurchase deliberate and positive word-of-mouth (WOM) towards P2P settlement stages through the intercession of believe and shopper distinguishing proof. A survey overview was connected to gather information from a test of 488 customers in China who had used P2P settlement stages within the past six months. Halfway slightest squares auxiliary condition displaying was utilized to dissect the information. The ponder found that consumers' recognition of green promoting introduction of P2P settlement stages altogether expanded buyer believe within the stage and shopper recognizable proof with the stage, which in turn each emphatically impacted repurchase purposeful and positive WOM to the stage. Moreover, customers believe had a positive impact on customer distinguishing proof and both trust and distinguishing proof interceded the relationship between green showcasing and repurchase purposeful between green promoting and positive WOM. The discoveries of this consider give P2P settlement stage administrators with vital bits of knowledge to apply green showcasing and center on buyer believe and recognizable proof in supporting their trade and adapting with the strongly advertise competition. It contributes to a superior understanding of the influence of green commerce hones on shoppers in sharing economy and offers down to earth suggestions on feasible P2P settlement hones.

The purpose of the study conducted by (Zaman & Kusi-Sarpong, 2024) to find what is the relationship between supportability toward buyer behavior. Buyer behavior is the strategy of choosing, buying and utilizing products and administrations with a connection to needs and needs. Presently customers are mindful with almost supportability, they make buy choices agreeing to natural security, advantage to society and increment financial development. The methodology of the study has been analyzed through specialists in the material industry by utilizing the Decision-Making Trial and Assessment Research facility approach. This strategy has numerous benefits which give choice producers and specialists to get the interdependency and compelling connection between the criteria by various levelled approaches. The findings have been concurred to the comes about, green culture (F8) and

green brand (F3) are the foremost compelling (causal) components and apply a significant sum of impact over other variables for accomplishing organizational execution and maintainability. On the other hand, past encounters (F14) and time pressure (F12) are the foremost impacted (impact) variables that are profoundly affected by other components. Troughs ought to utilize long-term methodologies that meet the tall item's esteem to upgrade the organization's notoriety, so it'll have positive shopper discernment. On the off chance that directors plan to execute normal assets in their crude fabric, this arrangement maintains a strategic distance from clashes and keeps adjustment in our society. It dives into the complexities and nuances related with the distinguishing proof and examination between the victory's components of supportability and buyer behavior.

2.4. Sustainable Product Design and Consumer Trust

The conceptual study (Borah et al., 2024) looked the appraisal of the impact of green buyer information on green buy behavior among Gen-Z buyers towards footwear whereas surveying the parts of shopper social duty, green promoting, and green shopper believe. The methodology of the study was quantitative in nature and utilized an internet survey to study 559 Chinese Gen-Z shoppers. Discoveries uncovered that although green shopper information had a coordinated impact on green buy behavior, this impact was mostly intervened by buyer social duty. The impact of buyer social obligation on green buy behavior was emphatically directed by green promoting, and the directing impact of green publicizing was advance fortified by green customers believe. At last, the intervening impact of customer social obligation was conditional on the directing impacts of green promoting and green customer believe. It was concluded that green buyer information is a fundamental fixing in upgrading Gen-Z consumers' green buy behavior towards footwear. As such, backing and weight bunches must progressively conscientize buyers.

The prior study conducted by (Amin & Tarun, 2021) investigated the impact of utilization values (such as utilitarian esteem, enthusiastic esteem and social esteem) on buy purposeful of customers with respect to green items and to look at the impact of green believe as an arbiter.

A cross-sectional study design was employed in which a self-administered questionnaire was used to collect data from the participants. Both the measurable bundle for social science (SPSS) and the partial least squares method, a second-generation approach to structural equation modelling, were employed as statistical tools for analyzing the performance and evaluating the parameters. Eager appreciation significantly influences eco-friendly purchasing intent, while the other two factors of consumption values have negligible effects on consumers' green buying intentions. Additionally, green belief has the most significant influence on consumers' green purchasing intentions, and green belief showed a substantial mediating effect among the three dimensions of consumption values and green purchasing intentions. The results of the present study may assist organizations and business owners in comprehending eco-friendly practices and marketing strategies designed to tackle environmental concerns. Marketers should focus on the practical advantages of products, their social aspects, and, most importantly, on emotional benefits to enhance consumers' eco-friendly actions

The deceptive actions of green washing undermine the advancement of sustainable products and markets. Green washing undermines fundamental efforts to mitigate climate change and pollution while promoting social equity. Misleading marketing that asserts products are affordable undermines the value of eco-friendly goods and weakens customers' ability to choose sustainable options over non-sustainable ones. Green washing moreover kills believe in “green” items. Markets contaminated by fake “green” items eventually come up short to supply the essential feasible change. It illustrates that buyers get solid straightforward, traceable, and tamperproof item data neutralizes seen green washing among buyers of biological nourishments. Besides, our information demonstrates that block chain data essentially more than certification frameworks to protect shoppers against the danger of green washing. Data approving realness advances the advancement of economical items, secures mental property rights for providers of green items, and shields the supply of green items to shoppers. Buyers require key data that guarantees the provenance of green items. Customary shrewdness underwriting certifications to oblige green washing. In any case, we discover that block chain data measurements ensure brands against seen green washing more heartily than certification frameworks.

The conventional study pointed by (Barbu et al., 2022) systematic writing analysis on consumer conduct, along with identifying the key factors that influenced consumer behavior towards eco-friendly products. A total of 37 muses were discovered and organized using selection and exclusion criteria. The papers were selected as they contained research on consumer perceptions of eco-friendly products. Employing this analytical approach, a writing examination was conducted using articles retrieved from the Web of Science, Emerald Insights, Springer Link, and Science Direct. Consequently, various factors influencing consumer behavior regarding eco-friendly products were identified, including social norms, usual environmental exposure, the firm's perceived eco-friendly image, attributes of green products, perceived risks and challenges related to purchasing green items, perceived advantages of buying green products, organizational trust, socio-demographic traits, and consumer confidence. Although the examined articles showcase quite different reasons, they stress that green products must consider the needs, wants, and perceptions of consumers.

The traditional study pointed by (Rizomyliotis, 2024) investigated how shopper believe impacts online buy eagerly for maintainable items. The technique included fundamentally assessing existing writing and observationally testing about show utilizing information from 278 members. The research results demonstrate that three factors, which are chance, security, and user security, predict customer trust in e-commerce platforms, which then creates a strong effect on their sustainable product purchasing behavior. The researchers discovered that customer trust acts as a buffer between their belief in e-commerce systems and their intention to shop online, which establishes customer trust as the primary factor that drives online sustainable product purchases.

The conventional study pointed out by (Dellyana & Aldianto, 2025) to upgrade client procurement by investigating viable promoting approaches for economical businesses. The strategy likely includes analyzing existing writing and conceivably conducting observational investigation to recognize effective procedures. The discoveries propose that imaginative showcasing procedures can essentially progress client securing for green items by leveraging shopper mindfulness and inclinations for supportability. The think highlights the significance of fitting promoting endeavors to reverberate with ecologically cognizant shoppers, possibly driving to expanded brand dependability and buy eagerly for green items.

The previous research which (Feng, 2025) proved that economic plan standards help to reduce environmental impacts throughout product development. The strategy likely included a comprehensive survey of existing feasible plan methodologies and their applications. The research results showed that product development needs to implement eco-design together with material selection and circular economy principles to reduce environmental impact. The research findings showed that using sustainable materials together with energy-efficient designs and modular construction methods leads to improved product recycling and extended product lifespan, which results in more sustainable product life cycles.

The existing research study conducted by (Holloway, 2025) investigated how consumer views about supply chain sustainability affect their purchasing choices. The study used qualitative research methods which included detailed interviews and focus groups to study multiple aspects that affect how consumers choose sustainable products. The study found that environmental impacts and social responsibility and transparency and economic factors, and cultural elements all shape how consumers form their opinions. Consumers show strong support for sustainability initiatives but face challenges because they have to pay higher costs and experience limited access to sustainable practices. The study showed that organizations should use transparent information methods together with sustainability certifications to build trust with consumers because these methods help customers understand their sustainability progress.

The study conducted by (Kantor, 2025) examined how green washing affects consumer trust and what business practices follow this effect. The research process probably entailed an in-depth review of literature and case studies regarding green washing, with inputs probably coming from consumer surveys and interviews. The research showed that green washing leads to a substantial decrease in consumer trust because it creates a deceptive false image which results in brand image and customer loyalty issues. The research identified corporate transparency with sustainable claims through genuine environmental practices and third-party certification as the essential elements needed to restore trustworthiness between businesses and their stakeholders.

2.5. Research Gaps

Previous studies have examined trust, transparency, and sustainability attributes separately, with limited integration into a single framework explaining consumer purchase behavior.

While consumers express awareness of sustainability, this does not consistently translate into actual purchasing decisions, indicating a gap between intention and behavior.

Existing research investigates sustainable product design through marketing research and behavioral studies instead of focusing on eco-labels recyclability and lifecycle assessment.

Both trust-building methods and transparency systems need additional study to determine their impact on consumer trust toward sustainable products.

Contextual limitations emerge because many studies operate within specific regional and industrial boundaries which prevent results from applying to wider consumer markets.

3. Research Methodology

The research method used in this study defines how researchers will assess the effect of sustainable product design on what consumers choose to buy. The analysis is succeeded by hypotheses designed to validate the objectives. The chapter presents a complete description of the data collection methods which researchers used in their study through the administration of questionnaires and their subsequent data analysis methods. The sampling method explains how researchers selected their participants for the study which links to their study criteria. The study will present its essential academic research aspects together with the chosen research methodology while it tries to understand why this research study chooses its specific topic and research timing.

This study will also seek to address the question, “What behavioral factors are significant for consumers to be willing to pay a premium price for sustainably designed products?” as explored in recent literature (Kavita Sharma et al., 2023b; Yusoff et al., 2023). The research examines how sustainable product design affects consumer trust and purchasing behavior by analyzing consumer buying patterns and their preference for brands that practice sustainability.

The research explores the impacts of design attributes of trustworthiness, transparency, and eco-labels on consumer buying intentions. The study will provide practical insights for business. Using quantitative methods, the data interpreted statistically will help businesses better understand consumer behaviours towards sustainable products.

3.1. Quantitative Method

The usage of quantitative study approaches delivers statistical data that signifies the viewpoints of how the sustainable design of the product influences consumers’ purchase decisions and their willingness to pay. Quantitative surveys are precisely used to measure the predictive impact of product design on purchasing decisions, letting scholars develop and examine hypotheses interrelated to their study goals. The aim of using this investigation

technique is to produce reliable and extensively applicable results that offer an understanding of predominant opinions for consumers on sustainable product design.

Large sample size: This guarantees dependability as this sample reflects the intended population (consumers who purchase or are potential buyers of sustainable products) or market. Because of the substantial sample size, the results can also be applied to the whole population, highlighting this as a key aspect of quantitative research.

Reusable outcomes: One of the essential features is that the results of research can be applied and reproduced in other studies, rather than being limited to just one inquiry.

Reliable: The participants respond to closed-ended question; their replies are straight forward and unambiguous, resulting in numeric data that is exceptionally trustworthy.

Easy-to-use data collection methods: The technique consists of experiments, regulated observations, and surveys or questionnaires featuring a rating scale or closed-ended questions that demand straight forward and direct responses; are not limited by geographic locations; and are simple to implement (Sreekumar, 2023).

The present research uses a quantitative method to effectively meet the research objectives regarding consumer preference and willingness towards sustainable product design. The chief objective of this technique is to produce steady and reliable consequences that can be prolonged to wider demographics. While qualitative policies provide in-depth evidence, they often encounter problems such as lack of precision, thoroughness, and oversimplification. Conversely, the quantitative method allows for methodical inspection of public viewpoints and governing practices. Specifically, this study employs an organized survey to gather information from a diverse group of contributors, allowing an assessment of understanding key dependent variables like purchasing decision, willingness to pay a premium for sustainable products. The method helps to identify which sustainable design elements matter most for product development while it helps to develop a deeper understanding of how these elements impact customer buying behavior and their product price valuation.

3.2. Research Approach

(Mark NK Saunders, 2023) defined as a deliberate exploration to analyze data gathered from various sources in a systematic manner. As a result, the primary goal of research is often to comprehend and provide additional insight into various phenomena related to our daily experience. (Brannick & Coghlan, 2007) proposed that academic research should prioritize the development of theories to enhance understanding of the research topics, rather than solely focusing on practical aspects. Quantitative and qualitative research methods are widely utilized in academic studies. This research employs quantitative research methods among the available approaches. Selecting the appropriate research methodology is essential for a successful research project (Elsevier, 2024).

Research methodology pertains to the guidelines on how different types of research should be carried out (Saunders et al., 2007). This chapter is keen on explaining the approach for obtaining dependable and innovative information during the empirical research of this thesis. (Saunders et al., 2007) Introduced the concept of the "research onion," a model that outlines the factors researchers should consider when selecting data collection methods.

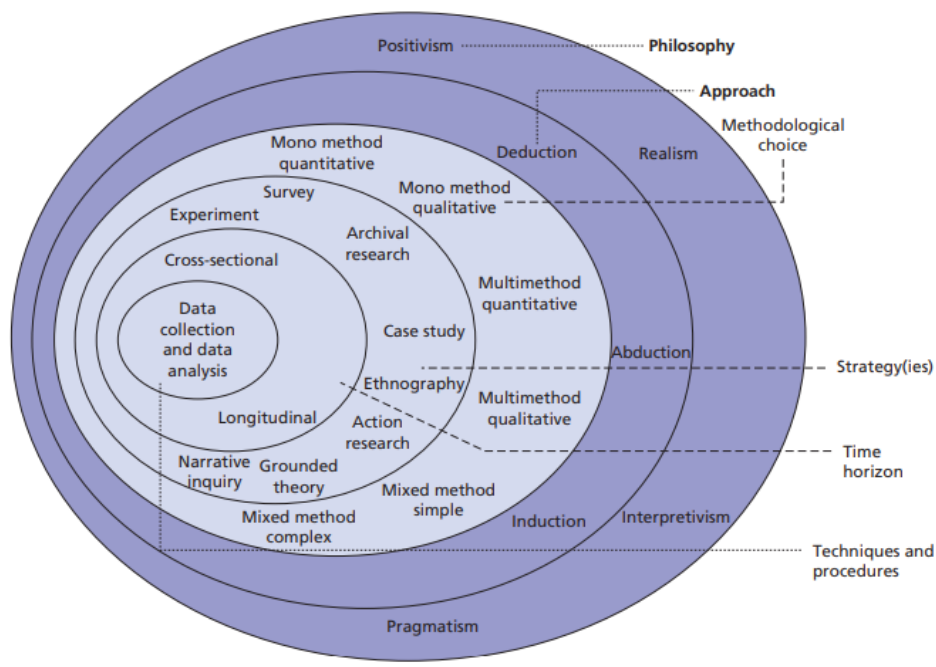


FIGURE 1: RESEARCH ONION (SAUNDERS RT. AL., 2007)

The research onion starts with the outer layer, which represents research philosophies that shape how the researcher perceives the world. Historically, two main research philosophies stand out: positivist and interpretivist. In addition, newer perspectives such as pragmatist, critical realist, and postmodernism have emerged in the realm of scientific research philosophy. The initial layer of the research onion delves into the researchers' beliefs about the world. The researcher's philosophies impact their priorities and the methodology they employ in their research (Saunders et al., 2007). The research philosophy followed in this thesis is positivism. This choice is made because there is a preference to observe specific traits and create generalizable conclusions. Furthermore, a well-organized approach is favored, especially in the context of positivism (Rose et al., 2023). Therefore, it is typical for positivist researchers to perform quantitative statistical analysis, which is also carried out in this thesis. However, no philosophy is superior to another. Certain philosophies may be more appropriate for specific research inquiries, and research often does not align exclusively with one philosophy (Saunders et al., 2007).

Three methods for theory development are discussed: deduction, abduction, and induction. The deduction method involves creating a hypothesis based on an existing theory and then designing research to test it. In contrast, the inductive method allows researchers to generate a theory instead of relying on an existing one, as seen in the deductive approach. Regarding methodological choices, mono-method quantitative study methodology (Rana et al., 2023) is employed in this study. The objective is to understand how product's sustainable design impacts the consumers' preference over others and willingness to pay for it.

3.3. Research Design

This study uses a quantitative approach to examine how sustainable product design influences consumer purchase decisions. This thesis will employ a quantitative research approach featuring a survey design. Quantitative research is appropriate for establishing effect meanings, testing hypotheses, and deriving attitudes and opinions from a larger sample size in studies (Dehalwar & Sharma, 2024).

A survey design provides a quantitative analysis of trends, attitudes, and opinions within a population, or examines relationships amongst variables of that populace, through

investigating a sample from it (Rana et al., 2023). This method provides reliable and uniform outcome data that can be applicable to a larger sample population and helps in understanding the consensus of people's views on the results. This approach will aid in recognizing the effect of trust in sustainable design of the product on consumer preferences.

Moreover, quantitative methods assist the current research in identifying relationships among variables and drawing conclusions applicable to a larger population effectively. Research technique is defined as a collection of extensive procedures, tools, and methods employed in the data collection process that helps achieve the study's objectives. The progression of the study and the comprehensive development of present research is shaped by research design. It pertains to the reaction during investigations about its appropriateness for the current task. The application of standardized data collection methods in quantitative research establishes objectivity and reliability while decreasing researcher bias and permitting other researchers to confirm study results. Researchers use quantitative research methods to test their hypotheses, which leads to discovering variable relationships that help with predictive analysis across different fields. The process of analyzing quantitative data requires researchers to collect data which they will analyze using statistical tools to create essential findings from their research. The data that is gathered and utilized for future tasks as well as for execution.

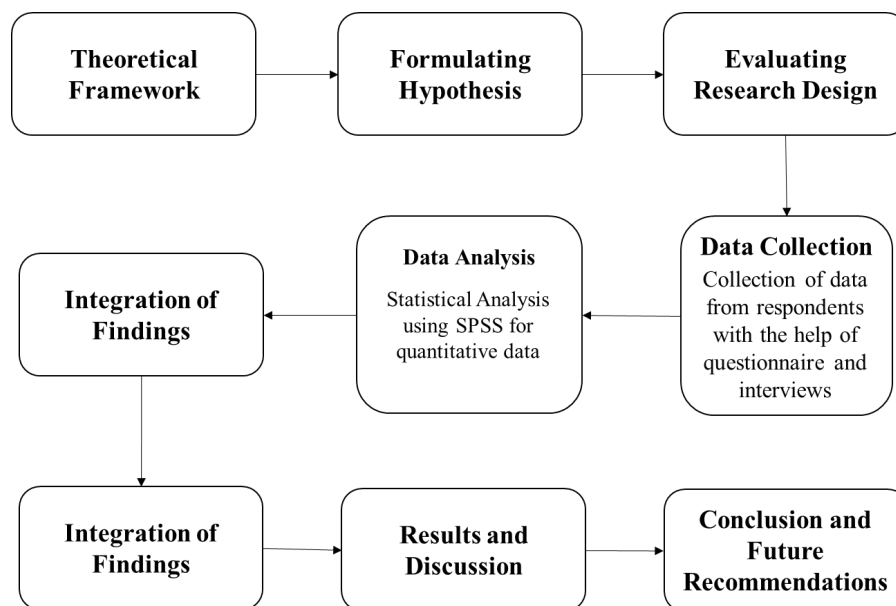


FIGURE 2: RESEARCH FRAMEWORK

The research employs a structured methodology which Figure 3.2 shows as its demonstration. The study begins with a theoretical foundation which implements the human capability approach together with research directional assumptions. The research framework establishes reliable research results because it follows established standards. The research objectives require systematic questionnaire development which will ensure the collection of necessary research data. The researchers used the questionnaire to collect data which they classified as primary data. Descriptive analysis aids the research by citing current literature, offering a theoretical basis for findings. Multiple statistical tests are performed on the study variables to guarantee a comprehensive analysis.

3.1.1. Research Hypothesis

The hypothesis of the study is mentioned below,

H1: Perceived trust in sustainable product design positively influences consumer purchase decisions.

H2: Supply chain transparency positively affects consumer willingness to pay for sustainable products.

H3: The presence of eco-label certifications significantly enhances consumer purchase intentions for sustainable products.

3.1.2. Sampling Area and Size

To obtain reliable and widely applicable results, accurately determining the research sample size is essential (Mweshi & Sakyi, 2020). When performing quantitative analysis, the sample size is vital because it influences the reliability of the results and aids in meeting the research goals. A big part of the survey study's success is the number of respondents (Saunders et al., 2007). The population for this study consisted of consumers who purchase or are potential buyers of sustainable products. Since there was no access for a complete sampling frame of the target population, a non-probability convenience sampling technique was used. This

method was chosen because it allowed data to be collected from respondents who were easily accessible and willing to participate in the survey. Total of 224 respondents responded and were included for the analysis.

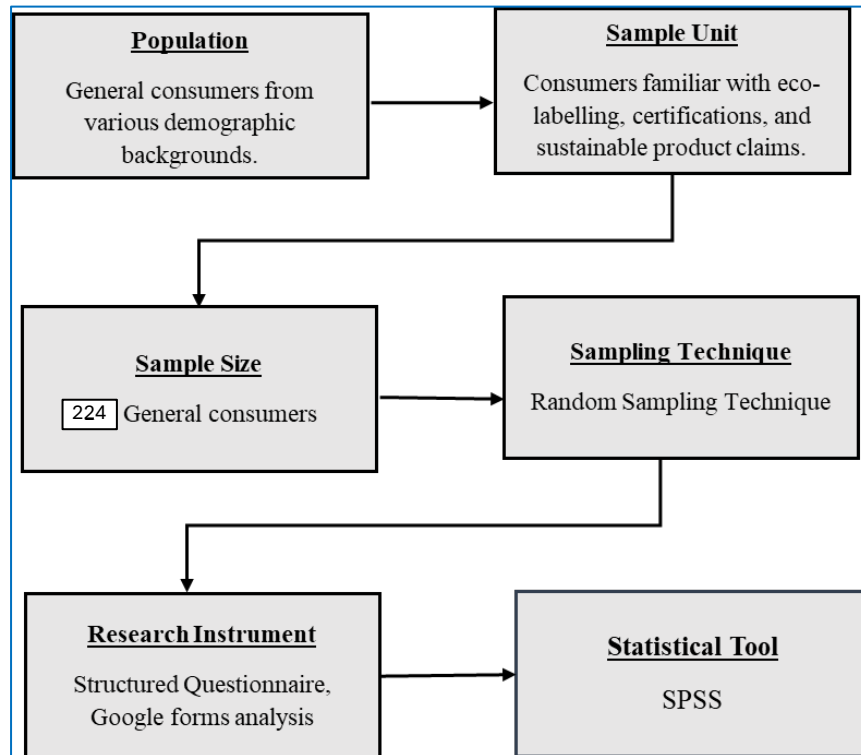


FIGURE 3: SAMPLING PROCESS

3.4 Data Collection

The information gathering in this research study was done through a survey, which is a reliable method for obtaining quantitative data (Saunders et al., 2007). The process of data collection requires researchers to gather information from different sources while determining which data types and their respective sources and data collection methods they will need (Jain, 2021). The process of organizing data requires a fundamental step to ensure whether the data meets requirements of being applicable and trustworthy and matching research goals. The research uses quantitative methods to study how sustainable eco-certified products affect consumer buying behavior and product evaluation through surveying customers. The thesis research targeted consumers from multiple industry sectors to study how design elements such as trust and transparency and eco-labels affect their buying decisions. The process of data collection involves identifying, compiling, and examining

information essential and pertinent to the ongoing research to ensure validity and reliability by employing high-quality methods. The information was collected via structured questionnaire and subsequently arranged in a Microsoft Excel spreadsheet, where it is converted into graphical representations utilizing Excel's charting capabilities. Additionally, collecting primary data provides the adaptability to tailor questions and instruments to meet the specific characteristics.

The survey will be conducted in Google Forms and will be distributed online and offline, if necessary. Data collection occurred over a period of 4 weeks, which allowed sufficient time to reach the desirable sample size. The desired sample size was 250 respondents. However, a total of 224 responses were collected successfully and analyzed; it represents an achievement of 90% of the intended sample. This research investigates consumers in various sectors where the consumer prefers the sustainable product and is willing to pay for it. Information was gathered from 224 respondents, concentrating on those directly involved in the purchase decision-making process. This research investigates consumers in various sectors where the consumer prefers the sustainable product and is willing to pay for it. Information was gathered from 224 respondents, concentrating on those directly involved in the purchase decision-making process.

The convenience sampling was done to select respondents who would provide the necessary data, and the study collected 219 valid responses out of 224 responses which were used for their analysis. Participants were ensured that their identities would remain confidential, and their personal details would stay anonymous. The research questionnaires did not gather any data that could identify participants. Through screening was performed to verify data completeness and correctness before proceeding to code data for entry into SPSS software which were used for statistical analysis.

The demographic information regarding age, gender, education, and work experience, they organized classification system enables researchers to conduct detailed studies which show how sustainable product design affects consumer buying behavior while delivering useful business results. The information will be arranged in an Excel spreadsheet that distinguishes itself according to these essential demographic elements to enable additional understanding and conclusions. Thus, there was a possibility of getting deeper into the issue and finding

casualties that had occurred and might not otherwise be recognized. Due to sensitive information provided, interviewees were told that their answers would be kept anonymous and that quotes would be used so that they cannot be linked to the respondents.

3.5 Measures

The study used a structured questionnaire to measure the main variables related to customer behavior towards sustainable products. The questionnaire consisted of demographic questions, one multiple choice question, and 15 Likert-scale items. The Likert-scale items were measured using a 5-point scale, where 1= Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree and 5= Strongly Disagree. It was used to assess how different variables interact with purchasing behavior and customers' readiness to pay for environmentally friendly products and their viewpoints, which research surveys cannot identify. The selection criteria considered assessment of candidate backgrounds together with their choice of online research activities. The selected respondents were considered to have knowledge about sustainability claims, including certifications and eco-labelling, and other sustainable attribute information. The selected respondents were mostly university students and people who were considered aware about sustainability because their selection would improve research quality while maintaining research objectivity. More descriptions of variables are as;

The variable supply chain transparency was measured using the statement: "Supply chain transparency is important to me when purchasing sustainable products."

The variable eco-label certification was measured using the statement: "I check for eco-labels or certifications before purchasing a product to verify its sustainability claims."

The variable willingness to pay was measured using the statement: "I am willing to pay a premium for sustainable products."

The variable consumer purchase decision was measured using the statement: "I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence."

The variable purchase intention was measured using the statement: “I prefer to buy products from companies that demonstrate a commitment to sustainability in their operations and supply chain.”

The questionnaire also included a multiple-response item on sources of information about sustainable products. This variable was recoded into four categories: social media, Online blogs/Article, Television Ads, and Friends and Family recommendations.

In addition, demographic variables such as age, gender, education, work experience, and income were included to describe the respondents and provide further insight into the characteristics of the sample.

3.5.1 The Assessment of the Quality of the Data

The quality of the data is crucial for the outcome of research, regardless of the circumstances under which the research is conducted. (Leung, 2015) The resources, procedures, and information are highlighted as essential components of accuracy in quantitative research. Although acknowledging that there are various methods to evaluate the accuracy of the data in the research, (Barroga & Matanguihan, 2022) indicate that the problem can be analyzed using four aspects: internal validity, construct validity, external validity, and reliability. Internal validity in research pertains to the study's capability to establish and demonstrate the connections between the elements investigated (Barroga & Matanguihan, 2022). The study addresses this challenge based on its theoretical framework. The structured questionnaire is the main tool for collecting data and incorporates elements discussed in the theoretical background section of the study.

(Barroga & Matanguihan, 2022) define construct validity in research as ensuring that the study examines the topic it purports to. According to (Ghanad, 2023), the importance of research constructs in shaping the study's results is emphasized. It is crucial for the construct validity of the research to be methodically developed, beginning with a comprehensive overview of the topics addressed and progressing smoothly to a more intricate examination of the issues pertinent to the study.

The external validity of the data quality assessment is based on the idea that the results of the study would be similar if conducted by a different person or with another group of participants (Barroga & Matanguihan, 2022). The study primarily focuses on addressing this challenge through the inclusion of a diversity policy for the participants. From the initial phase of pre-selection, efforts were made to gather a varied group of individuals to take part in the study. Furthermore, this diversity was enhanced by also considering the managerial aspect related to the topic.

The three aspects of validity mentioned above form the basis for ensuring the reliability of data in research. This is particularly important when conducting quantitative research, as stated in (Leung, 2015). The challenges of the landscape are due to the various perspectives it offers. The most important factor is ensuring transparency and reproducibility for reliable data (Barroga & Matanguihan, 2022).

3.5.2 Measurement of Variables

The study measured the main variables using structured questionnaire which included demographic questions, multiple response and 15 attitudinal questions related to sustainable consumption. There has been use of established scales from previous studies to measure its constructs because those scales have been proven to deliver valid and reliable results.

Trust was measured using two items. These items captured respondents trust in sustainability-related information and the influence of social media reviews on that trust. An example item is: "I trust the sustainability claims made by companies without skepticism." Another item used was: "Positive reviews and recommendations on social media increase my trust in a brand's sustainability claims." Both items were measured on the 5-point Likert scale described above.

Supply chain transparency was measured using one item on the same 5-point Likert scale: "Supply chain transparency is important to me when purchasing sustainable products."

Eco-label certification was measured using one item also on the 5-point Likert scale: "I check for eco-labels or certifications before purchasing a product to verify its sustainability claims."

Willingness to pay was measured using one item: "I am willing to pay a premium for sustainable products." This item was also measured using the same five-point Likert scale.

Consumer purchase decision was measured using one item: "I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence." Responses were recorded also on the five-point Likert scale.

Purchase intention was measured using one item using five-point Likert scale: "I prefer to buy products from companies that demonstrate a commitment to sustainability in their operations and supply chain."

In addition, the questionnaire included one multiple choice nominal question on how respondents access information about sustainable products. This variable was distributed into 4 categories: social media, Online blogs/Article, Television Ads, and Friends and Family recommendations. Since respondents were given to select more than one option here, this variable was analyzed separately as a multiple-choice item.

The questionnaire collected demographic information including age, gender, education, marital status, and income level. These variables were measured using categorical responses and were used to describe the characteristics of the sample (respondents).

To measure the internal reliability of the samples attitude related items, Cronbach's alpha was calculated for the 15-item attitudinal section of the questionnaire. The result showed very high level of reliability ($\alpha = .903$), indicating that the items had strong internal consistency. However, the Cronbach's Alpha was not calculated each single 15-Likert item measures because internal consistency reliability is not applicable to variables measured with only one item.

3.6 Data Analysis

Many survey questions are on the Likert scale, which is used to gauge respondents' opinions and attitudes. Individuals may interpret similar situations in various ways, so their perspectives may not always reflect the actual circumstances (Williams et al., 2022).

Therefore, this study focuses on the opinions of individuals regarding their preference and willingness to pay for sustainable design of the product. Likert scales play a helpful role in quantitatively analyzing the perceived effectiveness by allowing for the calculation of total scores reflecting specific attitudes or behaviors (Williams et al., 2022). Therefore, this study primarily utilizes the Likert scale to evaluate the general attitude or behavior of participants in the survey questions.

Data analysis is an essential technique in research, vital for evaluating and organizing data to obtain valuable insights. The SPSS is a highly regarded statistical analysis software recognized for its capability to handle complex data sets effectively (Rahman & Muktadir, 2021). The analysis process becomes easier for researchers through SPSS, which provides an intuitive interface for their data analysis needs. The program too has virtual exhibit apparatuses that help with analyzing complex models rapidly. The program has gained popularity among researchers and data analysts because of its easy-to-use interface and detailed instructional materials, and straightforward command of language. The system enables users to focus on their research work because it provides access to verified statistical data (Alili & Krstev, 2019).

The analysis was carried out in several stages. Firstly, descriptive statistics like frequencies and percentages were used to summarize the demographic characteristics of the respondents and to present the response distribution for the questionnaire items. Secondly, the reliability analysis was conducted using Cronbach's alpha to assess the internal consistency of the Likert-scale items. This helped determine whether the measurement items used in the questionnaire were reliable or not. After this, factor analysis was performed to examine whether the respondent's attitudinal items could be grouped into broader underlying dimensions related to consumer behavior towards sustainable products. Third, the Pearson correlation analysis was used to examine the direction and strength of the relationships between the key study variables. This made it possible to identify whether those variables were positively or negatively associated with one another. And finally, regression analysis was employed to test the study hypotheses and to determine whether the independent variables significantly predicted the dependent variables. For the first hypothesis, multiple regression analysis was used because more than one predictor was included in the model. For the second and third hypotheses, simple linear regression analysis was used because each hypothesis involved one predictor and one outcome variable.

The hypothesis presented in this thesis is tested using the IBM SPSS statistics software. Multiple steps need to be taken to determine the reliability of the analyzed data and assess the possibility of conducting a data reliability/validity test. The SPSS software is employed to examine the variables within an Excel spreadsheet. The results of the analysis are categorized into five sections: Frequency, Coefficient, Association, Reliability, and ANOVA. This software is commonly used for quantitative and empirical analysis (Arifa Rahman, 2021). The program helps evaluate information gathered from specific individuals. It could modify and adapt to the extent of the investigation. SPSS is utilized by researchers to enhance their work. Furthermore, the software can identify research obstacles and offer remedies for issues discovered during statistical examination.

3.7 Ethical Considerations

The research utilizes quantitative methods to inspect the effect of sustainable product design on consumer preference. The researchers use surveys and statistical methods to study how people decide to purchase environmentally friendly products based on their willingness to pay. The main ethical requirements demand that researchers secure informed consent from research participants while they protect both the privacy and security of participant information.

Researchers use quantitative methods to collect and analyze numerical data about consumer preferences, which lets them determine through statistical testing how sustainably designed products affect customer trust. The research method presents a structured approach which helps to analyze how sustainable product design characteristics affect consumer buying behavior.

3.7.1 Informed consent

The study ensures that participants grasp its main goal together with all survey requirements and data handling procedures and their entitlement to withdraw from the study whenever they choose. Respondents will be gathered through online survey platforms, social media or

email campaign or at the University of Vaasa's grounds people who are involved in the decision making of any purchase either online or offline will be targeted, when attaining informed consent. Also, the study will clearly explain the ways data from the quantitative phase will be used and integrated.

3.7.2 Data security and Confidentiality

The current research will safeguard the personal information (privacy) of participants by certifying anonymity during collection and presentation. Utilize pseudonyms or code numbers as a substitute for the actual names. Considering that the present research involves delicate information related to well-being and stress, it is crucial to be especially careful in protecting data from unauthorized access. This entails the safe storage of survey information. Clearly details management protocols, specifying how it will be kept, applied, and ultimately cleared.

4. Results

This research sampled 224 people with different demographic characteristics, asking them about the factors that influence the perception of sustainable products and their effect on consumer behavior. The primary motive behind choosing a quantitative method was to put to empirical test the hypotheses of the study concerning how brand-led sustainability initiatives and attributes affect consumer preferences, decision-making, and willingness to pay. In fact, the study emphasized the roles of perceived trust (H1), supply chain transparency (H2), and eco-label certifications (H3). The data were collected via a structured questionnaire and later analyzed with SPSS software to find the statistical patterns and correlations that form the core of the research objectives.

4.1 Demographic data

TABLE 1: AGE

Age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 to 25 Years	76	33.9	33.9	33.9
	26 to 35 Years	103	46.0	46.0	79.9
	36 to 60 Years	38	17.0	17.0	96.9
	Above 60 Years	7	3.1	3.1	100.0
	Total	224	100.0	100.0	

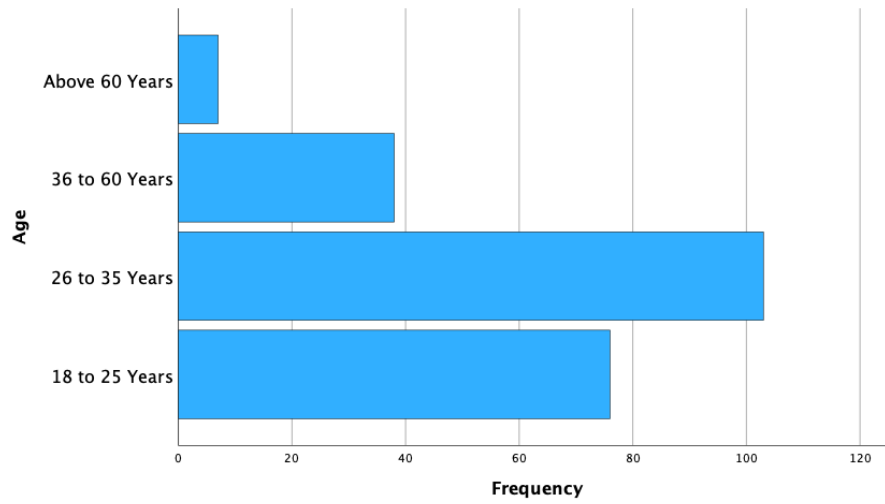


FIGURE 4: AGE

The age distribution of 224 respondents reveals that the sample mainly consists of young to middle-aged adults. The 26 to 35 years age group is the largest cohort, making up 46.0 % of the total participants, and the 18 to 25 years group with 33.9 % is closely following. As a result, these two younger segments together account for a significant majority of 79.9% of the total sample. The 36 to 60 years age range, thus, also forms a considerable share of the respondents, 17.0 %, while people above 60 years represent the smallest segment, 3.1 %. Such a demographic profile implies that the study's results are most reflect the views and the lifestyle of a younger, working age population.

TABLE 2 : GENDER

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	93	41.5	41.5	41.5
	Male	131	58.5	58.5	100.0
	Total	224	100.0	100.0	

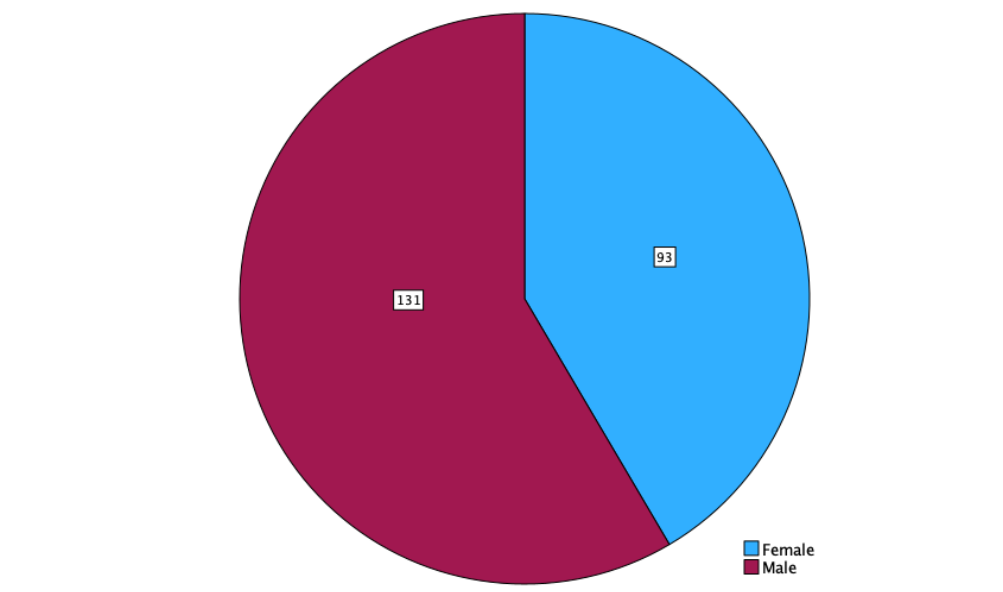


FIGURE 5: GENDER

Out of the 224 respondents, the distribution of genders is almost equal, with a small predominance of males. Men make up 58.5% of the sample (131 respondents), whereas women represent 41.5% (93 respondents). Such a close to equal distribution is one of the study's merits since it indicates that the results are not gender-largely biased and, therefore, give an inclusive insight into consumer behaviors from both male and female perspectives.

TABLE 3: MARITAL STATUS

Marital Status				
	Frequency	Percent	Valid Percent	Cumulative Percent
Married	78	34.8	34.8	35.3
Single	145	64.7	64.7	100.0
Total	224	100.0	100.0	

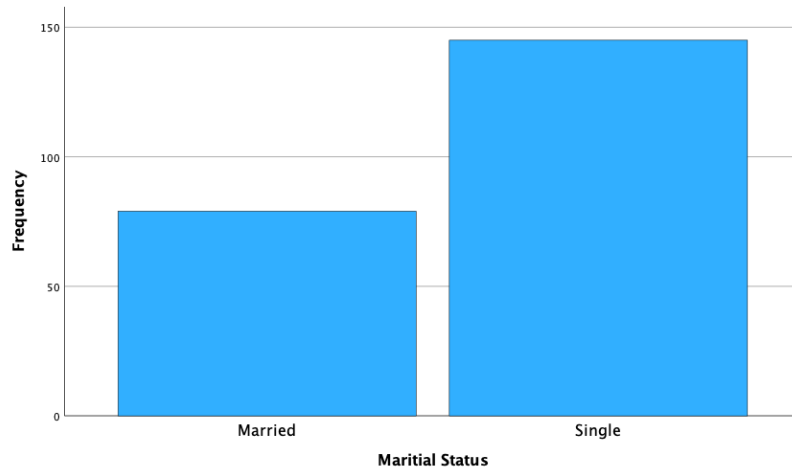


FIGURE 6: MARITAL STATUS

The distribution by marital status of the 224 respondents reflects a sample mostly of single people. To be exact, singles are the major group at 64.7% (145 respondents), whereas married respondents account for only 34.8% (78 respondents) of the sample. Such a distribution implies that the results of the research are more reflective of single consumers, however, the views of married people have also been considerably represented, thus, delivering an overall insight into these two major lives stages.

TABLE 4: EDUCATION LEVEL

Education					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	1.3	1.3	1.3
	Diploma	12	5.4	5.4	6.7
	Postgraduate	103	46.0	46.0	52.7
	Secondary	21	9.4	9.4	62.1
	Undergraduate	85	37.9	37.9	100.0
	Total	224	100.0	100.0	

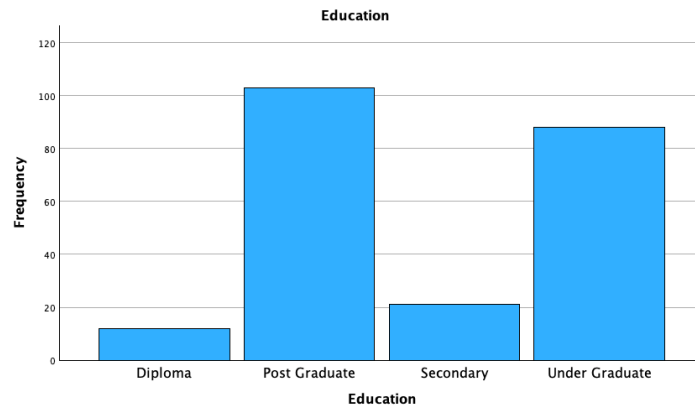


Figure 7: Educational Background

The educational background of the 224 respondents reveals that the sample is highly educated. Almost half of the whole sample, 46.0% (103 respondents), was the largest group to report having a post graduate degree. Next, the group of respondents with undergraduate degrees accounted for 37.9% (85 respondents) of the total sample. It is worth noting that people with either undergraduate or postgraduate degrees together make up a vast majority of 83.9% of the participants. The rest of the respondents were between those with a Secondary education (9.4%) and those holding a Diploma (5.4%). Such a distribution indicates that the results of the research are mostly representative of consumers with a relatively high level of formal education, which might be associated with a greater awareness of sustainability issues.

TABLE 5: INCOME LEVEL

		Yearly Income			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	100000 - 200000	4	1.8	1.8	1.8
	200000 or over	1	.4	.4	2.2
	25000 - 50000	96	42.9	42.9	45.1

	50000 - 100000	15	6.7	6.7	51.8
	Under 25000	108	48.2	48.2	100.0
	Total	224	100.0	100.0	

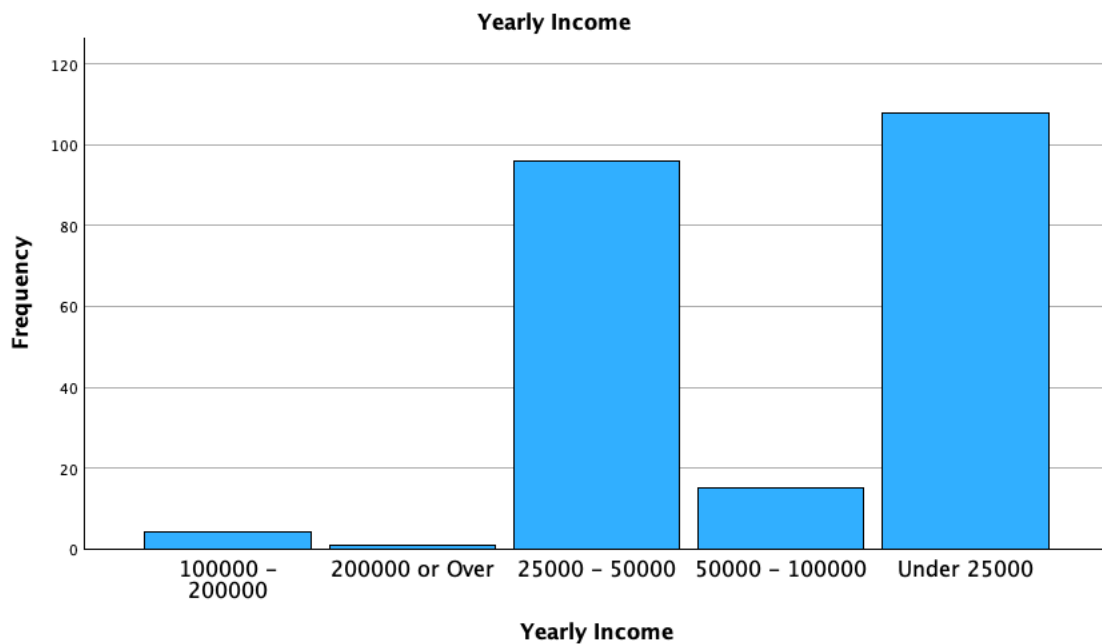
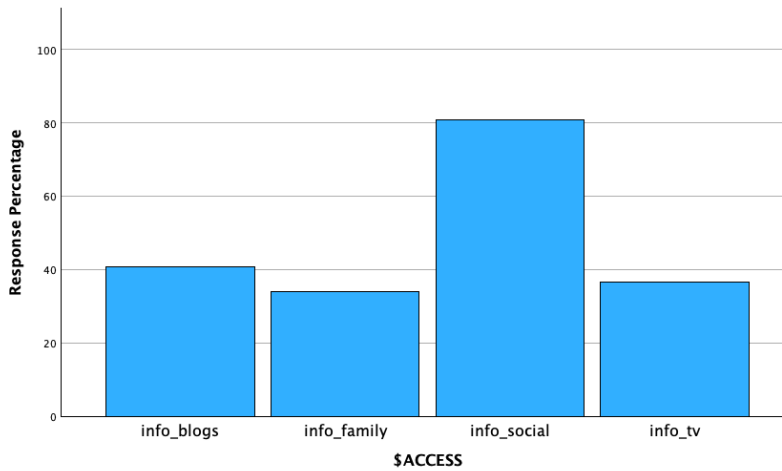


FIGURE 8: YEARLY INCOME

The income distribution of the 224 respondents reveals that the sample is mainly composed of individuals belonging to the lower-to-middle income brackets. The most substantial portion, comprising 48.2% (108 respondents), declared an income level under 25000 Euros per year, while the consumers under 25000 to 50000 euros per year bracket, which represents 42.9% (96 respondents) of the sample, is not far behind and almost the same. As a result, these two groups account for a major share of 91.9% of all participants. The rest of the respondents are scattered among the higher income levels, with 6.7% earning between 50000 to 100000 euros per year and just 1.8% reporting an income of more than 100000 - 200000 euros per year. There was also a significantly smaller number of respondents (0.4%) who reported the income levels of more than 200000 or over per year. Therefore, the study's findings seem to be the most representative of the consumers' views and purchasing habits of those with lower to middle incomes.

TABLE 6: ACCESS INFORMATION ABOUT SUSTAINABLE PRODUCTS

Access information about sustainable products				
		Responses		Percent of Cases
		No.	Percent	
Val	Social media	181	42.1%	80.8%
	Blogs and Articles	91	21.2%	40.6%
	Friends and Family recommendations	76	17.7%	33.9%
	Television Ads	82	19.1%	36.6%
Total		430	100.0%	192.0%

**FIGURE 9:** ACCESS INFORMATION ABOUT SUSTAINABLE PRODUCTS

The question on how respondents access information about sustainable products was provided on multiple choice-response items because participants were allowed to select more than one option. The responses were recorded into four categories: social media, Online Blogs/Article, Television ads, and Friends and Recommendation. Results show social media accounted for 80.7% which states that it is the most common source of information, chosen by 180 respondents. It was followed by online blogs /Article with 40.8%, 91 respondents. Television ads with 82 respondents accounted for 36.8%, and Friends and Family

recommendations with 76 respondents, which is 34.1%. Since, respondents were allowed to select more than one source, The analysis was based on 223 valid Responses out of 224, the percent exceeds 100% when combined but this shows the customer does not rely just on only one source but tend to get influenced by multiple sources. The positioning here emphasizes the substantial impact that social networks and online blogs/article have on consumer knowledge about the environment, which in turn suggests that personal contacts and television ads have a greater share of influence as well.

TABLE 7: HAVE YOU EVER RECOMMENDED A SUSTAINABLE PRODUCT TO SOMEONE ELSE

Have you ever recommended a sustainable product to someone else					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	44	19.6	19.6	19.6
	Occasionally	112	50.0	50.0	69.6
	Yes, frequently	68	30.4	30.4	100.0
	Total	224	100.0	100.0	

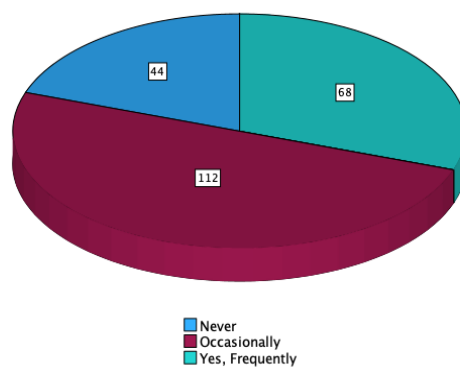


FIGURE 10: RECOMMENDATION OF SUSTAINABLE PRODUCTS

The data reveals a strong propensity that's the direction to which most of the respondents' minds are inclined is going to be their call of the sustainable products. About one-half of those surveyed, 50% (112 respondents), stated that they "Occasionally" recommend sustainable products to others. The next largest group, 30.4 % (68 respondents), also supports this idea, but they do it "Frequently." It is significant that as a result, 80.4% of the total samples have, at least once, been involved in recommending sustainable products. Quite oppositely, a small fraction, 19.6% (44 respondents), claimed that they "Never" made such a recommendation. The finding reveals the powerful role that word-of-mouth and personal endorsement play in the case of sustainable consumption. It implies that the most satisfied consumers are the ones who can help to spread the awareness among their peers and influence their purchasing decisions.

4.2 Frequency Analysis

Basically, Frequency Analysis is a statistical approach which interprets numbers by looking at the occurrences of different values in a dataset. Frequency analysis helps to confirm the dataset's precision and trustworthiness. It opens valuable insights into the distribution and data patterns, thus enabling informed decisions to be made. The main reason for utilizing this technique is to gain better comprehending about the central tendency and variability of data.

Table 8: I am willing to pay a premium for sustainable products

I am willing to pay a premium for sustainable products					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	35	15.6	15.8	15.8
	Agree (A)	78	34.8	35.1	50.9

	Neutral (N)	47	21.0	21.2	72.1
	Disagree (DA)	45	20.1	20.3	92.3
	Strongly Agree (SA)	17	7.6	7.7	100.0
	Total	222	99.1	100.0	
Missing	System	2	.9		
Total		224	100.0		

Table 9: I always consider a product's environmental impact before purchasing it

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	43	19.2	19.5	19.5
	Agree (A)	71	31.7	32.3	51.8
	Neutral (N)	71	31.7	32.3	84.1
	Disagree (DA)	28	12.5	12.7	96.8
	Strongly Agree (SA)	7	3.1	3.2	100.0
	Total	220	98.2	100.0	
Missing	System	4	1.8		
Total		224	100.0		

Table 10: Purchasing sustainable products improves my personal satisfaction

		Frequency	Percent	Valid Percent	Cumulative Percent
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Valid	Strongly Agree (SA)	49	21.9	22.4	22.4
	Agree (A)	88	39.3	40.2	62.6
	Neutral (N)	55	24.6	25.1	87.7
	Disagree (DA)	23	10.3	10.5	98.2
	Strongly Agree (SA)	4	1.8	1.8	100.0
	Total	219	97.8	100.0	
Missing	System	5	2.2		
Total		224	100.0		

Table 11: Price significantly influences my decision to purchase sustainable products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	84	37.5	38.2	38.2
	Agree (A)	73	32.6	33.2	71.4
	Neutral (N)	34	15.2	15.5	86.8
	Disagree (DA)	14	6.3	6.4	93.2
	Strongly Agree (SA)	15	6.7	6.8	100.0
	Total	220	98.2	100.0	
Missing	System	4	1.8		
Total		224	100.0		

TABLE 12: I PREFER BUYING SUSTAINABLY IN SPECIFIC PRODUCT CATEGORIES LIKE FOOD, CLOTHING, ELECTRONICS, OR PERSONAL CARE PRODUCTS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	57	25.4	25.9	25.9
	Agree (A)	84	37.5	38.2	64.1
	Neutral (N)	54	24.1	24.5	88.6
	Disagree (DA)	15	6.7	6.8	95.5
	Strongly Agree (SA)	10	4.5	4.5	100.0
	Total	220	98.2	100.0	
Missing	System	4	1.8		
Total		224	100.0		

Table 13: I trust the sustainability claims made by companies without skepticism

I trust the sustainability claims made by companies without skepticism					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	35	15.6	16.1	16.1
	Agree (A)	59	26.3	27.1	43.1
	Neutral (N)	58	25.9	26.6	69.7
	Disagree (DA)	53	23.7	24.3	94.0
	Strongly Agree (SA)	13	5.8	6.0	100.0
	Total	218	97.3	100.0	
Missing	System	6	2.7		
Total		224	100.0		

TABLE 14: SUPPLY CHAIN TRANSPARENCY IS IMPORTANT TO ME WHEN PURCHASING SUSTAINABLE PRODUCTS

Supply chain transparency is important to me when purchasing sustainable products					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	32	14.3	14.6	14.6
	Agree (A)	79	35.3	36.1	50.7
	Neutral (N)	71	31.7	32.4	83.1
	Disagree (DA)	30	13.4	13.7	96.8
	Strongly Agree (SA)	7	3.1	3.2	100.0
	Total	219	97.8	100.0	
Missing	System	5	2.2		
Total		224	100.0		

Table 15: I check for eco-labels or certifications before purchasing a product to verify its sustainability claims

I check for eco-labels or certifications before purchasing a product to verify its sustainability claims					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	40	17.9	18.1	18.1
	Agree (A)	69	30.8	31.2	49.3
	Neutral (N)	74	33.0	33.5	82.8

	Disagree (DA)	28	12.5	12.7	95.5
	Strongly Agree (SA)	10	4.5	4.5	100.0
	Total	221	98.7	100.0	
Missing	System	3	1.3		
Total		224	100.0		

Table 16: Positive reviews and recommendations on social media increase my trust in a brand's sustainability claims

Positive reviews and recommendations on social media increase my trust in a brand's sustainability claims					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	63	28.1	28.6	28.6
	Agree (A)	76	33.9	34.5	63.2
	Neutral (N)	55	24.6	25.0	88.2
	Disagree (DA)	17	7.6	7.7	95.9
	Strongly Agree (SA)	9	4.0	4.1	100.0
	Total	220	98.2	100.0	
Missing	System	4	1.8		
Total		224	100.0		

Table 17: I have felt misled by companies' sustainability claims due to green-washing practices in the past

I have felt misled by companies' sustainability claims due to green-washing practices in the past					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	30	13.4	13.8	13.8
	Agree (A)	88	39.3	40.6	54.4
	Neutral (N)	68	30.4	31.3	85.7
	Disagree (DA)	18	8.0	8.3	94.0
	Strongly Agree (SA)	13	5.8	6.0	100.0
	Total	217	96.9	100.0	
Missing	System	7	3.1		
Total		224	100.0		

Table 18: I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence

I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence					
		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Strongly Agree (SA)	31	13.8	14.0	14.0
	Agree (A)	72	32.1	32.6	46.6
	Neutral (N)	54	24.1	24.4	71.0
	Disagree (DA)	55	24.6	24.9	95.9
	Strongly Agree (SA)	9	4.0	4.1	100.0
	Total	221	98.7	100.0	
Missing	System	3	1.3		
Total		224	100.0		

Table 19: I am influenced by social media campaigns promoting sustainable products when making purchasing decisions

I am influenced by social media campaigns promoting sustainable products when making purchasing decisions					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	53	23.7	24.0	24.0
	Agree (A)	82	36.6	37.1	61.1
	Neutral (N)	57	25.4	25.8	86.9
	Disagree (DA)	16	7.1	7.2	94.1
	Strongly Agree (SA)	13	5.8	5.9	100.0

	Total	221	98.7	100.0	
Missing	System	3	1.3		
Total		224	100.0		

Table 20: I feel personally responsible for contributing to environmental sustainability

I feel personally responsible for contributing to environmental sustainability					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	50	22.3	23.0	23.0
	Agree (A)	92	41.1	42.4	65.4
	Neutral (N)	38	17.0	17.5	82.9
	Disagree (DA)	28	12.5	12.9	95.9
	Strongly Agree (SA)	9	4.0	4.1	100.0
	Total	217	96.9	100.0	
Missing	System	7	3.1		
Total		224	100.0		

Table 21: I actively seek out information about the sustainability practices of brands before making a purchase

I actively seek out information about the sustainability practices of brands before making a purchase					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	33	14.7	15.1	15.1

	Agree (A)	70	31.3	32.1	47.2
	Neutral (N)	71	31.7	32.6	79.8
	Disagree (DA)	34	15.2	15.6	95.4
	Strongly Agree (SA)	10	4.5	4.6	100.0
	Total	218	97.3	100.0	
Missing	System	6	2.7		
Total		224	100.0		

TABLE 22: I PREFER TO BUY PRODUCTS FROM COMPANIES THAT DEMONSTRATE A COMMITMENT TO SUSTAINABILITY IN THEIR OPERATIONS AND SUPPLY CHAIN

I prefer to buy products from companies that demonstrate a commitment to sustainability in their operations and supply chain					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree (SA)	45	20.1	20.5	20.5
	Agree (A)	85	37.9	38.6	59.1
	Neutral (N)	53	23.7	24.1	83.2
	Disagree (DA)	24	10.7	10.9	94.1
	Strongly Agree (SA)	13	5.8	5.9	100.0
	Total	220	98.2	100.0	

Missing	System	4	1.8		
Total		224	100.0		

4.3 Reliability Analysis

TABLE 23: RELIABILITY ANALYSIS

Case Processing Summary			
		N	%
Cases	Valid	209	93.3
	Excluded ^a	15	6.7
	Total	224	100.0
a. Listwise deletion based on all variables in the procedure.			

TABLE 24: RELIABILITY STATISTICS

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.903	.905	15

Reliability analysis for all 15-scale items from the questionnaire was reflected in Cronbach's Alpha .903. The figure is well above the generally accepted lower limit of 0.7, which means that the questions high internal consistency and were reliable in measuring the constructs of the study. The Case Processing Summary shows that the analysis was done with the whole sample of 224 respondents, 209 complete cases were included, and 15 cases being discarded due to missing data. Hence, the overall Cronbach's Alpha was 0.903, indicating high internal

consistency. The measuring instrument used is reliable and serves as a strong basis for the follow-up tests of the research hypotheses.

Factor Analysis

This is a statistical method which reduces a group of variables by extracting all their similarities into a smaller set of factors. Mostly, it is known as data reduction and by observing large number of variables, some similar patterns emerge which are called as factors.

TABLE 25: COMMUNALITIES

Communalities		
Questions (Q)	Initial	Extraction
8. I am willing to pay a premium for sustainable products	1.000	.529
9. I always consider a product's environmental impact before purchasing it	1.000	.540
10. Purchasing sustainable products improves my personal satisfaction	1.000	.544
11. Price significantly influences my decision to purchase sustainable products	1.000	.687
12. I prefer buying sustainably in specific product categories like food, clothing, electronics, or personal care products	1.000	.585
13. I trust the sustainability claims made by companies without skepticism	1.000	.714
14. Supply chain transparency is important to me when purchasing sustainable products	1.000	.615
15. I check for eco-labels or certifications before purchasing a product to verify its sustainability claims	1.000	.653

16. Positive reviews and recommendations on social media increase my trust in a brand's sustainability claims	1.000	.607
17. I have felt misled by companies' sustainability claims due to green-washing practices in the past	1.000	.482
18. I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence	1.000	.559
19. I am influenced by social media campaigns promoting sustainable products when making purchasing decisions	1.000	.680
20. I feel personally responsible for contributing to environmental sustainability	1.000	.628
21. I actively seek out information about the sustainability practices of brands before making a purchase	1.000	.647
22. I prefer to buy products from companies that demonstrate a commitment to sustainability in their operations and supply chain	1.000	.685
Extraction Method: Principal Component Analysis.		

TABLE 26: TOTAL VARIANCE EXPLAINED

Total Variance Explained						
Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.536	43.575	43.575	3.641	24.275	24.275
2	1.545	10.302	53.877	2.817	18.777	43.053
3	1.074	7.162	61.039	2.698	17.986	61.039

4	.873	5.817	66.856			
5	.724	4.827	71.683			
6	.686	4.574	76.257			
7	.588	3.919	80.176			
8	.517	3.449	83.625			
9	.473	3.152	86.777			
10	.439	2.924	89.701			
11	.403	2.689	92.390			
12	.344	2.290	94.681			
13	.313	2.086	96.767			
14	.264	1.763	98.530			
15	.220	1.470	100.000			
Extraction Method: Principal Component Analysis.						

Principal Component Analysis (PCA) was done on the 15 Likert-scale questions after confirming the suitability of those data for factor analysis. The communalities table (25) shows that, all items have substantial extraction values ranged from 0.482 to 0.714, many above 0.5 indicating that a significant portion of each item's variance is explained by the extracted components, with some items having exceptionally high communalities close to 1. Based on eigenvalue greater than one criterion, three components were extracted in which three components accounted for 61.039% of the total variance. After rotation sums, component 1 explained 24.275%, component 2 explained 18.77% and component 3 explained 17.986%, this suggests more balanced factor structure, where a few principal factors capture majority of information in the 15 Likert-scale questions. This constructs the validity and dimensionality of the instrument used to access perceptions of consumers.

4.4 H1: Perceived trust in sustainable product design positively influences consumer purchase decisions.

Correlation

The correlation test determines if a numerically significant linear and strong association exists among two considered continuous variables (Nelson et al., 2022).

TABLE 27: H1 CORRELATIONS

Correlations				
		13. I trust the sustainability claims made by companies without skepticism	16. Positive reviews and recommendations on social media increase my trust in a brand's sustainability claims	18. I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence
13. I trust the sustainability claims made by companies without skepticism	Pearson Correlation	1	.219**	.292***
	Sig. (2-tailed)		.001	<.001
	N	218	217	218
16. Positive reviews and recommendations on social media	Pearson Correlation	.219**	1	.317***
	Sig. (2-tailed)	.001		<.001

increase my trust in a brand's sustainability claims	N	217	220	219
18. I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence	Pearson Correlation	.292 ^{***}	.317 ^{***}	1
	Sig. (2-tailed)	<.001	<.001	
	N	218	219	221
**. Correlation is significant at the 0.01 level (2-tailed).				
***. Correlation at 0.001(2-tailed)				

Correlation analysis offers clear, consistent, and strong evidence in favor of Hypothesis 1, showing that perceived trust in sustainability claims is one of the main positive drivers of consumer purchase decisions and intentions. As a matter of fact, results showed that the trust in company claims (Q13) was found to be significantly correlated with the key behaviors, such as the actual switch to a sustainable brand (Q18, $r = .292$). On the other hand, positive reviews and recommendations on social media were also positively and significantly associated with consumers' switching behavior (Q16, $r = .317$). The results also show that the sustainability claims were also positively correlated with trust reinforced by social media reviews (Q13, $r = .219$). Therefore, the analysis leads to the unequivocal conclusion that consumers have become the most engaged and therefore most responsible for sustainable ones. To sum up, the empirical evidence very convincingly demonstrates that higher trust levels on consumer behavior.

Regression

This test is utilized to govern the arithmetic quantity of concepts. Additionally, the examination is utilized to evaluate the inference among the study construct that encompasses independent as well as dependent construct (Alita et al., 2021).

TABLE 28: MODEL SUMMARY (H1)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.384 ^a	.148	.140	1.027
a. Predictors: (Constant), Positive reviews and recommendations on social media increase my trust in a brand's sustainability claims, I trust the sustainability claims made by companies without skepticism				

Table 29: ANOVA H1

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.104	2	19.552	18.526	<.001 ^b
	Residual	225.854	214	1.055		
	Total	264.959	216			
a. Dependent Variable: I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence						
b. Predictors: (Constant), Positive reviews and recommendations on social media increase my trust in a brand's sustainability claims, I trust the sustainability claims made by companies without skepticism						

TABLE 30: COEFFICIENTS (H1)

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.514	.213		7.115	<.001
	13. I trust the sustainability claims made by companies without skepticism	.223	.062	.234	3.611	<.001
	16. Positive reviews and recommendations on social media increase my trust in a brand's sustainability claims	.265	.067	.258	3.991	<.001
a. Dependent Variable: I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence						

From the multiple regression analysis, it is evident that Hypothesis 1 receives robust statistical assistance, as it shows that perceived trust is a major factor inflating consumer purchase preferences. The overall model turned out to be statistically significant, $F(2,214) = 18.526$, ($p < .001$), with R square of .148. This indicated that the two trust predictors together accounted for 14.8% of the change in consumers' purchase decisions. To put it simply, the coefficients disclose that both general trust in sustainability claims ($\beta = .234$, $p < .001$) and trust facilitated by social media reviews ($\beta = .258$, $p = .003$) are significant and independent positive predictors. In other words, the finding shows that when consumers' trust is an inherent one or socially reinforced, their preference to purchase from companies committed to sustainability goes up, hence, providing empirical evidence supporting the hypothesized relationship.

Thus, H1: Perceived trust in sustainable product design positively influences consumer purchase decisions is proved from the analysis.

4.5 H2: Supply chain transparency positively affects consumer willingness to pay for sustainable products.

Correlation

The correlation test determines if a numerically significant linear and strong association exists among two considered continuous variables (Nelson et al., 2022).

TABLE 31: CORRELATIONS (H2)

Correlations			
		8. I am willing to pay a premium for sustainable products	14. Supply chain transparency is important to me when purchasing sustainable products
8. I am willing to pay a premium for sustainable products	Pearson Correlation	1	.297***
	Sig. (2-tailed)		<.001
	N	222	218
14. Supply chain transparency is important to me when purchasing sustainable products	Pearson Correlation	.297***	1
	Sig. (2-tailed)	<.001	
	N	218	219
***. Correlation at 0.001(2-tailed)			

Correlation analysis shows that the importance given to supply chain transparency (Q14) correlates positively and statistically significantly with both consumer preferences and price sensitivity (willingness to pay premium). Consumers who consider transparency to be very important are the ones who express the highest preference of buying from sustainable companies. The results revealed that a positive relationship between two variables ($r = .297$, $p < .001$) (Willingness to pay premium and supply chain transparency). This suggests that respondents who emphasized the importance of supply chain transparency were also more willing to pay a premium price for sustainable products. This can also be emphasized by the fact that even to those consumers who are highly committed to sustainability, price is still a decisive and carefully weighed factor in their choices of purchasing.

Regression

Table 32: Model Summary (H2)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.445 ^a	.198	.194	1.044
a. Predictors: (Constant), Supply chain transparency is important to me when purchasing sustainable products				

Table 33: Anova (H2)

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.764	1	57.764	53.035	<.001 ^b
	Residual	234.171	215	1.089		
	Total	291.935	216			
a. Dependent Variable: I trust the sustainability claims made by companies without skepticism						

b. Predictors: (Constant), Supply chain transparency is important to me when purchasing sustainable products

TABLE 34: COEFFICIENTS (H2)

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.447	.195		7.404	<.001
	14. Supply chain transparency is important to me when purchasing sustainable products	.518	.071	.445	7.283	<.001
a. Dependent Variable: I trust the sustainability claims made by companies without skepticism						

The regression analysis was conducted to examine the relationship between supply chain transparency and willingness to pay a premium for sustainable products. The results demonstrate that the importance of supply chain transparency is a significant positive predictor of willingness to pay. The model was statistically significant, $F(1,216) = 53.035$, ($p < .001$), with R square of 0.198 showing that supply chain transparency explained 19.8% of the variance in willingness to pay. The regression coefficient showed that the supply chain transparency was a significant positive predictor for willingness to pay for sustainable products (Beta= .445, $p < .001$) this explains a meaningful variance in consumers' preference to buy from committed companies. The research illustrates that although being transparent may not lead to an increase in the consumers' willingness to pay more, it is still a very influential factor in determining their preferred brand and consequently their real purchase

decision. Hence, it becomes a vital determining factor for businesses that want to appeal to eco-conscious consumers.

Thus, H2: Supply chain transparency positively affects consumer willingness to pay for sustainable products is proved from the analysis.

4.6 H3: The presence of eco-label certifications significantly enhances consumer purchase intentions for sustainable products.

Correlations

TABLE 35: CORRELATIONS (H3)

Correlations			
		15. I check for eco-labels or certifications before purchasing a product to verify its sustainability claims	22. I prefer to buy products from companies that demonstrate a commitment to sustainability in their operations and supply chain
22. I check for eco-labels or certifications before purchasing a product to verify its sustainability claims	Pearson Correlation	1	.482***
	Sig. (2-tailed)		<.001
	N	221	218
15. I prefer to buy products from	Pearson Correlation	.482***	1

companies that demonstrate a commitment to sustainability in their operations and supply chain	Sig. (2-tailed)	<.001	
	N	218	220
***. Correlation at 0.001(2-tailed)			

The correlation analysis reveals a significant and moderately strong positive relationship between the use of eco-labels and consumer purchase preferences for sustainable products. Specifically, the act of checking for eco-labels or certifications (Q15) is positively correlated with a preference for buying from companies committed to sustainability (Q22), with a correlation coefficient of $r = .482$ that is significant at the $p < .001$ level. As a matter of fact, the above data clearly brings out the fact that the tendency to choose for sustainable brands is by far stronger among the consumers who out of their own initiative accompany the check of the sustainability claims with a verification by a certification. They situate the greatest importance to the role of ecological labels in the change of the customers' behavior, i.e., in the choice of the brand to purchase.

Regression

Table 36: Model Summary (H3)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.482 ^a	.232	.229	.976
a. Predictors: (Constant), I check for eco-labels or certifications before purchasing a product to verify its sustainability claims				

Table 37: ANOVA (H3)

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	62.175	1	62.175	65.337	<.001 ^b
	Residual	205.549	216	.952		
	Total	267.725	217			
a. Dependent Variable: I prefer to buy products from companies that demonstrate a commitment to sustainability in their operations and supply chain						
b. Predictors: (Constant), I check for eco-labels or certifications before purchasing a product to verify its sustainability claims						

TABLE 38: COEFFICIENTS (H3)

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.153	.172		6.684	<.001
	15. I check for eco-labels or certifications before purchasing a product to verify its sustainability claims	.505	.062	.482	8.083	<.001
a. Dependent Variable: I prefer to buy products from companies that demonstrate a commitment to sustainability in their operations and supply chain						

The simple linear regression analysis offers strong statistical evidence that the introduction of eco-label certifications noticeably raises consumer purchase intentions. The overall model turned out to be very significant $F(1,216) = 65.337$, ($p < .001$) with an R square of .232, the

only predictor-checking for eco-labels-explaining 23.2% of the variance in consumers' preference for sustainable companies. More importantly, the local coefficient for checking eco-labels was positive and very significant ($\beta = .482$, $p < .001$) meaning that if consumers' need to verify sustainability through certifications increases then their preference of buying from companies that are committed to sustainability also increases. This is real evidence that eco-labels are a key and powerful factor to a consumer's choice of a sustainable purchase.

Thus, H3: The presence of eco-label certifications significantly enhances consumer purchase intentions for sustainable products is proved from the above analysis.

5. Discussion

The findings of this study are not just very insightful, but they also show a bigger picture of the complex factors that influence people's buying decisions of environmentally friendly products and indicate the area where trust, transparency, and certification interact in a complex and often unexpected way. The outcomes of the research almost unequivocally point to the perceived sustainability trust as the main driver of consumer behavior, thus being in line with the prior research (Amin & Tarun, 2021) who determined green trust as the main origin steering purchase intention. Still, the study goes much beyond here in illustrating that trust is not a single concept and neither solely based on corporate communication.

The first Hypothesis stated that perceived trust in sustainable product design positively influences consumer purchase decisions, based on the actual questionnaire items in the analysis, they were tested through trust in sustainability claims and trust reinforced by influenced by social media reviews, with switching from non-sustainable brand to sustainable brand used as the indicator of customer purchase decision. The regression model results showed that both trust in sustainability claims and positive social media reviews remained significant predictors of purchase decision.

This finding also suggests that trust can be considered a key condition for sustainable purchasing. It shows that customers are more likely to change their buying behavior when they believe that the claims made by companies are genuine and credible. While choosing sustainable products, consumers often face uncertainty as they cannot directly verify whether a product is truly socially and environmentally responsible, where trust becomes the key mechanism in reducing doubt and encouraging action. When consumers trust the claims made by companies, they might feel more comfortable and confident in moving away from conservative brands to choosing sustainable alternatives.

The significant positive impact of social media on trust shows that at present trust is a matter which is socially formed and processed by peer networks and digital communities together. Therefore, this paper strongly supports Huang et al.'s (2024) conclusions who argue that green marketing has an essential role in trust-building through online platforms and

collaborates with the broader "phygital" concept whereby consumers' perceptions are influenced through a mixture of their digital and physical experiences (Bonfanti et al., 2023).

Respondents (80%) of them declared that they mainly rely on social media for sustainability information; therefore, it is obvious that the traditional top-down model of corporate-to-consumer trust-building has been substituted by a more democratic, peer-influenced model. The consumer is no longer a passive audience but an active participant in a conversation where the testimonies of fellow users often have more influence than the promises of the brand itself.

In the similar way, supply chain transparency was named as another factor that facilitated consumer preference to a great extent, hence it was consistent with the papers of (Holloway, 2025) and (Kumar et al., 2021) who argued that consumers require more and more information about the origin of their products and the ethical side of companies that they support. When companies are open about their sourcing, manufacturing practices and operational sustainability, consumers may view the product as more credible, more ethical and trustworthy for a premium price. It is safe to say that transparency appears to increase perceived legitimacy for sustainability claims. However, the effect of this factor on preference was quite small; this means that even if transparency is an attribute that is highly appreciated, it still cannot be the only one that leads to consumer decisions. One possible reason can be that supply chain information may be important in principle, but not all the consumers actively seek the information and understand supply chain data in detail, and this can work conceptually but some consumers still rely on simpler cues when making actual purchase decision.

When many companies claim to be transparent, the market may have taken the transparency issue from being a differentiator to a baseline level - "table stakes" of corporate social responsibility, which consumers simply take for granted instead of being a convincing reason to choose one brand over another. One might say it is "transparency fatigue," meaning that the countless corporate reports and stories have become so overwhelming that consumers opt for more straightforward and easily digestible signals. Simply being transparent may not be enough unless that transparency is communicated clearly and in a way that consumers can understand easily.

Moreover, the study revealed a notable and indicative correlation between the request for transparency and the sensitivity to price ($r = .297$). The discovery indicates that individuals who worry the most about ethical supply chains are also the ones who monitor their finances most strictly. This fact, is actually, a confirmation of the "value-action gap" phenomenon that (Yarimoglu & Binboga, 2019) have explained. 91.9 % of the respondents, who are from lower-to-middle-income groups, and thus represent most of this sample, consider that ethical issues can be combined with financial realities. Hence, this creates a picture of the "conscientious but constrained" consumer, a group that is ready to do the right thing and thus demands transparency, but eventually, must make difficult trade-offs at the point of purchase. It suggests that corporate transparency, although necessary from a moral point of view, may not be sufficient to overcome the significant and real obstacle of price without other supporting factors like value-based pricing or the availability of product tiers. The consumer can be the one who tells the transparent story, but if the price tag is telling a different story, it is usually the latter that will dominate.

Though the impact of transparency is quite big; the influence of eco-label certifications was singled out as the most powerful and the most decisive factor that dramatically changed consumer preferences in this study. The main point here is the remarkable power of this relationship, the correlation $r = .482$, and the regression model explaining 23.2% of the variance, which is quite a significant amount, and it is indicative of a fundamental consumer decision-making dynamic. There is a convincing, nearly complete, empirical argument for the central role that certified, third-party verifiable accounts play in greatly facilitating complex purchasing decisions.

Basically, it lends support to (O'Rourke & Ringer, 2020) whose research found that clear and credible kinds of sustainability information have the most significant impact on consumer behavior. In a market filled with corporate claims and the risk of green washing, an eco-label is a very effective heuristic - a trustworthy signal that the consumer's noise-cutting and risk-reducing mechanisms, which are risk-reducing mechanisms, acknowledge, thereby reducing the risk and uncertainty experienced by the consumer. Besides these theoretical concepts, research depicts sustainable consumption very explicitly as a social phenomenon. As can be seen from the data, 63.2% of the total respondents indicated social media and peer recommendations as the most important sources of information. Thus, it can be stated that

the decisions about purchases are significantly influenced by social networks and digital communities. This socially driven, ethically informed consumerism is particularly characteristic of the dominant demographic of the sample young adults aged 18-35, who are digitally native and highly susceptible to peer influence. Their self-concept is very much intertwined with their online communities, and their consumption choices are a way of social signaling and engagement. However, this socially driven idealism is not without its economic counterpart. The strong correlation between a preference for sustainable companies and the influence of price ($r = .297$) may be interpreted as a sign that most consumers must juggle between their ideals and their budgets.

This research essentially presents the modern consumer as a blend of various characteristics: an idealist who demands proof, a social being who gets influenced by the tribe, and a pragmatic person who is limited by the wallet. Their way to a green purchase is not lit by shiny corporate stories but by their own active search for trustworthy, verifiable, and socially approved signs that not only relate to their moral values but also consider their economic reality.

It puts a very distinct and challenging condition in front of the companies which are willing to attract such consumers that: Besides merely going beyond making claims companies should provide evidence, engage social communities for the promotion and acknowledge the economic constraints of their target audience. The age of green marketing based on only talking is gone; the time of green marketing based on real evidence, social proof, and economic accessibility has come.

Together, the findings of the study suggests that consumer behavior towards sustainable products is influenced by a combination of trust, transparency and ultimately verification, they are not just influenced by sustainability claims alone, rather they appear to respond positively when sustainability is communicated in a way it is believable, supported and easy to verify. The findings also show that trust is an important factor for behavioral change, as seen in its positive effect on switching to sustainable brands. Also, even though the effect is comparatively smaller, supply chain transparency contributes to perceived value and supports willingness to pay premium. Eco-level certifications emerge as the strongest influence for purchase intention; this is because they translate abstract sustainability

promises into visible and understandable signals. One thing can be said from the interpretation that sustainable consumer behavior can be better understood as a process of confidence building. Firstly, consumers need to believe in companies' claims, then evaluate whether it is credible or not and finally decide whether they are willing to act of that information. In this whole process, labels, transparency, and social influence all serve as mechanisms to reduce uncertainty and support decision making. The broader conclusion is that consumers are more likely to choose sustainable products when sustainability is claimed by companies, but when they are trusted, verified and easy and clearly communicated.

5.1. Practical Implications

The findings of the study have several practical implications for businesses, marketers, and policymakers. It can be advised that firms should recognize that trust is the key indicator and central to sustainable consumer behavior. Sustainability of claims should therefore be specific, consistent, and should be supported with evidence. The claims which are exaggerated or vague may weaken the consumer's confidence and likelihood of sustainable purchase behavior.

Secondly, companies should improve the visibility and clarity of supply chain information. Since transparency positively influences the willingness to pay for them, businesses can benefit from showing the sourcing, their production methods, their ethical and environmental practices in their marketing campaigns. This information also must be communicated in a simple and accessible way to influence purchase decisions effectively.

Third, businesses should invest in eco-label certifications from the recognized governing bodies and display them clearly on product packaging and promotional materials. Since the results suggested that the eco-label checking showed the strongest effect on purchase intention, certifications may be among the most powerful tools available for encouraging sustainable consumer behavior.

Lastly, the influence of social media and its importance shows that firms should manage their online sustainability communication carefully. Positive reviews and recommendation

strengths the trust, so encouraging authentic consumer engagement may support sustainable brand growth. Also at the same time, businesses should monitor public responses and avoid communication that could be interpreted as misleading or insincere.

5.2. Limitations of the study

Despite the importance of the findings above, there are several limitations in this study. First, the intended sample was 250 but 90%, which is 224 respondents were only recorded. Among them, some of the dataset contained missing values, which reduced the number of valid cases in specific analysis. SPSS handled this automatically by excluding the incomplete cases in necessary analysis, but this might have still affected the precision of some estimates.

Secondly, the study relied on self-reported questionnaire data. This means that the results reflect respondents stated attitudes and behaviors which may not perfectly always match the real purchasing actions in everyday situations. There is also a chance that social desirability bias may also have influenced some answers, specifically related to the environment and sustainable behavior.

The third limitation is that the study is that the hypothesis was tested using individual items rather than full composite scales, this was appropriate for keeping the analysis closely aligned with hypothesis, but it may not capture the overall complexity of broader constructs like trust or purchase intention.

Lastly, in the context of geographical and cultural contexts, the sample may not fully represent all the consumer groups, so the general ability of findings may be limited.

6. Conclusion

This current research shows that the development of environmentally friendly products highly influences the buyer's consumer behavior, but the change from the stated to behavioral is a somewhat complicated process which requires trust, clear communication for its verification, and, lastly, a certificate that validates it. The study has identified that trust is the main support of green consumerism, but very importantly this trust is a social construct and is very fragile. The role of social media reviews in consumer trust, which is not based on corporate messaging only but is a joint creation within digital communities, is very significant. However, this trust may be easily dismantled. The recognition of "trust-disengagement paradox" when consumers recall green washing experiences is very disengaged from research activity, and this finding is a very important signal that deceptive practices not only harm the brand that is the source of these practices but they destroy the basis of the sustainable market by causing cynicism and lack of reaction.

It is obvious that transparency in the supply chain influences consumer behavior in a positive way. Nevertheless, the extent of this impact points out that transparency has turned into a sort of a baseline requirement rather than a logistic differentiator. Consumers want it, but the fact alone does not necessarily result in a purchase. What is more, the strong connection between the need for transparency and the product price sensitivity reveals today's consumer as "conscientious but constrained" who must find a balance between moral and financial values. In view of this complex situation, eco-labels have slowly become the most decisive and final factor, a trustworthy heuristic that assists consumers to quickly navigate their choices and reduce their perceived risk. These are the concrete, real, and indisputable examples that consumers are willing to take to confirm their decisions and thus receive the privilege of a potential price premium. Hence, the present-day sustainable consumer is a puzzling individual: an idealist who demands evidence, a social being influenced by the tribe, and a pragmatic one who is limited by the wallet.

Such results are a perfect sign of future academic research agenda and industry practice. Practitioners ought to go beyond the story and bring evidence that can be verified. Having reliable, third-party eco-labels should not be thought of as an option, but rather as a

fundamental strategy for market impact. The next steps should be the production of authentic social proof via real community engagement and the formulation of pricing policies that consider the financial aspects of ethically conscious consumers thus, allowing them to move from intention to action. The fight against greenwashing ought to be done in a shield-like manner when radical transparency and unchangeable data are used by companies to create around their brand a strong trust wall that cannot be easily broken.

6.1. Future Recommendations

Additional studies should be implemented to illuminate the current results and to assess the societal effect of the trust-disengagement paradox over time on market evolution and consumer activism. It is highly important to find out how these changes differ in various cultural and economic settings, especially among the affluent groups and non-Western markets. Moreover, the future role of the new technologies is a very important question; by discovering how innovations such as blockchain-based traceability can regain consumer trust and become a new, tamper-proof layer of transparency, it could even change the brand-customer relationship. In a nutshell, it was the first step towards building more complex models that in fact link consumers' values with their buying habits, thus offering real-world global sustainability transition strategies. Overall, the way to a sustainable market is not only the good intentions but also the credible evidence, social validation, and the accessible value. The future challenge and opportunity are to harmonize these three pillars to be able to convert environmental awareness into regular, widespread, and influential consumer behavior.

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Appendices

Appendix 1: Survey Questionnaires

THE IMPACT OF SUSTAINABLE PRODUCT DESIGN ON CONSUMER PURCHASE DECISIONS

Dear Respondents,

I am Bishnu Ghimire, a student at the University of Vaasa, conducting research on how sustainable product design impacts consumer purchase decisions.

The information you are providing is solely for research and academic purposes only and will therefore be treated with utmost confidentiality. Participation is voluntary and completely anonymous. No identifying information will be collected, and the responses will be used solely for academic purposes. All data will be deleted after the course has concluded.

Answering takes about 5-10 minutes.

I greatly appreciate your participation. Your insights are very valuable for this research.

Thank you for your time and participation!

Section A: Demographic Information

What is your age?

- 18 to 25 Years
- 26 to 35 Years
- 36 to 60 Years
- Above 60 Years

Gender

- Male
- Female

Marital Status

- Married
- Single

Education

- Undergraduate
- Postgraduate
- Secondary
- Diploma

Yearly Income Level (€)

- Under 25000
- 25000 - 50000
- 50000 - 100000
- 100000 - 200000
- 200000 or Over

How do you primarily access information about sustainable products?

- Social Media
- Online blogs/Article
- Television Ads
- Friends and Family recommendations

Have you ever recommended a sustainable product to someone else?

- Yes, Frequently
- Occasionally
- Never

Section B

Please mark (√) where appropriate for the Corresponding Questions

Please use the following scale for Questions

1 = Strongly Agree

2 = Agree

3 = Neutral

4 = Disagree

5 = Strong Disagree

Essential sustainable Product Design Features

- I am willing to pay a premium for sustainable products.
- I always consider a product's environmental impact before purchasing it.
- Purchasing sustainable products improves my personal satisfaction.
- Price significantly influences my decision to purchase sustainable products.
- I prefer buying sustainably in specific product categories like food, clothing, electronics, or personal care products.

Does Transparency Influence Your Purchasing Intentions?

- I trust sustainability claims made by companies without skepticism.
- Supply chain transparency is important to me when purchasing sustainable products.
- I check for eco-labels or certifications before purchasing a product to verify its sustainability claims.
- Positive reviews and recommendations on social media increase my trust in a brand's sustainability claims.
- I have felt misled by companies' sustainability claims due to green-washing practices in the past.

Views on Sustainable Product Design and Does these Views Influence Purchasing Decisions

- I have switched from a non-sustainable brand to a sustainable one due to environmental concerns or social media influence.
- I am influenced by social media campaigns promoting sustainable products when making purchasing decisions.
- I feel personally responsible for contributing to environmental sustainability.
- I actively seek out information about the sustainability practices of brands before making a purchase.

- I prefer to buy products from companies that demonstrate a commitment to sustainability in their operations and supply chains.