INFLUENCE OF SUSTAINABILITY INFORMATION ON CONSUMERS COGNITIVE DISSONANCE AND AVOIDANCE COPING MECHANISMS ASSOCIATED WITH THE PURCHASE OF SUSTAINABLE PRODUCTS

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ABSTRACT

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Keywords: *Sustainable Consumption, Sustainable Information, Cognitive Dissonance, Avoidance Coping, Theory of Planned Behavior, and Moral Identity*

The present study aims to investigate the relationship between sustainability information and consumers' avoidance coping behaviors originating from cognitive dissonance in the realm of sustainable consumption. Moreover, the study considers the individual characteristics of consumers' moral identity and how it influences the consumers' cognitive dissonance and avoidance-based coping when purchasing sustainable products. A multi-method quantitative research design is adopted for data collection. To deal with the self-reported biases, the study adopts eye-tracking technology to gather fixation data on sustainable product etiquette and utilizes regression analysis to define the association between variables. The findings of the study suggest that there is no statistically significant association between sustainability information and cognitive dissonance. However, the results suggest that there is a low negative association between consumers' cognitive dissonance and avoidance-coping. Furthermore, the study provides evidence that individual characteristics play an important role in establishing the relationship between consumers' cognitive dissonance and avoidance-coping. Lastly, a low positive relationship was found between consumers' avoidance-coping and sustainable consumption.

One of the limitations associated with the current study is the small sample size, thereby acting as a barrier to the generalizability and consistency of research with the prior studies. Nevertheless, the study still provides some key insights combined with prior literature for marketing managers, policymakers, and researchers when studying and addressing consumers' conflicting reactions toward sustainable consumption.

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Whether constituting academic progression or personal development neither of us has reached the finish line all by ourselves. Even if the support we acquired was pronounced or subtle, understanding the importance of appropriate guidance, monumental efforts, and mentorship are the first steps toward saying a *Thank You*.

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In Helsinki, 20th June 2022

Ahsan Rasool

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SYMBOLS AND ABBREVIATIONS

U – Error outputs of Regression model

S - Standard Deviation

S^2 - Variance

N – Normality

B - Beta coefficient of regression model

COV - Covariance

TPB – Theory of Planned Behavior

CDT - Cognitive dissonance theory

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1. INTRODUCTION

The emergence of sustainability-related problems has raised the awareness of environmental protection among humans. With the advent of these problems, sustainable consumption has now been embedded as an element of social development. The consumer's sense of responsibility and realization toward the preservation of the environment has also increased to a certain threshold but there remains a gap between sustainable consumption attitudes and behaviors (Antonetti & Maklan, 2015). Sustainable consumption behavior also referred to as environmentally friendly and pro-environmental behavior, is defined as the moral behavior which is associated with resource conservation and environmental protection by means of reducing waste, saving energy, and inclination towards sustainable services and products (Peattie, 2010). However, the results of sustainable consumption are not entitled to directly benefit consumers. Consumers are complex individuals who are driven and influenced by internal factors such as their values, feelings, and habits. Therefore, external guidance is often needed to shape consumers' behaviors towards sustainable consumption. The pursuit of the present study revolves on defining the relationship of external stimuli such as sustainability information on consumer values, feelings, and habits with the broader aim of shaping their behaviors towards sustainable consumption.

1.1 Motivational background and Research Objectives

The following section takes into account the prior studies in defining what the other researchers have done in the field of sustainable consumption and presents gaps that the present studies aim to address by presenting research objectives for subsequent research themes of the study.

Over the last 4 decades, there has been some research done on the contexts of environmentally and socially responsible consumption or sustainable consumption. Researchers and scholars have hypothesized various consumption-related problems with marketing and consumer behavior to provide scientific recommendations and analyses. The studies of Kilbourne & Beckmann (1998) and Irwin (1999) have investigated sustainable consumption, ecological an

d pro-social marketing, conservation behaviors, and green marketing from individual and organizational perspectives. Now, research in marketing has exceptionally moved towards addressing sustainability concerns (Achrol & Kotler 2012). This new sub-branch of marketing is known as sustainable consumer behavior which is defined according to White et al (2019) as actions that result in limiting environmental impacts while at the same time decreasing the natural resource utilization over the lifecycle of the product, service, or behavior.

However, there are various definitions for sustainable consumption provided by different authors. However, the consensus can be reached around the definition given by UNEP (2010) which advocates the consideration of basic human needs and withdrawal of excessive consumption. It poses even more stress on preserving the environment and needs of the future generations. Last but not the least, it places quality of life above materialistic codes of living. Apart from governments' and policy-makers efforts toward the development of a sustainable development motto, consumers are also considered to be major facilitators of sustainable development within a nation (Chekima et al., 2016; Kapoor & Dwivedi, 2020). Consumption is central to production so that individuals and households can have a quality life (Haron et al., 2005). With the increasing population and ever-growing consumer demand, natural resources are depleting at a very fast pace (Alisat & Reimer, 2015; Bogueva et al., 2017). Therefore, "sustainability" scholars need to discuss and raise awareness for sustainable consumption and make efforts to bring consumers closer to the notions of sustainability.

With the increased consumer awareness and perceived importance of sustainability concerns (Huang & Rust 2011), there still exists a gap between consumer attitudes or consumer reactions towards sustainability and their actual consumption behaviors which is referred to as the attitude-behavior gap (Devinney et al. 2006). Researchers and practitioners, assume this gap to be one of the most challenging barriers to promoting sustainable consumption (White et al. 2019). The existing literature on consumer research helps us recognize two types of realms for identifying conflicts that can be associated with consumer reactions and sustainable consumption namely (1) *Psychologically oriented consumer research* (Luchs et al. 2017; White

et al. 2019 Priester & Petty 1996; Festinger 1962; Castro et al. 2009) (2) *Sociologically oriented consumer research* (Lepoša 2017; Anderson 2012).

The social-psychological theories propose that consumers and individuals possess a strong desire to be consistent in their beliefs, attitudes, and behaviors (Thogersen, 2004; Cialdini, 1989; Bator & Cialdini, 2000). One of the most promising theories was identified by Festinger (1957), the theory of cognitive dissonance which claims that consumers/people are inclined to negate information that is not consistent with their priorly established beliefs and attitudes while at the same time they seek information that is congruent with their belief system. Moreover, cognitive capabilities are considered to be intellectual skills needed to address tasks either of simple or complex nature and are more associated with mechanisms of the learning process, problem-solving capabilities, memory, and attention spans rather than with some concrete knowledge (Michelon, 2006). Humans are believed to have limited cognitive abilities thereby posing a restriction on their awareness levels and attention towards sustainability issues (Hoque, 2013). The origin of cognitive dissonance can be associated with a conflict between sustainability issues and social issues, as well as personal issues that consumers have to counter in everyday life (Behr and Iyengar, 1985). Decision-making prompts dissonance, compelling consumers to take actions that are not sustainable. Furthermore, it is believed that dissonance increases with the impact, importance, and irreversibility of the decision. Hence, this phenomenon can lead to unsustainable consumption behavior among consumers (Hoque, 2013).

Information framing, one of the techniques present in nudging literature (Lehner et al 2016), suggests that the desired consumer behavior can be reached by simplifying or manipulating the information (Wansink et al., 2001; Thaler and Sunstein, 2008). Moreover, consumers who experience dissonance towards sustainable consumption are probable to experience both primings of positive or negative experiences, which in turn impact their consumption choices (Yang & Unnava 2016). Therefore, studies suggest that buffering sustainability communication against negative associations and gaining desirable appeal for sustainable consumption through positive associations is expected to increase sustainable consumption (White et al. 2019). To address these negative associations and build upon positive associations, framing *sustainability*

information is considered a key element. Taking into account consumers' cognitive dissonance and sustainable consumption; this provides enough reasons to test the influence of sustainability information most effectively in addressing consumers' cognitive dissonance which further leads to avoidance-coping if not addressed timely.

Research Objective 1: Assessing the impact of sustainability information on consumers' cognitive dissonance

As discussed earlier with the cognitive dissonance theory, consumers cope with dissonance by observing "*coping*" mechanisms. Scholars and researchers have identified this approach as one of the most efficient strategies in reaching favorable conclusions based on self-motivated reasons, and also providing grounds for not feeling guilty for their actions' outcome on others. (Bénabou & Tirole, 2016; Golman et al., 2017; Grossman & van der Weele, 2017). Hence, this leads to a situation where consumers remain ignorant of the nature and scope of co-benefits associated with a product purchase, thereby providing them the leverage to abandon their moral obligation to buy expensive sustainable products and rather settle for cheaper products with the less sustainable notion. This inclination to cheaper and less sustainable products is usually facilitated by over-looking product labels. Various empirical studies have priorly validated the theme of information avoidance by individuals (Dana et al. 2007; Feiler 2014; Grossman and van der Weele 2017; Spiekermann and Weiss 2016). In the study of Dana et al (2007), the subjects were found to preserve some "moral wiggle room" for the sake of behaving selfishly without standing accountable for harm induced to others by them. However, there is substantial uncertainty that such kind of strategic ignorance also exists in the context of consumption. There are a few studies that provide evidence for avoidance mechanisms (Pigors and Rockenbach 2016; Bartling et al 2015). Hence, it becomes significant to study the realm of avoidance-coping stemming from the cognitive dissonance of consumers when it comes to sustainability consumption.

Research Objective 2: Assessing the impact of consumers' cognitive dissonance on associated avoidance coping mechanisms exhibited by consumers in the realm of sustainable consumption

Past studies have provided sufficient evidence for mediating the relationship between consumer conflicting reactions relating to dissonance and sustainable consumption and coping mechanisms (Alexander & Blank 2018). For example, consumers generally place equal importance on saving money and protecting the environment. However, such a state places them in a trade-off situation that poses negative emotions. To deal with the *trade-off difficulty*, consumers get involved in coping behaviors (Luce 2001, 2005; Luce et al. 1997, 1999), more specifically avoidant coping behaviors where consumers continue to buy well-known brands and previously purchased products while sustainable products are less likely to be purchased by them (Brügger et al. 2015; Newell et al. 2014). Furthermore, there can be various types of avoidant-coping behaviors that consumers can adopt to drift away from the stance of sustainability such as ignorance of sustainable information which may result in conflict (Onwezen & van der Weele 2016), denial of their unsustainable behavior consequences (Buttlar & Walther 2018), or purposely forgetting sustainability information to escape *conflict* or *dissonance* (Reczek et. al. 2018). Researchers have suggested that avoidance-based coping mechanisms must be tested under different conditions (Alexander & Blank 2018). To take into account different conditions, the present study takes into account individual factors such as "Moral Identity" in defining the relationship between avoidance coping and cognitive dissonance. Individuals who scale high on moral identity are likely to accept higher costs of sustainable products to make their consumption choices more sustainable (White et al. 2019).

Research Objective 3: Examining individual factors of consumers such as "Moral Identity" in playing a role between their cognitive dissonance and avoidance-coping mechanisms in the context of sustainable consumption

1.2 Research Questions

The study considers the research objectives to streamline narrowed research questions of the study.
The present study seeks to answer the following research questions:

1. How does sustainable Information influence the consumer's cognitive dissonance towards sustainable products?
2. How does cognitive dissonance influence the consumer's avoidance-coping of sustainable products and how does moral identity moderate the relationship between cognitive dissonance and avoidance coping?
3. How does Avoidance-coping influence consumers' sustainable consumption?
4. Are there gender-based differences in rating the Perceived Product Sustainability (detergent)? *Note: (supplementary analysis)*

1.3 Key Concepts Definitions

This section of the study defines the key concepts of the study to create a detailed understanding of the theoretical framework. Although, the literature chapter would further dwell to present elaborative explanations for the key concepts.

Sustainability Information

The literature suggests that product sustainability or sustainable information offers a detailed illustration of a company's sustainability efforts which could include transparency in supply chain operations and claiming efforts made in the pursuit of sustainability (Park and Kim, 2016). Moreover, Adams et al (2020) in his study defined sustainability information as any information which is effective in making an impact on the organization's global achievement of sustainable development goals and leveraging the organization to present long-term value for the society.

Cognitive dissonance

One of the most used definitions for cognitive dissonance in the literature is the one provided by Festinger (1957), where cognitive dissonance is referred to as the feelings of discomfort stemming from the conflict between a person's attitude or behavior and values and belief system.

Avoidance coping

The behavioral and cognitive efforts made by individuals in minimizing, denying, and avoiding situations that are closely associated with depression and stress can be defined as avoidance coping efforts (Penley et al. 2002: Cronkite and Moos, 1995).

Moral Identity

However, the literature presents various definitions for moral identity revolving around the concept of "self". For the sake of creating an initial understanding, the study refers to the definition given by Hardy and Carlo (2011), where moral identity is referred to as the degree of importance an individual associates with being a moral person to satisfy his or her identity.

Sustainable consumption

The term sustainable consumption is a moral behavior exhibited by consumers, to be more focused on resource conservation and environmental protection through waste reduction, saving energy, and having a preference for sustainable services and products (Peattie, 2010).

1.4 Research Methodology

The present study follows a theoretical and empirical research methodology. The theoretical part refers to the systematic literature review which is conducted by means of collecting and referring to relevant and authentic articles and journals from the LUT database. The theoretical research design for systematic literature review was adopted from the study of Biesbroek et al (2013).

The empirical research design of the study adopted a multi-method quantitative methodology, where data was collected from multiple sources. The data for the study was collected by means of an online survey conducted through the "Qualtrics" platform. The developed questionnaire was presented to participants in the Viipuri Lab environment of LUT university. The questionnaire was equipped with an image consisting of a sustainable product (laundry detergent) to gather sustainability information via fixation count in the eye tracking measurements and questionnaire items corresponding to variables such as cognitive dissonance, avoidance coping, moral identity, and sustainable consumption. The questionnaire was developed in English and the target audience for this study was students and staff at the university.

The study adopts mainly two data analysis methods namely "regression analysis" to test and identify relationships between variables and "mean comparison tests/ T-tests" to check demographic differences of participants on the perceived product sustainability (detergent) based on gender.

1.5 Limitations

To keep the master thesis within the given framework various limitations were kept in mind. First and foremost, is the sample size of the study which acts as a major limitation in generalizing the findings of the study. Another limitation that is associated with the statistical data analysis method in this study, is that the regression analysis was conducted in sequential parts which

posed a barrier to assessing the overall R-square (goodness of fit statistics of the conceptual framework) of the model.

Moreover, the sample of the study consisted of more male respondents rather than an equal proportion of both genders. Likewise, the sample was not diverse enough to gather enough data on different nationalities and occupations and then use mean comparison tests such as ANOVA to find respondents' differences in perceived product sustainability (detergent).

A limitation associated with the part of the measurement of the study variables was the shortened scales or metrics used in the present study. To control the length of the questionnaire, adopted scales were shortened by excluding certain items, thereby limiting the measurement goals of the variables.

To address the research objectives of the study, a multi-method quantitative methodology was followed. It is expected by the author that a more suited research design for effectively gauging the research questions could be “between-subjects”, where two study groups could be analyzed to justify the relationships of the variables. Lastly, one of the participants in the study sample was known to the research theme. Therefore, it is believed that there could be potential biases in that specific response.

1.6 Study Structure

The present study consists of seven chapters presented in a chronological structure under the instructions of LUT master thesis guidelines.

The study structure comprises the following chapters:

1. The 1st chapter presents the introduction with subsections referring to the motivational background and research objectives, research questions, key concept definitions, research methodology, and limitations.
2. The 2nd chapter elaborates on the systematic literature review.
3. The 3rd chapter proposes the research model and hypothesis of the study.
4. The 4th chapter discusses the research design and methodology of a multi-method empirical study. The subsections refer to data collection, analysis methods, and factor analyses.
5. The 5th chapter demonstrates the results and analyses of the study. The subsections elaborate distribution analysis, correlation analysis, regression analysis and mean comparison tests.
6. The 6th chapter aims to answer the research questions of the study by discussing the current study results in light of prior literature. The subsections include managerial implications and limitations of the study.
7. The last section comprises references and appendices.

2. LITERATURE REVIEW

This section of the study elaborates the systematic literature review process of the study, discusses relative theories in context of sustainable consumption and lastly presents a mainframe literature section which discusses association of variables.

2.1 Systematic Literature Review Process

This sub-section of the study presents the methodology followed for the collection of relevant literature materials mainly elaborating which databases, keywords, and number of relevant literature materials such as journals, articles, scientific reports were collected during each phase of the process.

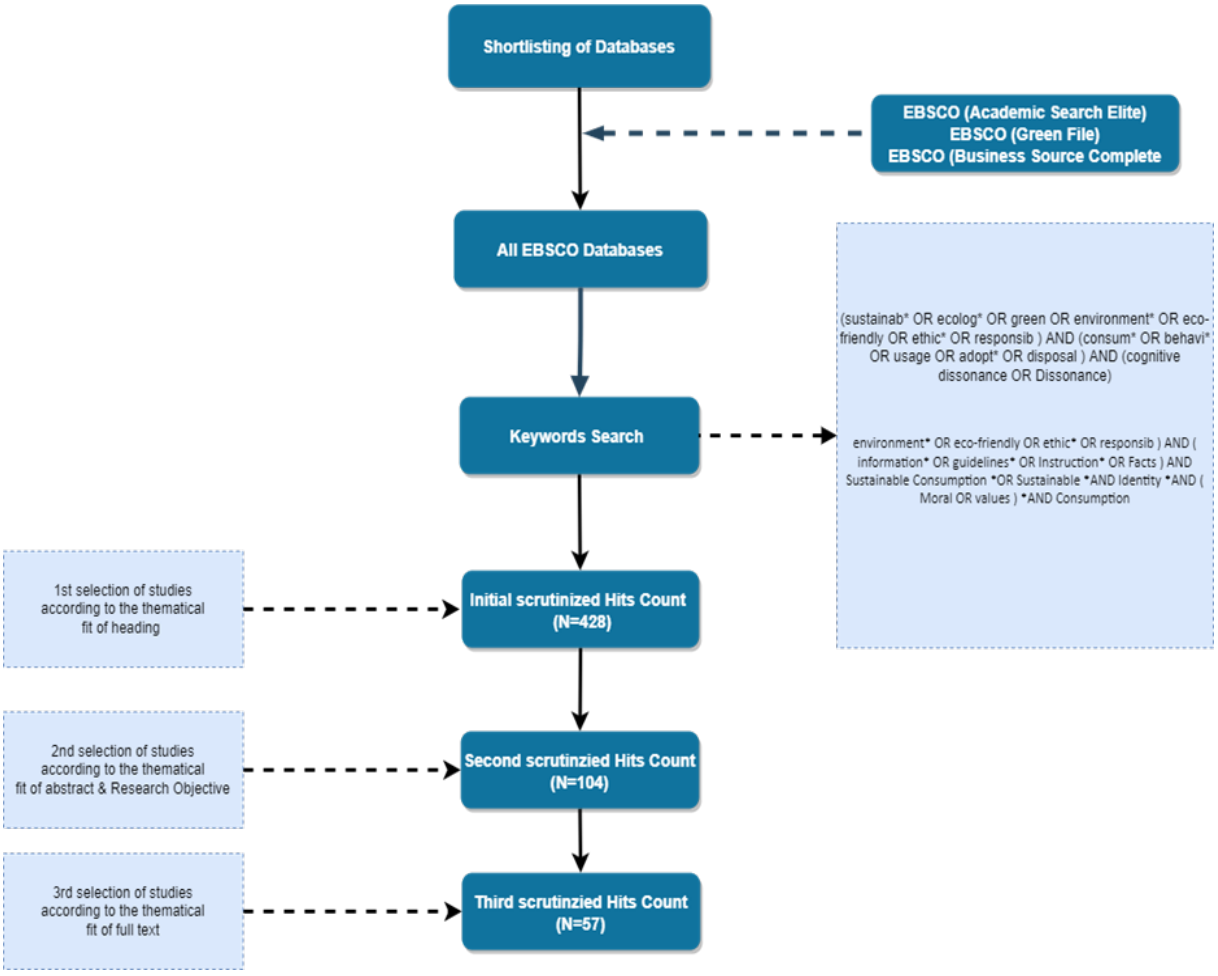


Figure 1: Systematic literature review process (adopted from Biesbroek et al. 2013)

For this particular part of the study, three databases were shortlisted namely (1) EBSCO (Academic Search Elite) (2) EBSCO Green File (3) EBSCO (Business Source Complete) for gathering relevant articles, conference papers, books, and scientific reports. The Keyword search comprised of following two sub-parts "*Sustainab* OR ecolog* OR green OR environment* OR eco-friendly OR ethic* OR responsib AND (consum* OR behavi* OR usage OR adopt* OR disposal) AND (cognitive dissonance OR Dissonance*" **and** "*environment* OR eco-friendly OR ethic* OR responsib) AND (information* OR guidelines* OR Instruction* OR Facts) AND Sustainable Consumption *OR Sustainable *AND Identity *AND (Moral OR values) *AND Consumption*".

The initial scrutinized hits count was composed of 428 materials and the selection of these materials was based on the thematic fit of the title of the articles, conference paper, and scientific report. The second scrutinized hits count was composed of 104 materials, and these were selected based on the thematic fit of the abstract and research questions/objective of the articles, conference papers, and scientific reports. The third and last scrutinized hits count consisted of 57 materials and the selection of these materials was based and limited to the thematic fit of the articles full text.

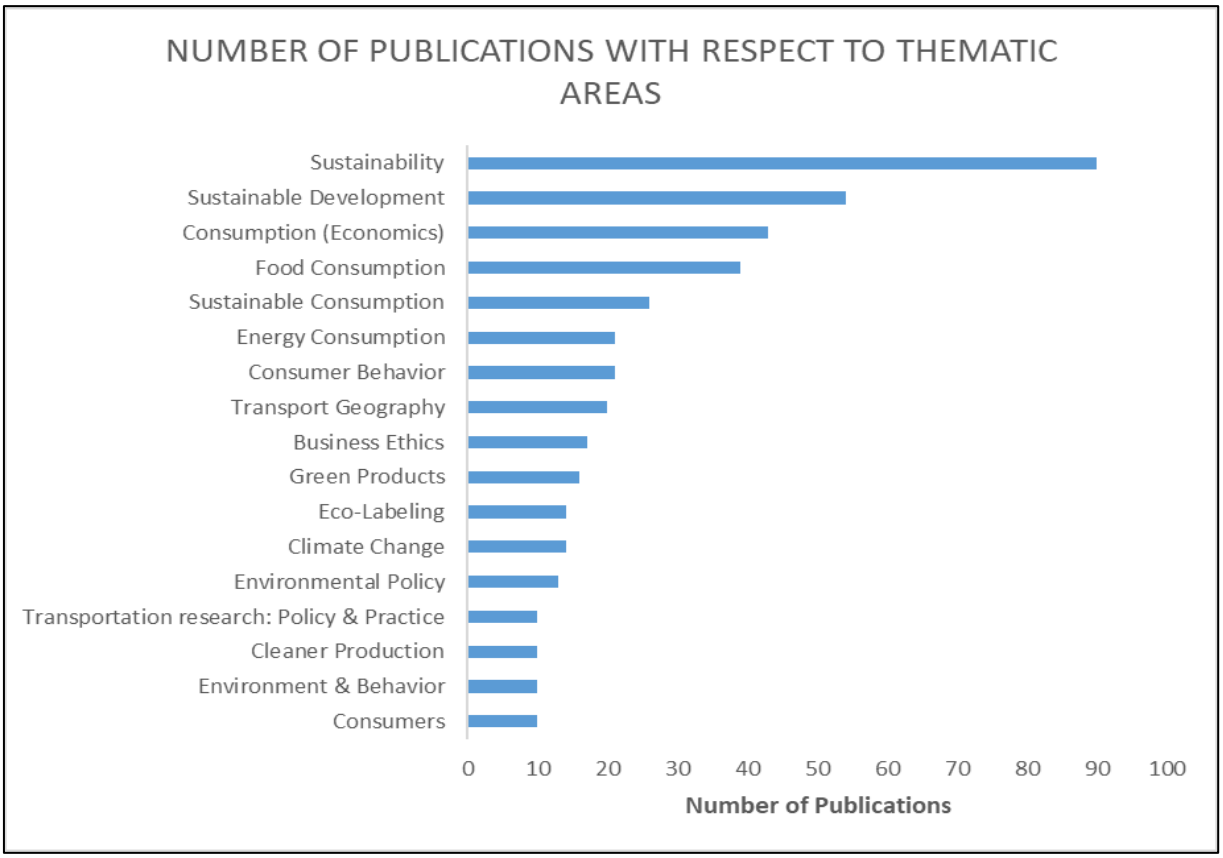


Figure 2: Demonstration of Materials gathered in Initial/1st stage of search

The Figure 2, shows the number of publications that were shortlisted for this study during the initial phase, comprising a total number of 428 materials/publications. It can be seen from the Figure 2, that the main materials/publications belong to the themes of "sustainability", "sustainable development" and "consumption economics".

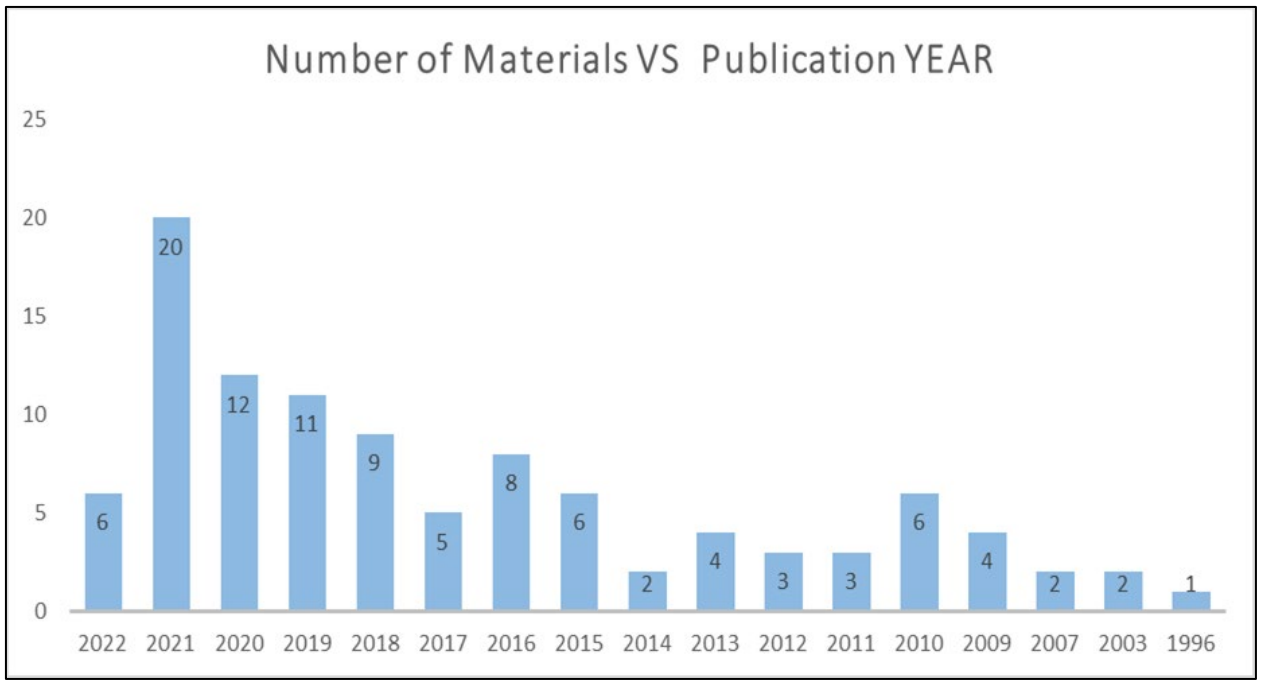


Figure 3: Number of Materials gathered in 2nd phase of search with respect to Publication Years

Figure 3 shows the number of materials/publications that were gathered for the study during the second phase of search. The study's literature is mainly focused on certain publications as the greatest number of publications are from the last four years.

2.2 Theoretical Background

This section of the study covers the theoretical background in relevance to the theories that are applicable in the context of sustainable consumption. Although various theories can be affiliated with sustainable consumption, this study limits the scope to below discussed two theories namely (1) Theory of Planned behavior (2) Cognitive Dissonance.

2.2.1 Theory of Planned Behavior

This section of the study is mainly focused on discussing the relevance of the theory of planned behavior and links have been made based on prior studies on how they can be used in the context of sustainable consumption.

The theory of planned behavior was developed by Ajzen (1985) to illustrate how individual beliefs are related to behavioral traits. The theory of planned behaviors notes that subjective norms, attitudes, and non-volitional behaviors (personal behavioral control) are determinants of intent and actual behavior among individuals. Thus, the theory states that an individual's intentional behavioral intention is influenced by attitude and subjective norms, which would more likely be carried out when there is the belief of effectively achieving the intent (Fielding et al, 2008). The theory has been adopted to explain the realm of persistent behaviors. In distant literature, studies have shown that the theory of planned behavior can explain the sustainable intentions of consumers; which can be used to determine sustainable consumption behaviors (Ajzen 1991; Ajzen 1985; Fielding et al, 2008).

Literature also shows that consumers are susceptible to experiencing conflict between their attitudes, beliefs, and behaviors; which indicates that an individual engages in coping behavior (Eagly and Chaiken, 1995). Therefore, it is necessary to explore several types of avoidance and coping behavior that consumers may exhibit, based on the theory of planned behavior. As already mentioned, the theory of planned behaviors notes that individual intention and behavior are influenced by three constructs, which are: subjective norms, attitudes towards behavior, and perceived behavioral control. That is, the behavior of consumers is based on evaluating a planned specific behavior. The subjective construct is associated with societal pressure and influence to behave or act in a certain manner. The perceived behavior control is centered on challenges and difficulty in behaving in a particular manner (Ajzen 1991). The theory of planned behavior has been used to explain sustainable consumption behavior.

Studies have used constructs of the originally planned theory of behavior (subjective norm, and perceived behavioral control), and included further constructs such as environmental concern,

and atmosphere to explain sustainable consumption (Armitage and Conner 2001; Donald, et al 2014; Jang et al, 2015; Maichum et al, 2016; Read and Brown, 2013). In addition, Shaw et al. (2000) investigated sustainable consumption behavior and found that individual factors such as ethical obligation and self-identity can be included as constructs to the original theory of planned behavior.

Existing studies have not been able to explain coping behaviors or strategies among consumers when they are faced with a conflict with their attitudes, beliefs, and behaviors. Other studies recognize such conflict as a concept as either neutralization or rationalization (Gruber and Schlegelmilch, 2014). Chatzidakis et al (2007) had previously incorporated the concept of rationalization into the TPB model and noted that it moderates negative relationship constructs in the theory of planned behavior and sustainable intention. Further studies from the field of psychology have also researched defense mechanisms exhibited by consumers to cope with cognitive dissonance. These studies are summarized in the Table 1.

Table 1: Synthesis of Avoidance-based Coping/Defensive behaviors studies

Studies	Type of Avoidance-based Coping OR Defensive behaviors	Context
Sykes and Matza (1957)	Denial of responsibility Denial of Injury Denial of victim Condemnation of condemners Appeal to higher loyalties	Coping Techniques by juvenile delinquent
Harris and Daunt (2011)	The metaphor of ledger	Coping Techniques by Service Consumers
Minor (1981)	Defence of Necessity	Coping Techniques by American Students
Coleman (1994)	Denial of necessity of Law Claim of entitlement	Coping Techniques by American Students
Henry and Eaton (1999)	Claim of relative acceptability Claim of individuality	Students Coping mechanisms to justify deviant behaviors
Cromwell and Thurman (2003)	Claim of postponement Justification by comparison	Coping techniques by Shoplifters

Rosenbaum et al (2011)	One-time usage First time, only-time crime Outsmart the system	Coping Techniques in Retail Frauds

A distant study by Sykes and Matza (1957), identified five major types of defensive mechanisms exhibited by consumers to cope with dissonance and distress that may emerge from the gap between individual behavior and attitude. First is the denial of responsibility, which is related to where the consumer does not consider the violation of social norms by believing that he or she cannot influence eternal factors affecting him or her. Another type is the denial of injury where the consumer indulges in certain behaviors while recognizing that such behavior is acceptable as long as they are not harmful to others. The third is the denial of the victim, where the victim believes he or she has done something wrong. The fourth is the condemnation of the condemners, which occurs when consumers may not like the norm-violating behavior, but indulges in them nonetheless. The last type is the appeal to higher loyalties, which occurs when consumers might indulge in behaviors or actions with the belief that such behavior is required to achieve higher-order goals in life.

In the last decades, researchers have focused on determining avoidance-based behaviors in the context of sustainability. Harris and Daunt (2011) discussed that Klockars introduced a behavior known as the "metaphor of ledger", where the consumers believe that if they have been doing good for a long time, they have the liberty to engage in unethical behaviors without feeling guilt. Likewise, Minor (1981) developed the concept of "defense of necessity", which is an avoidance-based coping behaviour where an individual feels that acting in a certain way without feeling guilty is the dire need of the time regardless of whether the behavior is morally wrong. Moreover, Coleman (1994) offered two distinct coping mechanisms "Denial of the necessity of Law" and "Claim of entitlement", where the former refers to a situation of an individual who indulges in unethical behavior because there are no laws protecting the pursuance of such a behavior, and the later relates a situation where a person has a right to both engage to the certain

action and to benefit from any action he or she undertakes, and these rights justify potential harm. Likewise, Henry and Eaton (1999) introduced two defense mechanisms "Claim of relative acceptability" and "Claim of individuality" where the former refers to a situation in which the individual justifies himself or herself that his or her certain action is acceptable/tolerable if it is less harmful compared to other actions, and the latter refers to the instance where the person is least bothered what others think of his or her actions.

In the early 21st century, Cromwell and Thurman (2003) proposed two coping mechanisms namely "Claim of postponement" and "Justification by comparison" where the first one claims that an individual can delay his/her evaluation of wrongdoing to avoid the feeling of guilt, while the second one refers to a situation where the individual justifies his wrong behaviors as not be extremely wrong concerning the situation where the behavior is exhibited. Recently, studies in the context of unethical retail disposition have identified three kinds of behaviors namely one-time usage, first-time and only-time crime, and outsmarting the system. One-time usage is a situation where the consumer uses a product a single time and then returns it to the retailer while having a justification that he or she didn't break any rules by returning the product. The first-time and only-time crime is a situation where a consumer might indulge in certain behavior that is wrong while knowing that it will be acceptable because it is being done for the first time. Outsmarting the system is a situation where the individual violates a norm or pursues an unacceptable behavior and attributes it as a source of pride rather than shame and seeks appraisal in beating the system (Rosenbaum et al, 2011).

2.2.2 Cognitive Dissonance Theory

This section of the study discusses the relevance of cognitive dissonance theory in the context of sustainable consumption and avoidance behaviors consumers may inherently hold. The section also covers the origin of cognitive dissonance in consumers, how consumers cope with cognitive dissonance, and potential reduction strategies that consumers use to limit their cognitive dissonance.

Sustainable decisions are related to cognitive dissonance theory. The theory of cognitive dissonance notes that humans inherently have a strong desire to keep attitudes, beliefs, and behaviors consistent (Festinger, 1957; Sharma, 2014). According to the theory of cognitive dissonance, humans stick with specific cognitions for self, the environment, opinions, attitudes, and previously executed behaviors (Oshikawa, 1969). The specific set of cognitions that individuals hold can be either consonant or dissonant from each other.

As a consequence, consumers triangulate their efforts to gain consistency over their self-perceptions, as well as exhibit behaviors to avoid dissonance (George and Yaoyuneyong, 2010). The origin of cognitive dissonance can also be resulting from sustainable critical consumption decisions. For example, people who frequently travel by air do not have the desire to harm the environment. However, there is excessive emission of GHGs with air travel, and travelers recognize that such means of travel can bring about behavior that is not consistent with attitudes. Therefore, several studies have found that air travelers experience cognitive dissonance (McDonald et al. 2015). Cognitive dissonance theory emphasizes that consumers are often faced with conflict (Tanford and Montgomery, 2015). When faced with different options, consumers tend to analyze the pros and cons of their purchases. Thus, the anticipation and analysis of purchase can lead to different types of cognitive dissonance when the person experiences conflicting cognitions about the planned purchase.

Furthermore, studies have shown that when consumers possess a high perceived control over a decision, these individuals feel that their positive self-concept might be endangered. As such, they exhibit high levels of perceived cognitive dissonance (Thøgersen, 2004). Following Thogersen (2004), these prepositions are valid when consumers feel that their planned behavior makes them scoreless on a moral scale**.**

Prior studies show that consumers can observe different strategies to deal with inconsistencies of conflicting cognitions. These strategies are mainly targeted at reducing the dissonant element between consumers' attitudes and behavior. As such, it can be reckoned that behavior, perceptions, and attitudes towards one’s behavior can be effectively transformed (Sharma,

2014). These transformations can be achieved by adding new cognitions. Therefore, consumers balance out their initial behavior or subsequently rationalize it (Sharma, 2014). The process of rationalization involves individuals actively seeking information that supports their stance and justifies their choices (Tanford and Montgomery, 2015). Similarly, consumers also ignore or avoid information that is not consistent with their attitudes. Likewise, consumers also place less importance on dissonance or inconsistent elements. Hence, this leads to the eradication of cognitive dissonance arising from dissonant cognitions (George and Yaoyuneyong, 2010).

The literature provides insights into three broad ways to reduce dissonance. They are changes in perception, behavior change, and change in attitude (Sharma, 2014). The change in perception category can be divided further into 4 sub-categories namely: evading, recall of consonant information, trivialization, and categorization. However, there is no clear consensus on the labels or names of each category, and many strategies have synonymous names. Moreover, there is also no general model of dissonance reduction strategies in marketing. For this study, the scope focuses on "attitude change", "evading" the sub-category of change in perception, and "behavioral change".

When the consumer or individual encounters himself with dissonant cognitions, it is his motivation to reduce the dissonance by modifying the discrepant cognitions. To reach this goal individuals usually pursue attitude change (Devine et al. 1999). Prior research is focused on involving people in counter-attitudinal behavior which guides these individuals in modifying their attitudes to achieve consistency between behavior and attitude (Devine et al., 1999). An example of attitude change can be seen when a consumer makes referrals in associations to a company, he or she at the same time increases his or her positive attitudes toward the company (Kuester and Benkenstein 2014). A specific kind of attitude change stressed in the CDT context is the “Spreading of Alternatives” (Brehm, 1956). The origin of this attitude change is mainly from the notion that scholars and researchers are quite focused on examining decisions making especially between similar alternatives and have found out that after the consumer has decided, he or she does not see the alternatives as similar because now he or she has developed positive attitudes towards the choice made (Devine et al. 1999).

Furthermore, "attitude bolstering" is another kind of attitude change, which can be referred to as a situation in which attitude change is a dissonance reduction strategy, where the individual changes the cognitions that are related to the attitude (Devine et al. 1999). However, it depends on whether attitude bolstering is categorized as attitude change as well. Attitude bolstering is a concept used to explain when a consumer's original intention significantly increases owing to defense to dissonance (Devine et al. 1999). Particularly the original attitude with its cognitions is enhanced, and not diminished. Sherman and Gorking (1980) investigated feminists and why they are satisfied with male surgeons. The study showed that the dissonance between a feminist's attitudes and the inability to see a female surgeon is based on the individual's (feminist's) strong attitudes towards feminism. That is, the stronger the attitudes toward feminism, the less likely would there be a dissonance behavior or intention.

When a person has cognition of a past or current behavior that is dissonant with an individual attitude, such person can alter his/her behavior to reduce dissonance. This indicates that "behavioral change" is a dissonance reduction strategy. Festinger made use of quitting a smoking habit to illustrate how behavioral change is a strategy for reducing dissonance (Festinger, 1957). Hence, an individual can quit smoking when he or she adopts a health habit that is not in agreement with smoking behavior. Another example of behavioral change as a strategy for reducing dissonance is among those who change from carnivore consumption to a vegan diet. This happens when the individual develops anti-meat and anti-dairy industry cognitions, which are invariant with one's previously carnivore consumption to vegan consumption behavior (Rothgerber, 2014).

In a model proposed by Cancino-Montecinos et al (2020), avoidance, distraction, escape, and forgetting are referred to as evading dissonance reduction strategies. An example of evading can be failing an online purchase by a consumer. In evading situations, dissonance can arise from the discrepancy between contribution (such as investment of time, waiting, monetary aspects, and planning) and the end poor result. Mahapatra and Mishra (2021), explored the case of failed online purchases and concluded that after a faulty purchase consumers preferred to return the

product rather than being subjected to mental disengagement. Moreover, avoidance plays an important part in the realm of cognitive dissonance. The research suggests that dissonance is always avoided until the point the cognition from a source is unable to be ignored. In the bigger picture, it can be said that dissonance reduction is a process and various strategies are used to dynamically address the issue.

As mentioned by Cancino-Montecinos et al (2020), evading is probably used in the earlier stage of the dissonance reduction process and this finding has been supplemented and validated by Gaspar et al (2016), where consumers were exposed to information about the risks associated with red meat consumption and the participants who initially rated high on avoidance were more likely to change their attitudes as low avoidance consumers after being exposed to two weeks of information presenting risks associated with red meat consumption. While on the other side, evading can also be treated as a deliberate dissonance reduction strategy. An example of such a case can be taken from social media where the consumers can block, unfollow and report dissonant stimuli (Skoric et al., 2018). Likewise, such avoidance can also be seen in the case of health organizations and governmental bodies where they are aiming to expose people to COVID-19-related information, but people subject such kind of information to avoidance for escaping the dissonance and this hence acts as a barrier to virus prevention (Song et al. 2021). Consumer behavior researchers have claimed that low perceived control over a situation can result in avoidant behaviors among consumers (Herzenstein et al. 2015). When consumers engage in the act of controlling their fears rather than the situation itself they end up in a situation of avoidance. In conclusion, behavioral researchers suggest crisis communication and risk factor identification with a clear goal to reduce barriers to avoidance (Song et al. 2021).

Moreover, the marketing literature also provides some relevant dissonance-reduction strategies (Table 2) (Cummings and Venkatesan, 1976; Wilkie, 1994; Donnelly and Ivancevich, 1970; Strait, 1964; Engle, 1965; Ginter, 1974; Sheth, 1970; Ginter, 1974; LoSciuto and Perloff, 1967; Hunt, 1970; Holloway, 1967).

Table 2: Dissonance Reduction Strategies in Marketing Literature

Dissonance-Reduction strategies	Case Examples
1. Adjustment of existing cognitions in relation to purchased product either by raising or lowering the performance perceptions	Belief of consumer that the product still performs better on certain criteria compared to other competitive brands
2. Consciously, looking for product or brand information that validates the purchase decision	Once bought the product the consumer might only look for positive ads or reviews of the product/brand
3. Purposely, avoid negative or dissonant information about the product purchased or the chosen brand	The situation where the consumer doesn't pay attention to competitive or rival brands ads or offerings
4. Selectively parse information to rationalize the decision as being the right one	The situation where the consumer is looking for only positive information of product and also regards the purchase as occasional "Lemon" to assure himself/herself that he/she made a good choice.
5. Gaining assure from other satisfied consumers of the same product as a means of validating the purchase decision	Consumers discussion around the product benefits and how they have benefited from it
6. Making recommendation to other friends and peers and speaking highly of the product in the public	Purposedly, disclosing the perks of your product in friends and peer gatherings.

7. Returning the product back to the seller and entirely disassociating yourself.	When the consumers psychological dissatisfaction is way too much, and the returning of the product is considered as the last resort.

2.3 Mainframe Literature

This section of the study focuses on the mainframe themes of the study. The section elaborates on prior studies done in the context of sustainable consumption and defines linkages and relationships between sustainable consumption and other antecedents of the studies such as cognitive dissonance, avoidance-coping mechanisms, moral identity, and sustainability communication by utilizing sustainable information.

2.3.1 Cognitive Dissonance and Sustainable Consumption

Recent literature on sustainable consumption (McEachern et al. 2010; Szmigin et al. 2009), confirms that inconsistent or dissonant behavior is omnipresent. Claims have been made by consumers that behavior is influenced by values and attitudes. Although, studies have shown that attitudes and values don't have to precisely correlate with actual behavior. This phenomenon has been referred to as the attitude and behavior gap (Chatzidakis et al. 2007).

One explanation for the attitude and behavior gap is given by "dissonant behavior" and "Flexible behavior" that sustainable consumers adopt (McEachern et al., 2010; Szmigin et al., 2009). It has been found that behavioral dissonance whether it is generic or originating from sustainable consumption, is likely to come alongside cognitive dissonance if consumers are well known for their discrepant choice. The focus on cognitive dissonance starts with Festinger's (1957) theory, which states that dissonance is a product of a consumer's two contradicting and conflicting beliefs or attitudes. This situation of conflict can lead to uncomfortable and negative emotions which most consumers wish to eliminate.

The research on cognitive dissonance has been mainly focused on psychological and emotional indexes of dissonance and has also included non-cognitive antecedents such as anxiety (Hunt, 1970), psychological discomfort (Elliot and Devine, 1994), emotions (Montgomery and Barnes, 1993), doubt/uncertainty (Menasco and Hawkins, 1978), and remorse or regret (Insko and Schopler, 1972). Elliot and Devine's (1994) explored an induced-compliance experiment and gauged the psychological discomfort relating to dissonance using a scale that was more focused on the emotional component.

Other researchers explored the dissonance aspect relating to continuity and arousal. Moreover, studies conducted in the context of air travel (Koller and Salzberger, 2007), have shown that individuals try to eliminate or reduce the dissonance using a range of strategies that mainly comprise the search for consonant information (Adams, 1961; Engel, 1963), disregarding of information that is discordant with the existing behavior (Kassarjian and Cohen, 1965), attitude or opinion change (Oshikawa, 1969), avoidance of dissonant information (Frey, 1982) and perceptual distortion (Steinbruner, 1974; Janis and Mann, 1977).

2.3.2 Coping mechanisms: In Context of Sustainable Consumption

The literature describes *"Coping"* as a thought or behavior which people or consumers adopt to regulate external and internal needs of circumstances that are considered stressful (Folkman and Moskowitz, 2004) or a consumer's planned effort to reduce perceived tension (Carver and Smith, 2010). Earlier studies on Coping strategies highlighted extreme situations (Parker and Endler, 1992), mainly focusing on the fact that consumers apply coping mechanisms to such as perceived stressors such as information seeking versus avoidance. A detailed argument suggested that consumers' fundamental coping mechanisms depend on the nature of a stressful situation such as the case of illness or losing a job.

Moreover, these coping mechanisms can be distinguished into two realms namely (1) Function-oriented, which include problem-focused coping mechanisms aimed at reducing or resolving the origin of the problem, and emotion-focused coping mechanisms where reducing the negative

emotion is the main goal, and (2) Direction-oriented coping mechanism, include engagement coping which is aimed at dealing with the problem and feeling associated with it and disengagement coping which is aimed at escaping the problem (Carver and Smith, 2010; Latack and Havlovic, 1996; Cameron and Wally, 2015; Lazarus and Folkman, 1987; Ojala and Bengtsson, 2018; Compas et al. 2001).

Homburg and Stolberg (2006) stated that regarding environmental problems, consumers can make use of problem-focused coping mechanisms which leads to sustainable behaviors. Based on a self-reported data collection method, they concluded that eight problem and emotion-focused coping strategies are used by consumers to deal with climate change as a problem namely, (1) expression of emotions, relativization, problem-solving, resignation, wishful thinking, self-protection and pleasure (Homburg and Stolberg, 2006). Stoll-Kleemann et al (2001), concluded based on a sample of Swiss citizens that how a variety of denials can be used by consumers to deal with feelings of dissonance to escape the effort of changing their consumption patterns to more sustainable themes. The examples of these denial coping mechanisms can stretch from blaming others' actions and highlighting the doubts concerning their locus of control and responsibility. Lorenzoni et al (2007), investigated the barriers that UK citizens face when engaging with climate change philosophy. The findings of this study were somehow consistent with the findings of the studies discussed previously as four justifications were identified from the aspect of the consumers namely (1) denial of control (2) comparisons (3) denial of responsibility (4) benefits using compensation.

Although, the aforementioned justifications and coping mechanisms don’t bridge the gap of actual inconsistency between behavior and attitude. The only purpose they serve is to help for overcoming feelings of dissonance. Concerning “denial”, Stoll-Kleemann (2001) emphasized that consumers justify a lack of consideration towards climate change by stressing distinct barriers concerning behavior change. Juvan and Dolnicar (2014), provided a further differentiation between denial of control and denial of responsibility. The differentiation between both stresses that denial of control may apply to a consumer if he or she states that the use of air traveling behavior is not under their control due to a lack of control of external factors

(Juvan and Dolnicar, 2014). The justifications that can be associated with this are such time, convenience, and costs while denial of responsibility is encountered when a consumer believes that his or her actions don't matter in constituting a big change (Juvan and Dolnicar, 2014; Stoll-kleemann et al. 2001).

Additionally, flying behavior is understood and justified by utilizing benefits associated with compensation. In the realm of tourism, these benefits can be the monetary gains of local communities, cultural and social exchange, and benefits entirely for self. (Hares et al. 2010; Juvan and Dolnicar, 2014; Becken, 2007). Festinger (1957), claimed that consumers generally compare themselves with other individuals to define themselves. In a particular context, finding associations with less sustainable consumers over considering industries as a whole can yield better feelings about the consumer's behavior (Juvan and Dolnicar, 2014). This state of association can be referred to as "downwards comparison". However, in experimental settings, the consumer's feeling of dissonance can be eliminated by forgetting and distraction (Zanna and Aziza, 1976; Elkin and Leippe, 1986). Shifting the attention away from the inconsistency can be useful in the avoidance of negative feelings of dissonance while forgetting about the inconsistency can be used to achieve avoidance of those feelings afterward.

The literature also provides a vast variety of studies in the context of meat consumption that signify conflict between attitudes and behaviors and highlight how meat consumption can trigger the mental process of cognitive dissonance (Festinger, 1962) within consumers which they have to deal with (Te Velde et al. 2002; Bastian et al. 2012; Rothgerber, 2014; Gregory et al. 2013; McEachern and Schroder, 2002). Studies conducted where the respondents were meat-eaters, meat avoiders, vegans and vegetarians prove that meat eaters show the highest level of ambivalence between their attitudes and behavior (Povey et al. 2001). Many people don't wish to think about the negative aspects associated with the production of the meat they are consuming (Knight and Barnett, 2008), only because they wish to consciously or subconsciously active their coping mechanisms to avoid feelings of guilt about meat consumption (Bilewicz et al. 2011; Bastian et al. 2012; Rothgerber, 2014; Gregory et al. 2013; McEachern and Schroder, 2002).

Serpell (1996) describes four coping mechanisms namely (1) concealment (2) misinterpretation (3) detachment (4) shift of blame. In the context of meat consumption, "concealment" fits in the best as it is where consumers believe they can't see and additionally don't want to see what happens in the factory, farms, and slaughterhouses. These hidden processes and industrialized meat production which are divided into stages where each party is just performing one function and is not known what others are doing; make it easier for each of them to shift the blame to one another. The responsibility of imposing regulations on meat markets is often under the control of governments. Hence, consumers make a just out of it claiming that consumption of meat shouldn't be considered bad when governments have legalized meat production.

"Distancing", is one of the most used coping mechanisms where consumers make use of the language such as pork or beef rather than pig or cow to mask the fact that they are eating an animal (Plous, 1993; Serpell, 1996). On the other hand, Rothgerber (2014), states that consumers don't want information about the meat origin, meat production impacts, and living conditions these animals are kept only to facilitate the fact they wish to avoid unfavorable feelings while eating. There is a partial similarity between the Serpell and Rothgerber findings, but the latter author draws a differentiation based on highlighting the importance of perceived behavioral change when consumer reduces their meat consumption in some instances.

2.3.3 Moral Identity as a Moderator

In a research conducted by Randers et al (2021), "Moral Identity" was found to be an important element in the domain of sustainable consumption or sustainable behaviors among consumers. Consumers often face the challenge of living a sustainable lifestyle due to the pre-defined norms and structured forces which hinder them to adopt sustainable choices in their daily life buying patterns.

One of the key factors that restrict consumers from going for easy, comfortable, and quick unsustainable choices is an integrated sense of moral identity within them which helps them surpass the situational and cultural temptations. In environmental psychology, moral identity

has been credited as the key factor or an antecedent for a wide range of sustainable behaviors among consumers (Clayton, 2003; Van der Werff et al. 2014; Whitmarsh and O'Neill, 2010). However, it is also important to notice that people have multiple identities, therefore the influence of moral identity must not be studied alone. Although, many researchers have studied moral identity in isolation (Gatersleben et al. 2019).

Aronson et al (1974), stressed that moral identity is important concerning dissonance because every individual underlying motive is to maintain a stable, competent, and morally responsible image of self. Therefore, when discussing the domain of sustainable consumption or sustainable behaviors, one must likely include the moral dimension part in the investigation. It is vital to note that if there are chances of occurrence of unsustainable behaviors, an individual's positive self-counters to not let those happen.

Furthermore, Aquino and Reed (2002), defined moral identity as a combination of two dimensions namely (1) "symbolization" which explains the delicacy of how an individual's moral choices are perceived by the external world (2) "internalization" which claims the importance of moral characteristics of an individual's self-concept. However, the other point of view that can be made is that if individuals regulate their "internalization" dimension, they can either justify their unsustainable behaviors for themselves or use their sustainable self-concept to remain sustainable in consumer choices. Moreover, the influence of moral identity is strongly dependent upon an individual and how he or she views external information, if it synchronizes with his attitudes/beliefs he is more likely to act sustainably and if it poses a threat to his or her moral identity or belief system, he or she is likely to avoid information and act towards unsustainable choices (Goldman et al. 2017; Onwezen & van der Weele, 2016).

The literature provides us with plenty of studies done in the context of moral identity and sustainable consumption. In a study conducted by Soron (2010), it was stressed that sustainable consumption should be dealt with as an identity project where an individual's choices can be shaped by communicating through commodities that are reflective of identity choices. Furthermore, it was suggested by Soron that greening identity employing sustainable

consumption can work well in the case of wealthy consumers but not in the case of the community as a whole.

Furthermore, studies have also investigated the effects of education on sustainable consumption, and it is noted that identity questions should be handled through the higher education platforms (Sterling, 2001; Wals, 2007; Huckle, 2004; Glasser, 2009). Building on the foundation of the aforementioned studies, the latest studies have suggested that to have made a shift toward sustainable consumption behaviors there is a need for participatory, activism, and critical social learning (Mintz and Tal, 2018); (MacVaugh and Norton, 2012); (Souza et al. 2019). Over two decades, researchers have triangulated studies on education for sustainable consumption and have claimed that tailored education programs can aid in the paradigm shift from education about sustainability to reframing education for sustainability which involves identity dimensions, although this proposition has remained a conceptual (Blake et al. 2013; Filho et al. 2018).

However, in practice, sustainable education has been focused on identity issues relating to behavioral obligations rather than taking an individual's pre-existing identities as the starting point (Payne, 2000). In the study of Payne (2000, p6), it is stressed that education should be focusing on "socio-ontological understanding of our individual and collective component of the environment" and sustainability education to emphasize identity issues critically, by taking into account social-influence and self-related identity aspects.

The existing studies provide evidence that when people face cognitive dissonance, they get involved in coping or avoidance behaviors (Festinger, 1972). One thing that needs to be kept in mind during this phase is the individualistic component of moral identity. In a study, Hirsh and Kang (2016) identified three different types of coping/avoidance behaviors consumers engage in to resolve identity conflicts. Firstly, consumers may engage in "enhancement" of important identity which may make them narrowly focused on motives co-relating to that identity while additional identities of his or her remain of the less or same importance. Secondly, the phenomena of "compartmentalizing" in which consumers or individuals are more focused on

avoiding circumstances where two conflicting identities are significant. Thirdly, the situation is in which individuals seek to "integrate" two discordant identities. However, this solely takes place only if the motive in both or either one of them is so that they are harmonious. (Hirsh and Kang 2016).

2.3.4 Sustainability Communication

According to significant new studies, communication plays an important role in stimulating sustainable consumption dynamics. One of the important roles played by communications is establishing the societal debate around changing the consumption patterns and problematization of consumption (Bengtsson et al. 2018; Wiedmann et al. 2020).

The research around communication began to institutionalize in the 1920s, producing 150 theories to explain communication effects (Lock et al. 2020). The communication literature presents us with three broad theoretical perspectives. Firstly, communication models were mainly focused on the mathematical aspects where human communication was regarded as a process of sign transmission in which a transmitter sends a coded signal to transmit information via a channel to a receiver (Shannon and Weaver, 1949). However, neither the sign nor the interpretation associated with the message played a significant role.

Secondly, the later communication theories and models were mainly focused on information exchange and the process associated with the individualistic level. One example of this scenario can be the *"Elaboration Likelihood Model*", which states that the content of the message processing is dependent on the recipient where his or her motivation for the message determines whether the message receives thoughtful consideration or casually passed away (Petty and Cacioppo, 1986).

Thirdly, models of communication theory see communication as a process underpinned by social relations. They are based on knowledge of sociology (Berger and Luckmann, 1966) and discourse analysis developed around them (Keller et al., 2013). Therefore, it can be established

that communication not merely serves information transmission purposes but also regulates human actions to address significant issues, and create social meaning and shared consensus.

Three of these approaches in communication studies are adopted in the field of sustainability communication. However, in this study communication is used for a different purpose mainly to trigger consumers towards sustainable consumption (Adombent and Godemann, 2011). The literature provides different approaches toward sustainable communication ranging from one-way approaches to interactive approaches. Interactive approaches are geared towards creating shared meaning for sustainability concerns, deliberation, and societal learning about sustainable consumption while One-way approaches are targeted to persuade the consumer to accept sustainable consumption goals determined by the sender (Newig et al. 2013).

Literature on sustainable communication provides enough evidence for *"nudging"* to play an effective role in promoting sustainable consumption among consumers (Sunstein 2014a, 2014b). The definition of nudging can slightly vary depending on the context. According to Thaler and Sunstein (2008), nudging in the context of a decision environment is referred to as the change predictably made to consumers' behaviors without limiting their options or manipulating economic incentives. The perspective of behavioral economics suggests that every situation requires some sort of choice architecture (Kahneman, 2013) where information or environmental elements influence the way choices are made (Thaler and Sunstein, 2008).

Therefore, it can be said that nudging refers to purposeful changes in choice architecture that influence peoples' behaviors by making changes in the environment that guide and enable individuals to make choices almost automatically (Thaler and Sunstein, 2008). The most simplistic way of nudging can be from *"information framing"* either to negate negative consumer reactions or validate positive consumer reactions by providing default choices that facilitate sustainable consumption decisions (Lehner et al. 2016). Hence, the literature also provides enough evidence to conclude that nudging doesn't change an individual's belief system; rather it focuses on enabling behaviors and private decisions that are beneficial for society and usually in the individual's long-term interests (Thaler and Sunstein, 2008). Hansen (2014)

presented a thorough definition of nudging where he referred to it as an attempt to influence a consumer's judgment, behaviors, or choice in predictable ways such as making it possible by limiting individual cognitive biases and barriers to social decision-making.

According to Lehner et al (2016), "nudging" can be administered through four types of tools namely (1) information framing and simplification (2) physical environment changes (3) default policy changes, and (4) social norms usage. The scope of this study is limited to adopt information framing as the tool to address consumer conflicting reactions, therefore the study dives into mechanisms of how information can be framed to reach desired consumer reactions.

Prior studies that adopted information framing as a means to reach desired consumer behaviors have shown it to be effective such as evident in the studies which considered renaming items on a café menu (Wansink et al. 2001), which increased sales by 27% and getting feedback on how one is reaching one's retirement savings goals can help people to stay on track with their plans (Thaler and Sunstein, 2008).

Moreover, consumers who possess cognitive dissonance towards sustainable consumption are probable to experience both primings of positive and negative experiences, which in turn impact their consumption choices (Yang & Unnava, 2016). Therefore, studies suggest that buffering sustainability communication against negative associations and gaining desirable appeal for sustainable consumption through positive associations is expected to increase sustainable consumption (White et al. 2019).

To address these negative and positive associations, framing sustainability information is considered a key element. Research on framing information is mainly focused on content, structure, and channels for information that influence consumers to purchase sustainable products (Goldstein et al., 2008). Information framing can be divided into two aspects namely positive and negative information framing. Positive information framing builds consumer actions based on positive consequences (gains) for target consumer groups while negative

information framing communicates losses that the target audience could incur for not acting as suggested (Maheswaran and Meyers, 1990).

Past studies have shown the impact of information framing on consumers' attitudes and behaviors; however, literature depicts mixed conclusions on the impact of different information framing approaches. Previous studies provide a mixed view on the effectiveness of positive and negative information framing, some suggest that positive information framing is more likely to influence the attitudes of consumers by evoking positive associations and beliefs (Lord, 1994) while others suggest that negative information framing is more effective since it convinces the consumer by negative consequences of not acting in a certain way (Kanouse, 1984).

2.3.4.1 Sustainable Information

A sub-theme that originates from sustainability communication is sustainability or sustainable information also known as eco-labeling in sustainability literature.

The presence of sustainable information on product labels can provide consumers with the desired information to alter or modify their choices toward sustainable consumption (Nair et al. 2010; Yu et al. 2019). Sustainable information on product labels can be defined as a voluntary approach to gaining environmental performance certifications and this is becoming a worldwide practice (Global Network Ecolabeling, 2018). Eco-labelling is now more of a tool used to support and promote more sustainable products in two complementary ways. Firstly, this approach provides consumers with concerning information to enable them to look for products that have high environmental performance. Secondly, it is used as a tool for benchmarking an organization's environmental performance and direction for future product developments. (Minkov et al. 2018; Miranda-Ackerman and Azzaro-Pantel, 2017; Murali et al. 2019).

It is important to emphasize sustainable characteristics and benefits of products or else if not done this can lead to weaker cognitions and understanding of the sustainable products among consumers/buyers (Bjerregaard and Møller, 2019; Park, 2017). Therefore, one of the best

approaches to environmental policy is presenting consumers with sustainable information about the product and presenting 3rd party certification marks to gain credibility of information (Wang et al. 2018). These sustainable information labels can limit the asymmetry of information between the manufacturers and consumers and give consumers the leverage to distinguish between sustainable and unsustainable products.

In a study conducted by Yu et al (2019), where he examined China's environmental labeling policy and stated that a clear presentation of sustainable information can help generate sustainable consumption behavior among consumers. The scope of sustainable information presentation can vary from region to region (Mahlia and Saidur, 2010). Various studies claim that sustainable information labels can guide sustainable consumption behavior among consumers (Ward et al. 2011; Sammer and Wüstenhagen, 2006).

2.4 Eye-tracking Methodology Literature

For a certain part of data collection, this study involves using the eye-tracking methodology to measure sustainability information. The selection of eye-tracking methodology has been inspired by the studies recently done in the context of "political advertising" (Marquart et al. 2016), "personalized ads" (Pfiffelmann et al. 2019), "social information avoidance" (Huang et al. 2018), "avoidance of political ads" (Desirée-Schmuck et al. 2019) and "climate change" (Sollberger et al. 2017).

Table 3: Synthesis of studies from Eye-Tracking literature

Study	Research design	Sample Size (N)	Analysis Approach
Pfiffelmann et al (2019)	In-between subjects	72	Mean-comparison tests Logistics Regression
Marquart et al (2016)	Within-subjects	57	ANOVA Linear regression
Huang et al (2018)	Within-subjects	200	Mixed Regression
Desirée-Schmuck et al (2019)	Within-subjects	76	Mean Comparison Tests
Sollberger et al (2017)	Within-subjects	80	ANOVA Mixed Regression

Emerging studies in management and psychology note that effective information avoidance behaviors in situations when a consumer is known certain information and has easy access to it and still ignores or avoids information (Golman et al. 2017; Karlsson et al.2009; Sicherman et al. 2016). Making use of uncertainty of specific context and valence, consumers avoid information with the aim of escaping potential anxiety, disappointment, and threat (Andries and Haddad, 2014).

Moreover, it has also been found that information avoidance has proved to show adverse impacts on consumers' financial decisions (Karlsson et al.2009; Sicherman et al. 2016), the decision relating to health (Oster et al. 2013; Koszegi 2003), outcomes relating to management (Schulz-

Hardt et al. 2000). Additionally, information avoidance also contributes to climate change, political polarization, and the spread of diseases (Golman et al. 2017).

One of the best methodologies to gauge avoidance of information is by using eye-tracking approaches. In the past, the most commonly used approach for measuring attention to advertisements is self-reported memory measures which involve questions such as “to what extent do you pay attention to advertisements' ' (Molosavljevic and Cerf, 2008). However, memory measures have proven to be poor metrics for gauging attention toward ads (Rosbergen et al. 1997). In a study conducted by Molosavljevic and Cerf (2008), it was emphasized that there are two problems associated with self-reported measures namely (1) it might be possible that a stimulus is reached but the awareness stage is not reached, making it not possible for the stimulus to stay in the memory and report it (2) There also might be a situation where the stimulus is retained in the memory but consumers might forget it with most of the already retained stimulus.

Therefore, to avoid the limitation concerning memory measures, physiological measures such as eye movements which can easily depict the shifts in attention (Deubel and Schneider, 1996) are known as more trustworthy indicators (Krugman, 1965; Vertegaal and Ding, 2002). In addition, eye-tracking studies have been conducted in the context of information systems to see how cognitive processes work in various information-processing conditions (Burke et al. 2005; Cyr et al. 2009; Dreze and Hussher, 2003; Hervet and Guerard, 2010; Owens et al. 2011; Pieters and Warlop, 1999; Pieters and Wedel, 2004).

Therefore, this study uses the eye-tracking measurements to gauge the fixations participants make on the sustainable information presented in the experimental image (detergent) to establish a relationship between cognitive dissonance and participants' cognitive dissonance and avoidance coping towards sustainable consumption.

3. RESEARCH MODEL AND HYPOTHESES

This chapter of the study proposes the conceptual model based on the literature review. The conceptual model including the hypotheses can be seen in Figure 4. Finally, the Table 4 summarizes the hypotheses of the study.

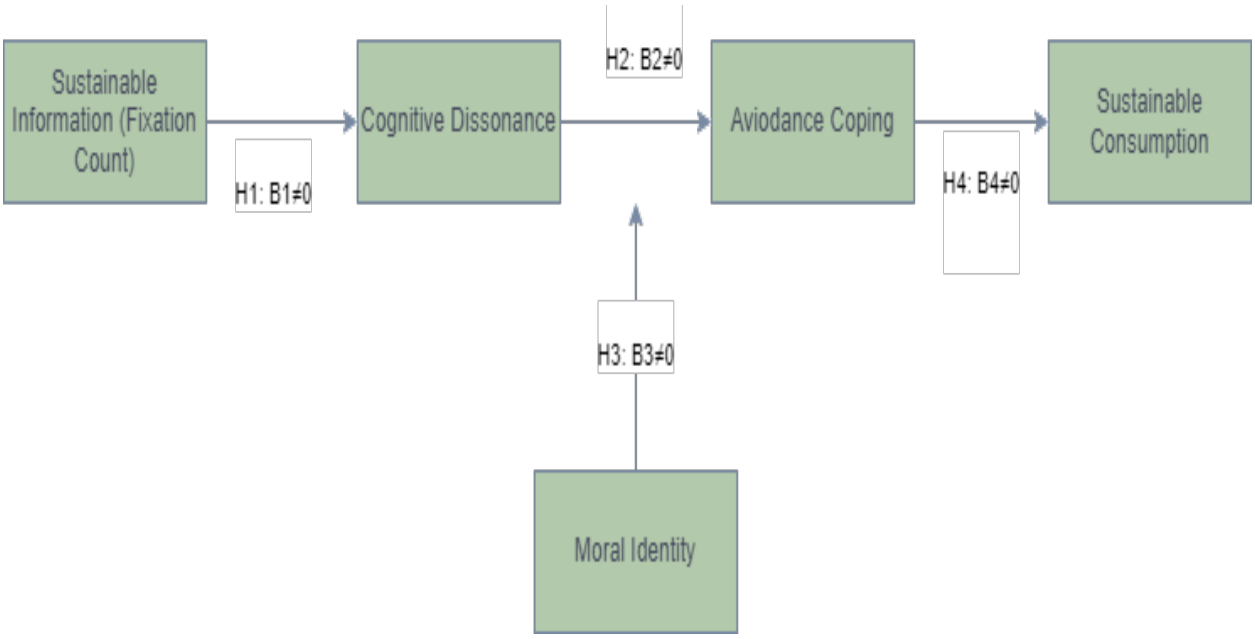


Figure 4: Conceptual Model with Hypotheses

The Table 4 below represents the hypotheses of the study and proposes how variables are associated within these hypotheses

Table 4: Summary and Description of Hypotheses

Hypotheses	**Description**	**Empirical Evidence on Constructs**
H1	Sustainable Information has a negative influence on Cognitive Dissonance	Rolling et al (2021); Leak et al (2015) & Quin et al 2011
H2	Cognitive Dissonance has a positive influence on Avoidance Coping	De et al (2016); Van and Kaufmann (2018)
H3	Moral Identity moderates the relationship between cognitive dissonance and avoidance coping	Yang et al (2021)
H4	Avoidance Coping has a negative influence on Sustainable Consumption	Stoll-Kleeman et al (2001)

4. RESEARCH DESIGN AND METHODOLOGY

The following section discusses the research design and methodology part of the study. Firstly, the chapter starts with an explanation of the research design. Later, it builds upon the data collection procedures and Questionnaire design. Moreover, the chapter also includes sub-sections for factor analysis and critical analysis of reliability and validity of scales.

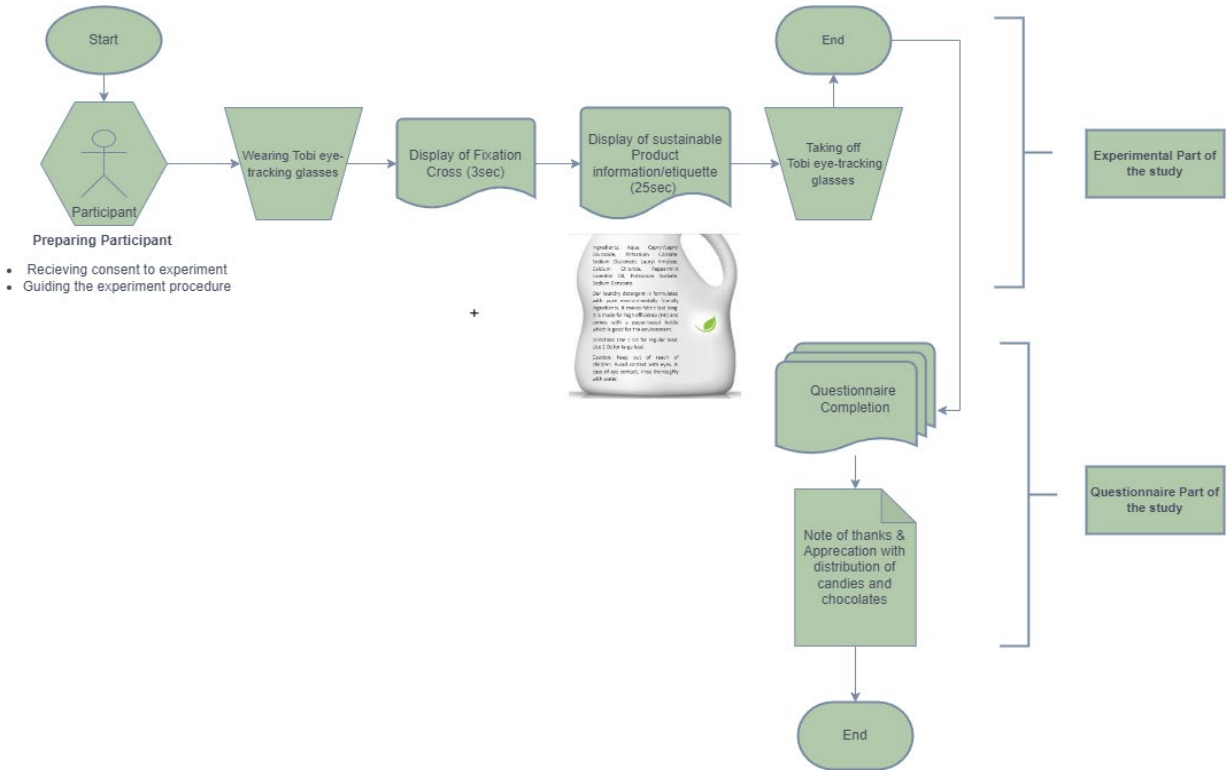


Figure 5: Chronological depiction of research design and data collection process

4.1 Research Design

The study adopts a multi-method quantitative approach as the principal research design. This quantitative research design uses multiple means of data collection and analysis techniques. Moreover, studies done in the context of sustainable consumption (Turner et al. 2002) and avoidance behaviors (Gleim et al. 2013) have already adopted the multi-method research design

to address various research questions. The main aims of this study include finding the impact of sustainable information on, cognitive dissonance and avoidance-coping, and sustainable consumption. Along with the primary aims the study also focuses on finding the moderating effect of moral identity between cognitive dissonance and avoidance coping.

For data analysis study adopts two data analysis methods namely “regression analysis” to test and identify relationships between variables and “mean comparison tests/ T-tests” to check demographic differences of participants on the perceived product sustainability (detergent) based on gender. The regression analysis provides the capability to gauge the impact of one or more independent variables on dependent variables. Furthermore, one of the best ways for collecting standardized data from a large and selective population is through survey strategies such as questionnaires. Moreover, this questionnaire methodologies are considered to be the most economical (Lee and Lings 2008; Saunders et al. 2015)

The data for the study was collected utilizing an online survey conducted through the “Qualtrics” platform. The developed questionnaire was presented to participants in the Viipuri Lab environment of LUT university. The questionnaire was equipped with an experimental image consisting of a sustainable product (in this case laundry detergent) and items corresponding to variables such as cognitive dissonance, avoidance coping, moral identity, and sustainable consumption. The questionnaire was developed in English and the target audience for this study was students and staff at the university.

4.2 Data Collection

The chapter consists of two subsections elaborating the process and means of data collection for the study. The later part stretches upon the empirical data collection done through questionnaires and the first part discusses the experimental procedure adopted to collect eye-tracking data (constituting sustainable information/fixation counts) using Tobii eye-tracking glasses.

Moreover, the experimental data were collected by means of embedding the sustainable (detergent) product within the Qualtrics survey along with a fixation cross presented before showing the sustainable product image (detergent). Participants were guided to wear the Tobii eye-tracking glasses before the start of the experiment and guided about the experimental procedure. Later, once the timed experiment was done participants were told to take off Tobii eye-tracking glasses and continue filling out the questionnaire.

4.2.1 Eye Tracking Measurements

The study involved experimental measurements to gauge the impact of sustainable information on measured variables. Therefore, a dummy product belonging to the category of detergent was made which contained sustainable etiquette information in the form of ingredients, benefits, and sustainability symbols. Before showing the product to the participant, a fixation cross was used in order to fixate the participant gauge on a single position. The latest technology of Tobii Eye-tracking glasses present at Viipuri lab was used to gauge the participants' eye movements and fixations on various areas of the product etiquette. The time of fixation cross to stay on the screen was 3 secs and the product representation to stay on screen was 25 sec.

Once the participants had given their consent, the experiment was commenced by the researcher where the participants wore the eye-tracking glasses and began inspecting the product package. Later when the timed measurement of sustainable information was completed by the participants, they were guided to complete the questionnaire related to the variables being measured for the study.

4.2.2 Questionnaire

The empirical data collection was composed of participants who were residing in Finland and were fluent English speakers. A validated questionnaire was adopted from various studies that had empirically tested the reliability of the scales. The questionnaire consisted of in total 26 items relating to study variables and 5 items relating to demographics variables, thereby summing up to 31 items in total. The survey-based questionnaire consisted of 5 items for

cognitive dissonance, 7 items for Avoidance coping, 8 items for moral identity, 5 items for sustainable consumption, and 1 item for rating the extent of sustainability of the shown product from the experimental part of data collection. For the purpose of effective data collection and fulfillment of research objectives, it was made sure that at least three to five items were used for measuring each variable (MacCallum et al. 1999).

The questionnaire was kept the same for the participants. The introductory page or slide to the questionnaire informed participants of the anonymity, and confidentiality of the collected data and asked about their concerns about using the experiments and questionnaire data for generating the findings of this study. The estimated response time for filling out each response comprised approximately 10 to 12 minutes. The survey platform was Qualtrics and participants were given invitations to come to the Viipuri lab for experiments. The Questionnaire for the study has been attached in the appendices section appendix A.

4.3 Measures

A 7-point Likert scale stretching from "1= Strongly disagree" to "7 = Strongly agree" was used to measure all variables except the ones that corresponded to demographics and perceived product sustainability in this research.

Cognitive Dissonance

From the study of Sweeney et al. (2000), a 5-item instrument was chosen to measure cognitive dissonance. Examples of cognitive dissonance items include: *"While seeing the product, I was in despair"* & *"While seeing the product, I felt uneasy".*

Avoidance Coping

From the study of Kuo et al. (2006), 7 items were shortlisted to be included in the questionnaire for measuring avoidance coping. Examples of avoidance coping items include *" I try to block*

out or forget about what's bothering me." and "*I tell myself that my problems will go away on their own".*

Moral Identity

The scale of Black and Reynolds, (2016) was used to measure Moral Identity. The scale consisted of shortlisted 8 items that included items such as *"I try hard to act honestly in most things I do"* and *"hurting other people is one of the rules I live by".*

Sustainable Consumption

The scale of Armstrong et al (2016) was used to measure sustainable consumption. The scale consisted of shortlisted 5 items that included items such as *"I can maintain my and family's health and safety through sustainable consumption"* and *"I can save my money through sustainable consumption"*.

Perceived Product Sustainability

With the aim of gauging the extent to which participants found the product to be sustainable, the study included a rating item at the very end of the questionnaire such as "Please recall the product you saw in the beginning and indicate, to what extent you agree with the following statement: *The product was Sustainable*".

4.4 Defining Measures

As discussed earlier the data was collected through two means (1) eye-tracking measurements and (2) a questionnaire survey. The Independent variable "sustainable information" was collected through eye-tracking measurements and other variables such as "cognitive dissonance" and "avoidance coping" were discussed through questionnaires. Later the eye-

tracking measurement data and questionnaire data were exported in the form of an excel spreadsheet and combined to form one excel file that was imported to SPSS for further analysis.

Firstly, the data was cleaned by removing excess variables that were not needed in the study such as fixation durations, and demographic variables such as occupation, gender, and nationality were categorically coded for further analysis.

Table 5: Categorical Coding of Demographics Variables

Demographics variables	**Categorical Coding**
Gender	Male = 1 Female = 2 Prefer not to say =3
Age Group	Under 18 = 1 18-24 = 2 25- 34 = 3 35 - 44 = 4 45 - 54 = 5 55 - 64 = 6 65 - 74 = 7 75 - 84 = 8 85 or older = 9
Education	Less than high school = 1 High school graduate = 2 College student = 3 Bachelor's Degree/Equivalent = 4 Master's Degree/Equivalent = 5 Professional Degree = 6 Doctorate = 7
Occupation	Lecturer =1

	Admin and Staff =2 Student = 3 Entrepreneur = 4 Professor = 5
Nationality	Finland =1 Italy = 2 Ukraine = 3 Indian = 4 Ethiopian = 5 Nepali = 6 Pakistani = 7 Iran = 8

All rest of the variables were measured on a scale of 1 strongly agree to 7 strongly disagree and their values were reflective of the scale used. The responses didn't include any missing values, therefore the treatment of missing values was not done for the questionnaire data. However, there were two missing values for sustainable information (fixation count) variable from the eye-tracking measurements part of data collection which was filled out based on an average of the fixation counts of other participants. For regression analysis, all the data was required to be in numeric format therefore, demographics variables were converted to categorical variables serving a similar role as dummy variables. While the other variables were already in numeric format, therefore it was not required to change their format.

4.5 Defining Scales and Tests

To examine an area, usually, a meter is chosen that could be a measuring instrument or single test, or a sub-meter that might have originated from a bigger measuring set. A meter could consist of a question or a couple of questions aimed at observing a phenomenon in an objective manner (Metsämuuronen, 2011). The questionnaire that is adopted for the study is built on a 7-point Likert scale. The purpose of using this Likert-scale number is the aim of achieving the

objective reality of participants. Hence, the goal underlying the questionnaire with a 7-point Likert scale is that the participant must be given the flexibility to choose among a wide range of options ranging from (1) strongly disagree and (7) strongly agree (Joshi et al. 2015).

Factor analysis gives the capabilities to assess the relationship between several variables such that these could be either questions or items from a questionnaire. Moreover, it also provides the leverage to group or summarizes these variables together into a small number of factors or latent variables (Comrey and Lee, 2013). Researchers have emphasized that latent variables can not be measured directly, because these variables are difficult to capture and follow a hidden pursuit while influencing the scores of variables that are included in the study.

Therefore, this study adopts factor analysis to group variables/items that are related to one another into one overall or underlying factor and understand the variance in the data more effectively. A certain degree of correlation is required to exist between the variables to conduct factor analysis, usually, this limit is considered to be correlations greater than 0.3 (Hair et al. 1998). While in the case of this study correlation between the variables was significant to give confirmation for factor analysis. Furthermore, there are different means or ways of conducting factor analysis in SPSS. However, for this study factor analysis using principal component analysis (PCA) has been taken into account with a confirmatory role in justifying whether the variables proposed in the hypothesized model are justified (Bryant and Yarnold, 1995).

The communalities are the proportions of each variable's variance which is explained by the factors. It can also be referred to as the sum of squared factor loadings of variables (Yong and Pearce, 2013). The limits of communalities are suggested to be above 0.6. However, the sample size plays an important role in defining the threshold for communalities. Larger samples are suggested to have communalities above 0.6 but samples that range from 0.5 range from 100 to 200 observations can have communalities threshold of 0.5 (Field, 2009). Moreover, researchers have also claimed that communities' values greater than 0.4 still serve the purpose of variance explanation (Metsämuuronen, 2011).

One of the most used means of measuring the reliability of the questionnaire in literature and studies is Cronbach Alpha (Kiliç, 2016). It is suggested by Field (2009), that the values of Cronbach's alpha should be above 0.8 for the overall questionnaire. However, different opinions exist in the research such as Metsämuuronen (2016), who suggested that the threshold for Cronbach Alpha should be above 0.6 for a questionnaire to be reliable.

To complement the factor analysis part of the study, the Kaiser-Meyer-Olkin test (KMO) and Bartlett's test of sphericity were conducted. The former assesses the adequacy of the sample size of the study and whether it is sufficient for the factor analysis and the latter tells us whether we have enough correlations in the variable to conduct factor analysis (Pishghadam et al. 2011). If further detailed the KMO test can be referred to as a ratio of squared correlations between variables to the squared partial correlations between the variables. However, the test doesn't have any limitations on variable numbers rather can be used to access single or multiple variables. The values of the test can range from 0 to 1, where anything that is above 0.5 is considered fairly fine and anything that is above 0.7 is considered exceptionally good (Metsämuuronen 2011; Hutcheson and Sofroniou, 1999; Field, 2009).

The given amount of variance that is explained by a specific principal component is assessed through the eigenvalues. The theory suggests that eigenvalues can be positive or negative but, in practice, mostly these values are positive (Happ and Greven , 2018). It is said that the eigenvalues of the factors should be more than one and in case these values are below one, then the potential factors within low eigenvalues might become one reliable factor. Furthermore, the cumulative percentage of variance tells how much variance in the data is explained by the factor.

Lastly, one index that is used within factor analysis is Factor Loadings which gauges and provides the evidence that a measure serves the intended purpose. Factor loadings are scaled from 0 to 1 and are referred to as coefficients that suggest how strong is the relationship between the variable and the factor (Peterson, 2000).

4.6 Factor Analysis

After formatting all the data from the Qualtrics platform, it was made sure that it was good to be taken for factor analysis and reliability tests. The factor analysis was administered using the extraction method of principal component analysis (PCA) and the rotation method chosen was Varimax with KMO and Bartlett's test of sphericity. The main reason behind the choice of Varimax rotation method choice was that the factors in the study were considered to be independent of each other (Finch, 2006).

Cognitive dissonance

The factor analysis for cognitive dissonance identified values of factor loadings between the range of 0.475 to 0.878 while the communalities ranged from 0.225 to 0.727. The results from the factor loadings were somehow acceptable excluding the Item "CD1" which was below the acceptance level. But, due to the low sample size and the number of items for the dissonance factor, the exclusion of "CD1" was not considered. Moreover, the results of Cronbach's alpha, KMO, and Bartlett's test were also within the acceptable limits. Lastly, the total variance that the factor of cognitive dissonance was explaining was 57%. (Table 6)

Table 6: Factor Analysis of Cognitive Dissonance

	Item	Factor 1	Communalities
CD1	While seeing the product, I was in despair	0.475	0.225
CD2	While seeing the product, I felt uneasy	0.844	0.712
CD3	While seeing the product, I felt annoyed	0.652	0.425
CD4	While seeing the product, I wondered if I really needed this product	0.852	0.727
CD5	While seeing the product, I wondered would it be the right thing to buy this product	0.878	0.771
	Eigenvalue	2.860	
	Cum% of variance explained	57.2%	
	Cronbach Alpha	0.805	
	KMO	0.737	
	Bartlett's test	Chi-square = 22.2 P-value = 0.014	

Moral Identity

The factor analysis for moral identity identified values of factor loadings between the range of 0.134 to 0.966 while the communalities ranged from 0.018 to 0.933. The results from the factor loadings were somehow acceptable excluding the items "MI4", "MI5", "MI6" and "MI8" which were below the acceptance level. But, due to the low sample size and the number of items for the moral identity factor, we only excluded items "MI4" and "MI8" for further analysis from the aforementioned unacceptable items. Moreover, the results of Cronbach's alpha, KMO, and Bartlett's test were also within the acceptable limits. Lastly, the total variance that the factor of Moral identity was explaining was 38.8 %. (Table 7)

Table 7: Factor Analysis of Moral Identity

	Item	Factor 2	Communalities
MI1	I try hard to act honestly in most things I do.	0.885	0.783
MI2	Not hurting other people is one of the rules I live by.	0.966	0.933
MI3	It is important for me to treat other people fairly.	0.932	0.868
MI4	Lying and cheating are just things you have to do in this world.	0.150	0.023
MI5	Doing things that some people might view as not honest does not bother me	0.427	0.182
MI6	If people treat me badly, I will treat them in the same manner.	0.306	0.092
MI7	I will go along with a group decision, even if I know it is morally wrong.	0.453	0.205
MI8	Having moral values is worthless in today's society	0.134	0.018
	Eigenvalue	3.01	
	Cum% of variance explained	38.8%	
	Cronbach Alpha	0.717	
	KMO	0.528	
	Bartlett's test	Chi-square = 59.9 P-value < 0.01	

Avoidance Coping

The factor analysis for Avoidance Coping identified values of factor loadings between the range of 0.374 to 0.859 while the communalities ranged from 0.140 to 0.738. The results from the factor loadings were somehow acceptable excluding the items "AC1", "AC2", & "AC7" which were below the acceptance level. But, due to the low sample size and number of items for the avoidance coping factor, we only excluded item "AC2" for further analysis from the aforementioned unacceptable items because it was far below the acceptance threshold. Moreover, the results of Cronbach alpha and KMO were also within the acceptable limits. The

results of Bartlett's test proved to be insignificant with P-value being above 0.05. Lastly, the total variance that factor of Avoidance Coping was explaining was 40.6%.

Table 8: Factor Analysis of Avoidance Coping

	Item	Factor 3	Communalities
AC1	I try to block out or forget about what's bothering me.	0.537	0.288
AC2	I tell myself that my problems will go away on their own	0.374	0.140
AC3	I keep my emotions to myself and do not show them.	0.621	0.386
AC4	I choose to resolve my problems in ways that would attract the least attention to me	0.691	0.478
AC5	I just accept the fact that this happens and tell myself that I can't do much about it.	0.736	0.542
AC6	I get involved in other activities to keep my mind off the problem	0.859	0.738
AC7	I engage in activities my parents would not approve to ease my anxiety or nervousness, such as smoking, drinking, and doing drugs.	0.525	0.276
	Eigenvalue	2.84	
	Cum% of variance explained	40.6%	
	Cronbach Alpha	0.731	
	KMO	0.625	
	Bartlett's test	Chi-square = 24.1 P-value = 0.289	

Sustainable Consumption

The factor analysis for sustainable consumption identified values of factor loadings between the range of 0.886 to 0.968 while the communalities ranged from 0.786 to 0.937. The results from the factor loadings were greatly in the acceptance threshold. Moreover, the results of Cronbach

alpha, KMO and Bartlett's test were also within the acceptable limits. Lastly, the total variance that factor of sustainable consumption was explaining was 86.3%.

Table 9: Factor Analysis of Sustainable Consumption

	Item	Factor 4	Communalities
SC1	I can maintain my and family's health and safety through sustainable consumption.	0.930	0.864
SC2	I can save my money through sustainable consumption.	0.968	0.937
SC3	I can contribute to making our society and the earth better by sustainable consumption	0.929	0.864
SC4	Sustainable consumption helps me with getting inner satisfaction.	0.931	0.866
SC5	I can be recognized as a socially good person through sustainable consumption	0.886	0.786
	Eigenvalue	4.31	
	Cum% of variance explained	86.3%	
	Cronbach Alpha	0.959	
	KMO	0.959	
	Bartlett's test	Chi-square = 72.5 P-value < 0.001	

The overall results from the factor analysis were satisfactory. Although, the sample size of the study was very low consisting of 14 observations only. Therefore, it can be seen that certain factor loadings and tests proved to be insignificant and the explained variance by a few factors such as "moral identity" and "avoidance coping" was low. Before moving towards the creation of Index variables, items namely "MI4", "MI8" and "AC2" with low factor loadings were excluded or dropped.

4.7 Index Variables Creation

The variables accessed in the questionnaire proved significant in the factor analysis. Since the factors loaded in their respective variables, therefore, no change was required to be made to the factors or variables in the study. To run regression analysis on the variables of the study, the factors needed to be transformed into index variables. The creation of the index variable was done by summing all the values of the variable items and then dividing it by the number of items. The index variables were generated from the mean factor with the aim of having continuous variables. Moreover, before the creation of index variables correlation of the variables was investigated in their factors as well as the reliability of the created index variables. The descriptive statistics of the index variables can be seen from the Table 10.

Table 10: Descriptive statistics of Index variables

Variables	N	Min	Max	Mean	Std
Cognitive Dissonance	14	1.0	5.8	3.50	1.10
Avoidance Coping	14	1.0	5.0	3.37	1.19
Moral Identity	14	1.0	4.7	3.89	0.97
Sustainable Consumption	14	1.0	7.0	5.15	1.53

The descriptive information of Index variables can be seen in the aforementioned Table 10. From Table 10, we can infer that the variables lie around the mean as the standard deviations are close to one. The distribution of index variables looks justified as means are close to three while the lowest and highest values lie around the extreme.

To assess the normality of distributions of the index variables, Kolmogorov-Simrnov and Shapiro Wilk tests were used. Although these tests are quite commonly done for larger samples but for sake of achieving validation of results, both aforementioned normality tests and visual representation through histograms have been created in the study to examine the normality of index variables. Moreover, researchers have suggested using histograms to access the normality of variables, therefore both means are equally preferred here.

For normality to exist among the variables both tests (Kolmogorov-Simrnov & Shapiro Wilk) are recommended to have a P-value greater than 0.05. In this study, it can be seen from Kolmogorov-Simrnov test that variables are normally distributed except for moral identity as the P-value is lower than 0.05. Similarly, the Shapiro Wilk test also claims the same results except for a minor discrepancy for sustainable consumption, where the P-value is on the borderline of turning significant and suggesting sustainable consumption to be normally distributed. The results for normality distribution diagnostics can be seen in Table 11.

Table 11: Normality distribution diagnostics of Index variables

		Kolomogorov-Smirnov test		**Shapiro Wilk test**	
Variables	df	Statistics	P-value	Statistics	P-value
Cognitive Dissonance	14	0.182	0.200*	0.942	0.439*
Avoidance Coping	14	0.199	0.139*	0.918	0.205*
Moral Identity	14	0.278	0.004	0.763	0.002
Sustainable Consumption	14	0.206	0.111*	0.870	0.042

After performing the required analysis such as the creation of Index variables, checking their normality through tests and graphic illustrations the results have proven satisfactory to perform or run the further analysis on the variables.

4.8 Reliability and Validity

The reliability of the indicators is directly proportional to the reliability of findings generated within the study. Validity and reliability are terms used traditionally to refer to reliability. Although, the content of reliability refers to the reproductivity of the study. If an instrument is considered to be reliable, then the responses would still be quite the same even if measured at different times (Metsämuuronen, 2011).

In this study, the Cronbach Alpha measure for reliability is used to measure the reliability of the factors or variables. However, literature presents both criticism and support made around the use of Cronbach Alpha. Some researchers have suggested that specific circumstances of a study should be considered before claiming the reliability of an outcome measure (Pedhazur and Schmelkin, 1991). Cronbach Alpha, being considered a statistical means of assessing reliability, requires certain assumptions around data (sample size) to be met in order for the reliability estimated to be accurate, or else if these conditions are not fulfilled the estimates are not accurate (Helms et al. 2006).

Many studies suggest that a Cronbach Alpha value greater than 0.7 is considered to be a good indicator of scale reliability (Nunnally, 1978; Bland & Altman, 1997). Based on the claims from prior studies, it can be said that all the Cronbach alpha values in this study are above the minimum threshold, therefore considered reliable and good enough to be used in further analysis. Table 12 illustrates the Cronbach Alpha values from factor analysis.

Table 12: Cronbach's alpha values concerning reliability measurement from factor analysis

Variables	**Cronbach Alpha**
Cognitive Dissonance	0.805
Avoidance Coping	0.731
Moral Identity	0.717
Sustainable Consumption	0.959

The component of validity can be segregated into two sub-components namely external and internal validity. The internal validity refers to the inherent reliability of the study itself while the external validity refers to the generalizability of the study to other contexts (Metsämuuronen, 2011).

One of the major limitations of this study is the small sample size therefore, to increase the external validity the sample size of this particular research needs to be increased to enhance the external validity. However, the internal validity of this study seems fine but to increase it further, future researchers need to include a larger instrument (number of items per variable) with

meaningful statements to have good internal validity. Although all the factors and their instructions were adopted from prior studies, due to the length of the questionnaire their number was reduced but still, the factor analysis proved these factors to be working well in the context of this study.

Furthermore, the descriptive statistics and visual representations in the study depict that there are no extremely large outlier observations in the data which can impact the results of the regression analysis. Hence, following Metsämuuronen (2011), it can be said that the results of the regression analysis won't be affected by the outlier observations in the data.

5. RESULT AND ANALYSES

The following section of the study covers descriptive statistics, distribution analysis, correlation analysis, regression analysis, and mean comparison tests to unravel the aforementioned hypotheses of the study.

Initially, the descriptive statistics of all the variables collected in the study from eye-tracking measurements and questionnaire were generated. The variable of *"fixation count"* that corresponds to *sustainable information* was taken from the Tobii eye-tracking measurements and the index variables along with respondent's perceived product sustainability (detergent) were collected from the questionnaire data. The descriptive statistics of the entire data variables can be seen in the below-mentioned Table 13.

5.1 Descriptive statistics

The variables included in the study comprise 14 responses or observations. The "Gender" variable from the below-mentioned Table 13 can be seen to have min value of 1 while a max value of 2 and a mean of 1.29. The "Age" variable can also be seen to have a min value of 2 while a max value of 4 with a mean being 2.93. Similarly, for other demographics, Index, and eye-tracking gauged variables, the min, max, mean, and standard deviation values can be seen in below Table 13.

Moreover, the demographics variables are converted to a categorical scale therefore, the values in the table represent the categories with these variables. Later, when discussing the distribution of variables the categories within these demographic variables will be discussed.

Table 13: Descriptive statistics of Demographics, Eye-tracking Measurement variable, and Questionnaire variables

Variables	N	Min	Max	Mean	Std
Gender	14	1	2	1.29	0.47
Age Group	14	2	4	2.93	0.62
Education	14	2	7	5.21	1.25
Occupation	14	1	5	3.00	0.78
Nationality	14	1	8	4.93	2.43
Sustainable Information (Fixation Count)	14	5	27	17.43	5.74
Cognitive Dissonance	14	1.0	5.8	3.50	1.10
Avoidance Coping	14	1.0	5.0	3.37	1.19
Moral Identity	14	1.0	4.7	3.89	0.97
Sustainable Consumption	14	1.0	7.0	5.15	1.53
Perceived Product Sustainability	14	2	4	3.07	0.73

Figure 6 presented below contains histograms of demographic variables. It can be seen from Figure 6 that most of the variables are not normally distributed, mainly due to the fact that the sample size of the study was small and enough data on each of the variables couldn't be collected due to the time constraint involved within this study.

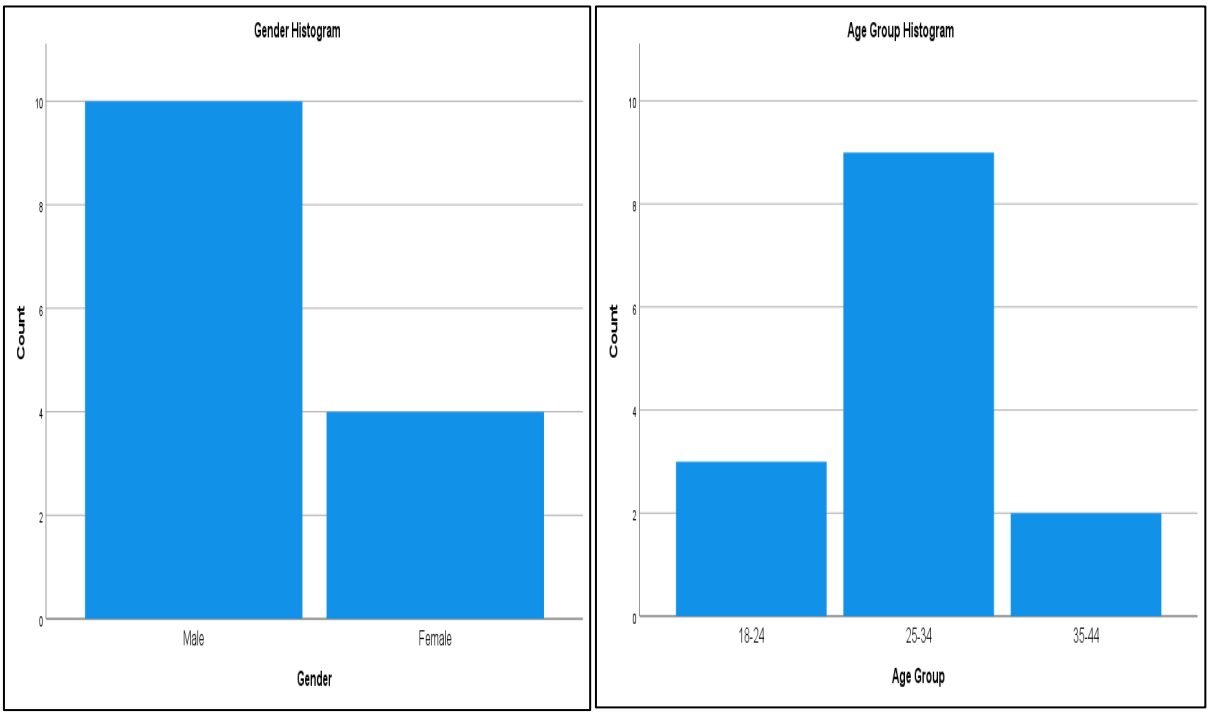
Furthermore, the "Gender" variable histogram shows there are two gender groups within the data namely male and female. However, the gender histogram is right-skewed, representing that there are more male respondents in the data compared to females, thereby limiting the study to not significantly conclude anything based on gender differences, as the female sample size in the sample size is significantly low.

For the case of the "Age Group" variable, it can be seen that it is normally distributed neither right nor left-skewed and most of the data belongs to the group of 25-34 years followed by 18-24 years and 35-44 years age groups.

Similarly, if the “Education” variable is assessed, it can be seen that it is left-skewed with data mostly belonging to the category of Master’s degree/ Equivalent followed by Doctorate and High-school graduate categories.

Likewise, if a keen look is taken at the “Occupation” variable it can be seen that it is fairly normally distributed, and the major data belongs to the category of Student followed by Lecturer and Professor (Figure 6).

Lastly, viewing the “Nationality” variable it can be seen that the data is mainly right skewed with most of the data belonging to the category of Pakistan, Finland, and Indian. The histograms for the demographic variables can be seen in the Figure 6.



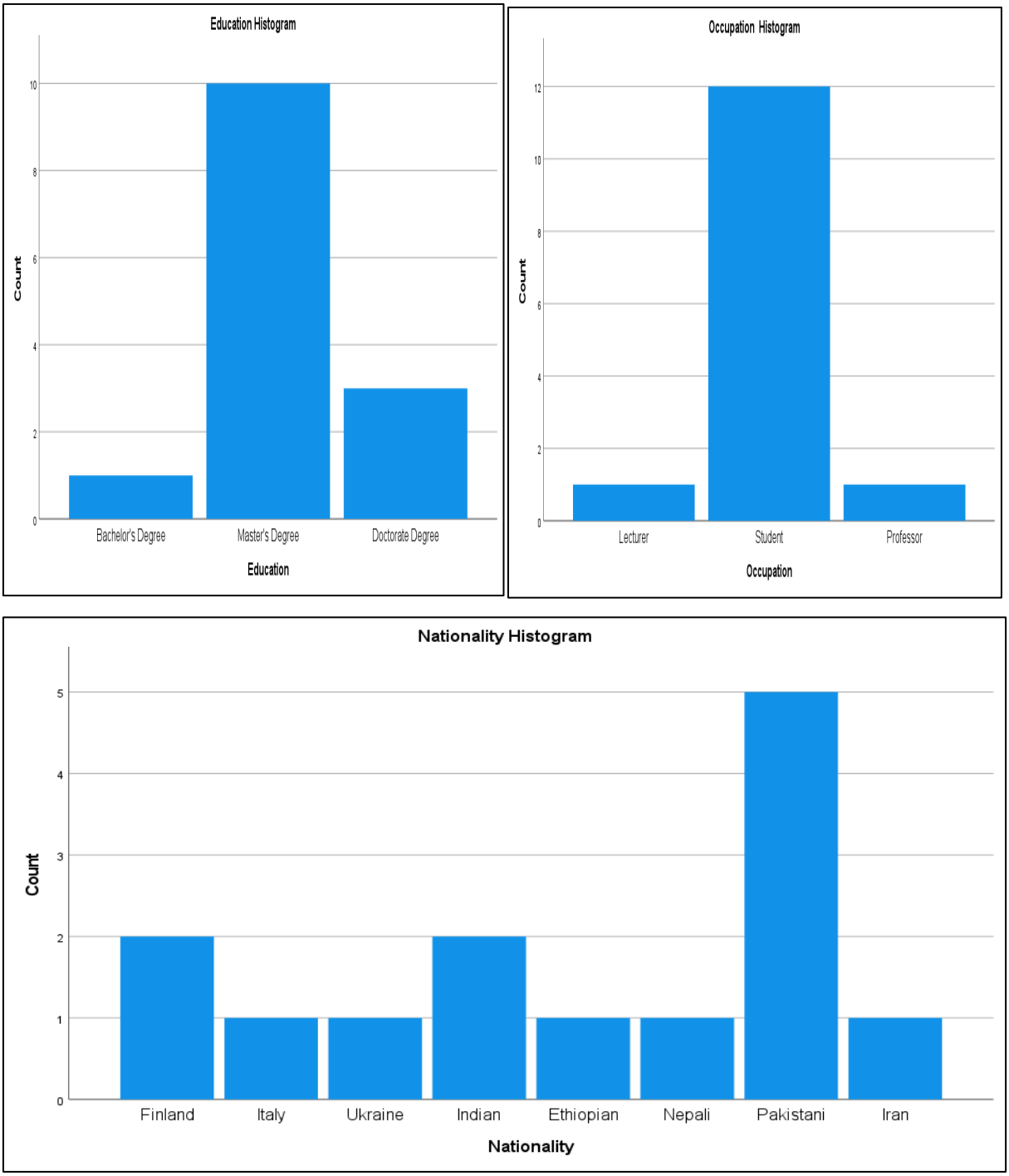
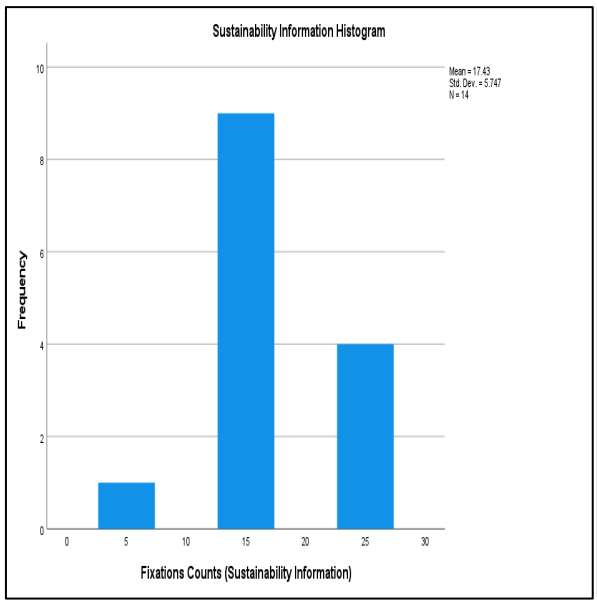


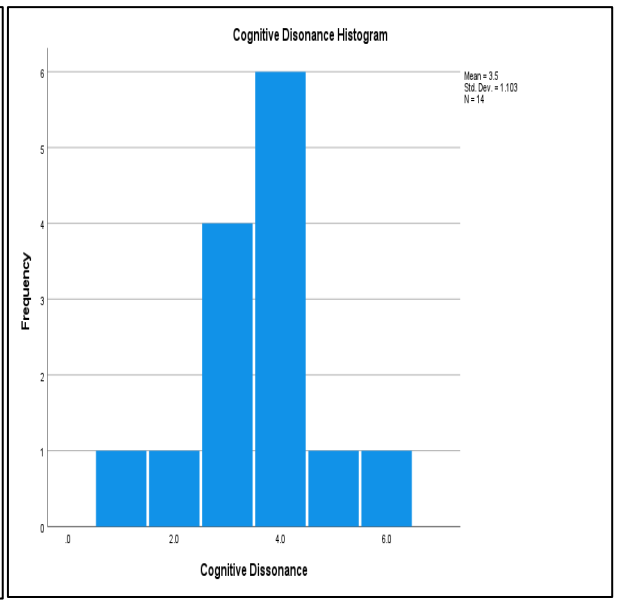
Figure 6: Histograms of Demographics variables

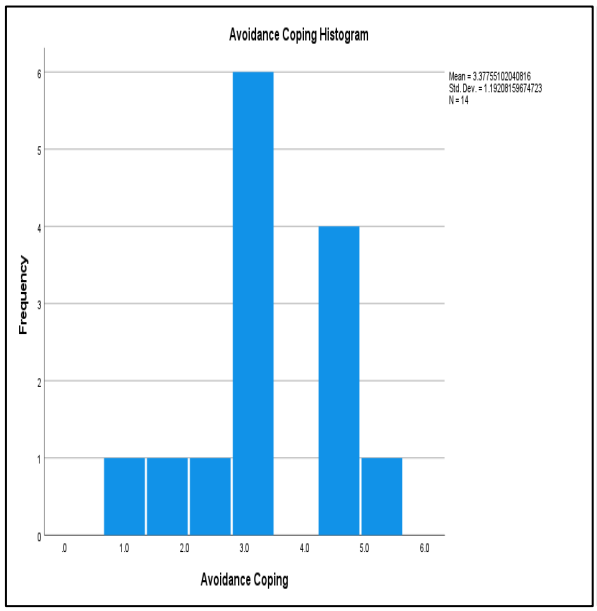
When understanding the distribution of the Index variables, it can be seen that *"Cognitive Dissonance"* among the other Index variables is fairly normally distributed (Figure 7). However, other Index variables seen with the lens of visual representation can be confidently said that are not normally distributed. It can be seen from the histograms of variables *"Avoidance Coping"*, *"Moral Identity"* & *"Sustainable Consumption"* are all left-skewed, depicting that the respondents were more likely to agree with statements in questionnaire items (Figure 7).

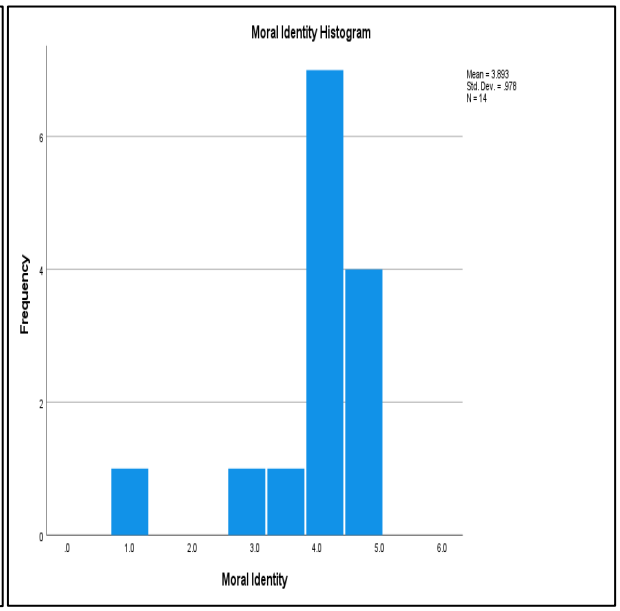
The results from histograms are partially overlapping with the results of Kolomogorov-Smirnov and Shapiro Wilk tests (Normality tests). One reason that can be contributed to this minor conflict is the small sample size undermining the results of these statistical tests. The final stance for normality of the variables would be based on the visual representation rather than the statistical tests. On the other hand, the eye-tracking gauged variable "Sustainable Information" (Fixation Count) shows a lack of normality with distribution being left-skewed and the same is the case with the "Perceived Product Sustainability" variable. The histograms for the Index variables, sustainable information, and Perceived Product Sustainability can be seen in Figure 7 below.

An important notion to be noted at this point is that assessing whether a variable is normally distributed or not normally distributed is important to determine the type of correlation test chosen in the next section of the study.


Sustainability Information Histogram
Mean = 17.43
Std. Dev. = 5.747
N = 14
Frequency
Fixations Counts (Sustainability Information)


Cognitive Disonance Histogram
Mean = 3.5
Std. Dev. = 1.103
N = 14
Frequency
Cognitive Dissonance


Avoidance Coping Histogram
Mean = 3.3775102040816
Std. Dev. = 1.1920815874723
N = 14
Frequency
Avoidance Coping


Moral Identity Histogram
Mean = 3.893
Std. Dev. = .978
N = 14
Frequency
Moral Identity

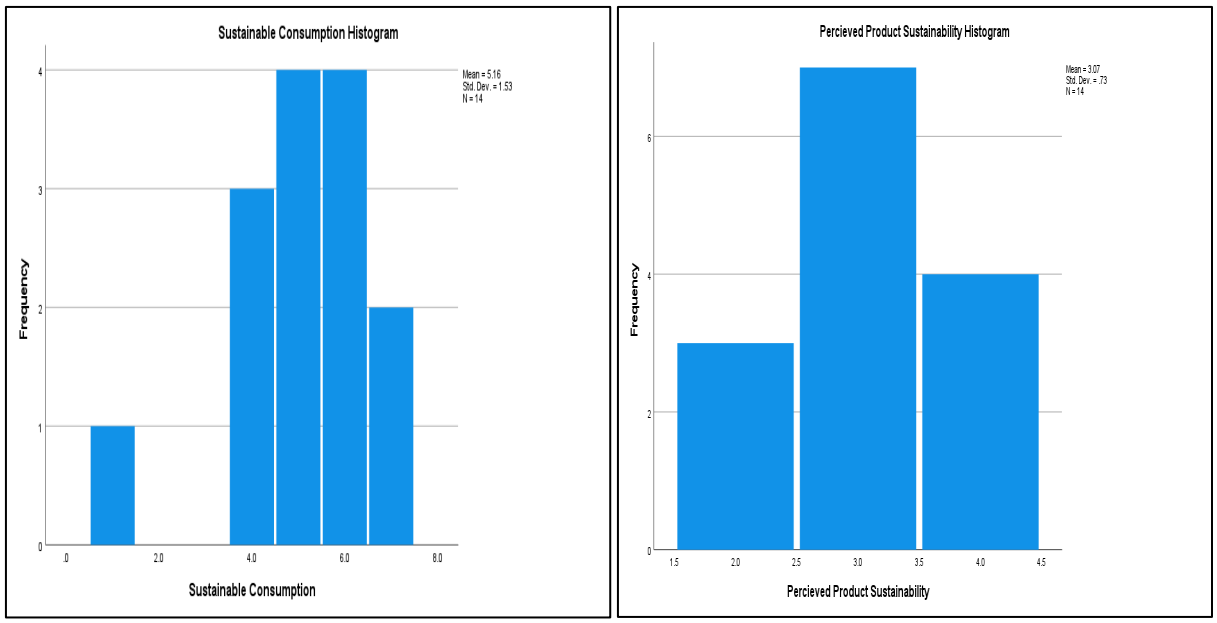


Figure 7: Histograms of Index variables, Eye-tracking measured variable (Sustainability Information) & Perceived Product Sustainability variable

The visual output extracted from the eye-tracking measurement by means of Tobii eye tracking glasses can be seen in the below Figure 8. The figure 8 below corresponds to the heat map of fixation counts on the sustainable information of laundry detergent product.

Figure 8: Heat Map of Fixations on Product Etiquette

It can be seen from Figure 8, that respondents who participated in the eye-tracking measurements had a considerable amount of fixations in the area of interest (AOIs). The AOIs were product sustainable ingredients, benefits, and pictorial images and it can be seen from the dense reddish-orange fixations in the area of the aforementioned AOIs. Hence, this suggests that respondents had paid attention to sustainable information.

5.2 Distribution Analysis

The aim of the distribution analysis in this section of the study is to check for normality for all variables (including demographics, sustainability information & Perceived product sustainability) being used in a study. Though, there exist various normality tests belonging either from graphical or statistical categories such as QQ-Probability plots, W/S test, Jarque-Bera test, and Shapiro-Wilks test (Razali et al.2012). In this section of the study, we would adopt the Shapiro Wilk test to check the normality of our variables. The results of the normality test for all variables of the study can be seen in Table 14 below.

Table 14: Normality Tests (Shapiro Wilk Test) for Distribution analysis

		Shapiro Wilk test	
Variables	df	Statistics	P-value
Gender	14	0.576	<0.001
Age Group	14	0.779	0.003
Education	14	0.702	<0.001
Occupation	14	0.551	<0.001
Nationality	14	0.881	0.060
Sustainable Information (Fixation Count)	14	0.922	0.236*
Cognitive Dissonance	14	0.942	0.439*
Avoidance Coping	14	0.918	0.205*
Moral Identity	14	0.763	0.002
Sustainable Consumption	14	0.870	0.042
Perceived Product Sustainability	14	0.821	0.009

From the aforestated Table 14, it can be seen that most of the study's variables are not normally distributed as the P-value for variables is lesser than 0.05 which means that the Shapiro Wilk test's H0 "Tested variable is normally distributed" is not accepted. Although, according to the Shapiro Wilk test "Sustainable Information", "Cognitive Dissonance", and "Avoidance Coping" are normally distributed as the P-value for these variables is greater than 0.05.

On referring back to the descriptive and visual representation of variables, it can be said that there is a partial overlap between the normality diagnostics from statistical and visual methods as both methods help predict the same results for normality of variables such as "Cognitive Dissonance" while there is a conflict between the results of "Sustainable Information", "Avoidance Coping" and few demographics variables. As priorly discussed the shortcoming of these statistical tests with the presence of a small sample size, the study's interpretation of diagnostics related to the normality of variables would be based upon descriptive statistics and visual representation through histograms.

5.3 Correlation Analysis

To explore the degree of relationship or association between the two variables correlation analysis is conducted (Lindley, 1990). The coefficient of correlation is the measure of the degree of association between the variables. In scientific and managerial research two correlation coefficients are usually used namely, Pearson's product-moment correlation coefficient and Spearman's rank correlation coefficient (Pearson, 2011).

Pearson's correlation is used when both the variables are normally distributed while on the other hand Spearman's correlation is utilized when the variables lack normality. In this study, the distribution analysis proved that various variables were not normally distributed therefore, Spearman correlation is used to conduct the correlation analysis. The Table 15 below shows the correlation of the variables.

Table 15: Spearman Correlations of variables

Correlation Matrix											
Variables	1	2	3	4	5	6	7	8	9	10	11
Gender	*1.000*	.069	.495	**.000**	**-.804**	.357	-.020	-.650	-.551	-.514	.618
Age Group	.069	*1.000*	.493	-.303	.201	-.276	.152	.078	-.179	.117	-.181
Education	.495	.493	*1.000*	**.000**	-.330	.428	.284	-.297	-.506	-.439	.206
Occupation	.000	-.303	**.000**	*1.000*	-.072	.379	-.497	-.306	-.165	-.047	**.000**
Nationality	**-.804**	.201	-.330	-.072	*1.000*	-.358	.203	**.763**	.411	**.702**	-.473
Sustainable Information	.357	-.276	.428	.379	-.358	*1.000*	.034	-.217	-.139	-.260	.338
Cognitive Dissonance	-.020	.152	.284	-.497	.203	.034	*1.000*	.341	.179	.325	-.185
Avoidance Coping	-.650	.078	-.297	-.306	**.763**	-.217	.341	*1.000*	.323	.492	-.194
Moral Identity	-.551	-.179	-.506	-.165	.411	-.139	.179	.323 .	*1.000*	.652	-.425
Sustainable Consumption	-.514	.117	-.439	-.047	**.702**	-.260	.325	492	.652	*1.000*	-.605
Perceived Product Sustainability	.618	-.181	.206	**.000**	-.473	.338	-.185	-.194	-.425	-.605	*1.000*

From the aforestated Table 15, it can be seen that low to moderate level correlation exists between various variables. Moreover, the variables that need to be pointed out are the ones with high correlation or no correlation at all.

It can be seen from the correlation analysis (Table 15) that "Nationality" and "Gender" are highly negatively correlated to each other with a value of -0.804. The reason attributed to the existence of such a correlation is mainly due to "*Spurious correlation*", where variables are correlated by chance (Haig, 2003) and the other one is the small size of the study.

However, the study is not interested in finding the relationship between demographic variables rather the focus is on the main variables of the study. Furthermore, it can be seen that there exists no correlation between the "Occupation" and "Gender", "Education" and "Perceived Product Sustainability". Lastly, a strong positive correlation was seen between the variables "Nationality" and "Avoidance Coping" & "Sustainable consumption".

Furthermore, correlation can be used as an initial framework to look into the hypotheses of the study but making concrete statements adopting this analysis is not appropriate. Therefore, to dive deeper into assessing the results surrounding the hypotheses of the study, regression analysis is used to assess the relationships proposed in the conceptual framework.

5.4 Regression Analysis

The regression analysis requires certain assumptions to be fulfilled to make significant and valid conclusions about the relationships of the variables. According to Brooks (2008), there exist five linear regression assumptions described as follows:

1. $E(u) = 0$

The first assumption states that the *mean* of disturbances or errors should be zero given that there is a constant term in the regression. Moreover, statistical tests and graphical representation can be used to assess this assumption.

2. $Var(u) = 2$

The second assumption concerns *the homoscedasticity* of errors. In other words, it can be said that the variance of errors should be constant. However, if the errors are not having a constant variance, it is claimed that there is a presence of heteroscedasticity. The methods concerning the assessment of this assumption are graphical and formal statistical tests namely Goldfeld-Quandt and White's test.

3. Cov(u1,u2) = 0

The third assumption of regression analysis concerns the *autocorrelation* of errors. In simple terms, it can be stated that the errors don't follow a certain pattern. If there is a presence of a pattern in the residuals (errors), it can be stated that there is a presence of autocorrelation, and the assumption is violated. The statistical tests concerning the assessment of autocorrelation are Durbin-Watson and Breusch-Godfrey. Furthermore, if this assumption is ignored the generated coefficients estimates from the regression analysis are biased.

4. Cov(u1,x1) = 0

The fourth assumption concerns *multicollinearity* which assures that the explanatory or independent variables are not highly correlated with each other. The concern for this assumption is to avoid perfect multicollinearity between the variables. The test for this assumption is Pearson or Spearman correlation check among the independent variables. One of the solutions given by researchers to address this violation is forming principal components before conducting regression analysis. In this study, factor analysis is conducted to form independent factors and correlation analysis is done to see if there exist any highly correlated variables. The outcome of these chapters suggests an affirmative indication for the fulfillment of the 4th assumption of regression analysis.

5. U ~ N(0,2)

The fifth assumption of regression analysis concerns the *normal distribution* of residuals or errors. If the errors are not normally distributed, it means that the regression model is not capturing the trend in the data. If the distribution of errors is skewed, it violates the assumption of normality. One of the most used tests for normality checks is Bera Jarque.

Since the conceptual model and proposed hypotheses contained a moderation check, therefore, three linear regression models were fit to find the relation of variables proposed in the conceptual framework. The ordinary least squares method was used to estimate the coefficients of the regression. The method minimizes squares of distances between the observed values and the regression equation. Since the study had quite many variables, therefore, scatterplots and regression equations were not included in the analysis (Field, 2009).

5.4.1 Regression 1

Regression analysis 1 corresponds to the results of H1: B1 ≠ 0, where it is proposed that sustainable information influences cognitive dissonance. The figure shows variables involved in regression analysis 1, where the sustainable information variable is treated as an independent variable and cognitive dissonance is treated as a dependent variable.

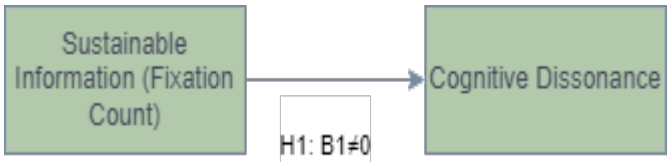


Figure 9: Variables in Regression Analysis 1

Table 16: Results of Regression Analysis 1 (Dependent Variable: Cognitive Dissonance)

Regression Coefficients

	Unstandardized Coefficients		**Std Coefficients**	**T-value**	**Sig**
	B	Std Error			
Constant/intercept	3.662	1.012		3.61	0.004*
Sustainable Information	-0.009	0.055	-0.049	-0.168	0.869

*significance <0.05

Model Summary

	Sum of Squares	**df**	**Mean Square**	**F-value**	**Sig**
Regression	0.037	1	0.037	0.028	0.869
Residual	15.78	12	1.31		
Total	15.82	13			
R-square = 0.02					
Adj R-square = 0.081					

Assumptions

1) E(u) = 0	**2) Var(u) = s^2**	**3) Cov(u1,u2) = 0**	**4) Cov(u1,x1) = 0**	**5) u~N(0,s^2)**
Not violated	***Violated***	***Not Violated***	***Not Violated***	***Not violated***
Residual u = 0.00	Scatter-Plot distribution clustered & Trend	Durbin Watson = 1.92	VIF = 1.00	Normal PP-Plot & Histogram

From the aforestated Table 16, it can be seen that the regression model is not doing very well as the R-square and Adjusted R-square values are extremely low. Hence, it can be said that the trend in the data is not well explained by the model. Although the Regression sum of squares is low it is insignificant and the Residual sum of squares is 15.82, which is high compared to the

data sample concerning this study and helps in concluding that the errors associated with the model are high.

Lastly, the results generated from the model cannot be trustworthy. On the contrary, if the assumptions for regression analysis 1 are seen, it can be said that almost all the assumptions are met except for assumption 2 “Homoscedasticity” since the errors don’t have a constant variance among them. It can be seen from the scatter plot given in Appendix B1 “Regression analysis1 plots” that the errors are not divided equally above & below the line of zero, are clustered, and seem to follow a trend. Moreover, the 5th assumption about “Normality of errors” is also confirmed by using plots such as Normal PP-Plot and residual Histogram. It can be seen in the PP-plot that the residuals are not exactly overlapping the diagonal line but they are still staying close to it. Though it is difficult to conclude the normal distribution of errors but with the histogram and Normal PP plot, it can be partially said that the errors of the model are normally distributed. Lastly, the assumptions about errors or residuals mean being zero, no autocorrelation, and multicollinearity were tested through statistical tests, and values of Durbin Watson and VIF were within the acceptable thresholds of 1-3 for Durbin Watson (Aisami et al. 2021) and less than 10 For VIF. Although, the results of Variance Inflation Factor (VIF) are biased as the test is supposed to test multicollinearity between multiple regressors but in this part of the model, the study has one regressor namely sustainable information, therefore, the VIF value is 1.00.

However, the overall results from the assumptions and model statistics are fairly fine to make conclusions in the part of hypothesis testing.

5.4.2 Regression 2

Regression analysis 2 corresponds to the results of H2: $B2 \neq 0$ and H3: $B3 \neq 0$, where it is proposed that cognitive dissonance influences avoidance coping, and the relationship between cognitive dissonance and avoidance coping is moderated by moral identity.

The Figure 10 shows variables involved in regression analysis 2, where the cognitive dissonance variable is treated as an independent variable, avoidance coping is treated as a dependent variable and moral identity is treated as a moderator. To assess the moderating role of moral identity, an interaction variable is created by multiplying cognitive dissonance and moral identity variables and regressing it on the dependent variable avoidance coping.

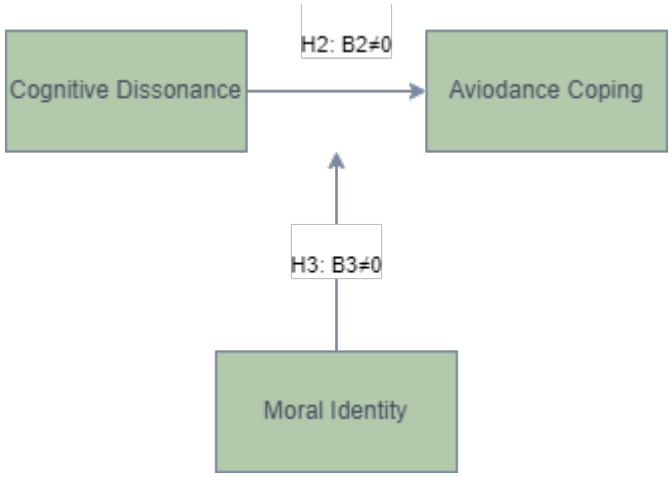


Figure 10: Variables in Regression analysis 2

Table 17: Results of Regression Analysis 2 (Dependent Variable: Avoidance Coping; Moderating Variable: Moral Identity)

Regression Coefficients

	Unstandardized Coefficients		**Std Coefficients**	**T-value**	**Sig**
	B	Std Error			
Constant/intercept	1.923	0.334		5.767	<0.01*
Cognitive Dissonance	-0.482	0.121	-0.446	-3.979	0.002*
Moral Identity (Interaction Variable)	0.257	0.024	1.193	10.65	<0.001*

*significance <0.05

Model Summary

	Sum of Squares	**df**	**Mean Square**	**F-value**	**Sig**
Regression	17.03	2	8.51	64.8	<0.001
Residual	1.44	11	0.131		
Total	18.47	13			
R-square = 0.922					
Adj R-Square = 0.908					

Assumptions

1) E(u) = 0	**2) Var(u) = s^2**	**3) Cov(u1,u2) = 0**	**4) Cov(u1,x1) = 0**	**5) u~N(0,s^2)**
Not violated	*Violated*	*Not Violated*	*Not Violated*	*Not violated*
Residual u = 0.00	Plot distribution clustered & Trend	Durbin Watson = 1.611	VIF = 1.776	Normal PP-Plot & Histogram

From the aforestated Table 17, it can be seen that the regression model is doing very well as the R-square and Adjusted R-square values are extremely high. Hence, it can be said that the trend in the data is well explained by the model. Although the total sum of squares is high compared with the scale of study used, this can not be a good measure of the goodness of the model, as TSS changes with the scale of measurement.

On the contrary, if the assumptions for regression analysis 2 are seen, it can be said that almost all the assumptions are met except for assumption 2 “Homoscedasticity” since the errors don’t have a constant variance among them. It can be seen from the scatter plot given in Appendix B2 “Regression analysis 2 plots” that the errors are not divided equally above & below the line of zero, are clustered, and seem to follow a trend. Moreover, the 5th assumption about “Normality of errors" is also confirmed by using plots such as Normal PP-Plot and residual Histogram. It can be seen in the PP-plot that the residuals are not exactly overlapping the diagonal line but they are still staying close to it. Though it is difficult to conclude the normal distribution of errors with the residual histogram and Normal PP plot, it can be partially said that the errors of the model are normally distributed.

Lastly, the assumptions about errors or residuals mean being zero, no autocorrelation, and multicollinearity were tested through statistical tests, and values of Durbin Watson and VIF were within the acceptable thresholds of 1-3 for Durbin Watson (Aisami et al. 2021) and less than 10 For VIF. However, the overall results from the assumptions and model statistics are good to make conclusions in the part of hypothesis testing.

5.4.3 Regression 3

Regression analysis 3 corresponds to the results of H4: $B4 \neq 0$, where it is proposed that avoidance coping influences sustainable consumption. The Figure 11 shows variables involved in regression analysis 3, where the avoidance coping variable is treated as an independent variable and sustainable consumption is treated as a dependent variable.

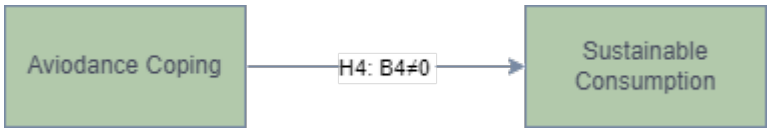


Figure 11: Variables in Regression 3

Table 18: Results of Regression Analysis 3 (Dependent Variable: Sustainable Consumption)

Regression Coefficients

	Unstandardized Coefficients		**Std Coefficients**	**T-value**	**Sig**
	B	Std Error			
Constant/intercept	2.645	1.077		2.456	0.03*
Avoidance Coping	0.744	0.302	0.580	2.464	0.03*

*significance <0.05

Model Summary

	Sum of Squares	**df**	**Mean Square**	**F-value**	**Sig**
Regression	10.20	1	10.22	6.07	0.030*
Residual	20.19	12	1.68		
Total	30.41	13			
R-square = 0.336					
Adj R-square = 0.281					

Assumptions

1) E(u) = 0	**2) Var(u) = s^2**	**3) Cov(u1,u2) = 0**	**4) Cov(u1,x1) = 0**	**5) u~N(0,s^2)**
Not violated	*Not Violated*	*Not Violated*	*Not Violated*	*Not violated*
Residual u = 0.00	Scatterplot shows No pattern & Trend	Durbin Watson = 1.92	VIF = 1.00	Normal PP-Plot & Histogram

From Table 18, it can be seen that the regression model is doing reasonably well as the R-square and Adjusted R-square values are fairly fine but not exceptional enough. Hence, it can be said that the trend in the data is not well explained by the model. Although the Regression sum of squares and Residual sum of squares cumulatively is 30.41, which is high compared to the other regression models in the study and helps in concluding that the errors associated with the model are high.

On the contrary, if the assumptions for regression analysis 3 are seen, it can be said that almost all the assumptions are not violated. It can be seen from the scatter plot given in Appendix B3 “Regression analysis 3 plots" that the errors are divided equally above & below the line of zero, aren’t clustered, and seem to follow no trend, therefore it can be assumed that the second assumption about “Homoscedasticity” is fulfilled.

Moreover, the 5th assumption about “Normality of errors” is also confirmed by using plots such as Normal PP-Plot and residual Histogram. It can be seen in the Normal PP-plot that the residuals are almost exactly covering the diagonal line. Though it is difficult to conclude the assumption of normal distribution of errors with the residual histogram and Normal PP plot discrepancies, it can not be confidently said that the errors of the model are normally distributed.

Lastly, the assumptions about errors or residuals mean being zero, no autocorrelation, and multicollinearity were tested through statistical tests, and values of Durbin Watson and VIF were within the acceptable thresholds of 1-3 for Durbin Watson (Aisami et al. 2021) and less than 10 For VIF. Although, the results of Variance Inflation Factor (VIF) are biased as the test is supposed to test multicollinearity between multiple regressors but in this part of the model, the study has one regressor namely sustainable information, therefore, the VIF value is 1.00. However, the overall results from the assumptions and model statistics are fairly fine to make conclusions in the part of hypothesis testing.

5.5 Mean Comparison Tests

In this study, mean comparison tests consisted of only T-tests, as analysis of variances (ANOVA) couldn't be conducted for demographic variables such as age groups and education levels due to insufficient sample size. The T-test is one of the most used methods to compare the mean of one group either to a particular value or to the mean of another group. One of the advantages of T-tests are that they perform well even if the data slightly lacks normality within the underlying group distributions (Gerald, 2018).

The aim of this section of the study is to see if there are potential or significant differences based on gender towards the perceived sustainability of the product (detergent). Therefore, an independent sample T-test is conducted by firstly checking for equal variances through "Levene's Test for Equality of Variances" and then checking for mean differences.

Table 19: Equality of Variances (Levene's Test) in Perceived Product Sustainability based on Gender

Variables	**Summary of Perceived Product Sustainability**		
Gender	**Mean**	**Std**	**freq**
Male	2.80	0.632	10
Female	3.75	0.500	4
Total	3.27	0.566	14

F-value = 0.255, t-stat = -2.67, **P-value: 0.623**

Since the P-value of Levene's Test is greater than 0.05 (Table 19), it is concluded that the variances of both the groups are equal and hence after having the equality of variances test, the study looks into the means of the two groups in gender variable.

Table 20: Equality of Means (Two-sided test P-value) in Perceived Product Sustainability based on Gender

Variables	**Summary of Perceived Product Sustainability**	
Gender	**Mean**	**Freq**
Male	2.80	10
Female	3.75	4
Diff	0.950	14
Significance Two-sided P-value	**0.021***	

Since the P-value is less than 0.05, hence it is evident that the means of both males and females are different (H0: Female (mean) - Male (mean)=0, H0 rejected). Therefore, it can be said that the perceived product sustainability between females and males is not the same, and they do differ by 0.950. Females rank higher on the mean thereby suggesting that females have perceived the product to be more sustainable in relation to the males.

5.6 Testing Hypotheses

In this section of the study, hypotheses testing for each of the hypotheses of the study is conducted with relevance given to the regression analysis outputs. The rejection or acceptance of hypotheses is determined by the coefficients of three regression analyses performed.

Hypothesis 1: *Sustainable Information has a negative influence over Cognitive dissonance*

The relationship between sustainable information and cognitive dissonance is determined by the regression coefficient β which is -0.049, claiming that there exists a negative relationship between sustainable information and cognitive dissonance. Moreover, it can also be referred to as one unit change in sustainable information bringing a 0.049 decrease in cognitive dissonance. However, the results make sense but hypothesis 1 is **rejected** and can't be concluded from these

findings since the coefficient has proved to be statistically insignificant with the p-value being greater than 0.05. (Table 16)

Hypothesis 2 & 3: *Cognitive dissonance has a positive influence on Avoidance coping and Moral identity plays a moderating role between these variables.*

The relationship between Cognitive dissonance and Avoidance coping is determined by the regression coefficient β which is -0.446, claiming that there exists a negative relationship between cognitive dissonance and avoidance coping. Furthermore, it can be said that a one-unit increase in cognitive dissonance can bring a 0.446 decrease in avoidance coping. Moreover, the regression coefficient is statistically significant with a P-value of 0.002.

Likewise, the moderating variable moral identity has a regression coefficient of 1.193. The moderating effect claims that the relationship between cognitive dissonance and avoidance coping is turned to be positive if moral identity acts as a moderator. Hence, hypothesis 2 is **rejected** and hypothesis 3 is **accepted** in the context of this study as both have proven to be found statistically significant. (Table 17)

Hypothesis 4: Avoidance Coping has a negative influence on Sustainable Consumption

The relationship between variables Avoidance coping and Sustainable consumption is determined by the regression coefficient β which is 0.580, suggesting that there is a positive relationship between avoidance coping and sustainable consumption, and one unit increase in avoidance coping brings a 0.580 increase in sustainable consumption. Hypothesis 4 is **rejected** as the statistical significance is 0.03. (Table 18)

6. DISCUSSION AND CONCLUSION

This master thesis study explored the sustainable consumption behaviors of consumers residing in Finland. The purpose of the study was to examine the influence of avoidance coping consumers often adopt towards sustainable consumption. Moreover, the study also explored how consumers' moral identity moderates the relationship between consumers' cognitive dissonance and their capacity for avoidance coping. To deal with the self-reported limitations associated with measuring the impact of sustainable information (Milosavljevic and Cerf, 2008), the study adopted an eye-tracking methodology to extract fixation counts variable representing sustainable information and check the influence on the cognitive dissonance of consumers.

The results of the study suggest that there is a very low negative association between sustainable information and the cognitive dissonance of consumers. Although the relationship is not statistically sound, therefore, the study assumes as no relationship exists between the aforementioned variables. However, the study finds a statistically significant low negative relationship between cognitive dissonance and avoidance coping of consumers and validates that moral identity moderates the relationship between cognitive dissonance and avoidance coping. Lastly, the results section provides enough evidence to conclude that there exists a statistically significant low positive relationship between the avoidance coping capabilities of consumers and their sustainable consumption.

The current chapter of the study will aim to answer the research questions. Moreover, this section of the study will state the congruence and conflict of research findings of this study concerning prior studies. The managerial implications section provides some insights on the target audience such as managers who could benefit from the findings of this study and in which particular context can these findings be used. Lastly, a section illustrating the limitations and future research directions would be presented at the very end to guide further researchers on the potential work in the research area.

6.1 Theoretical Contributions

This subsection builds upon the studies and theories present in the second chapter of the study and gathers support and incongruencies in the findings of this study and prior research done in the context of sustainable consumption. The results are discussed in relevance to the hypotheses of the study and then broadly in the context of main research questions.

How does sustainable Information influence the consumer's cognitive dissonance towards sustainable products?

The results from hypothesis 1 of this study, suggest that there is no influence of sustainable information on consumers' cognitive dissonance. Although, the beta value of Regression 1 shows that there is a small negative association between the two variables but since it's statistically insignificant, the study concludes it to be as no association was found between the variables in hypothesis 1.

However, studies conducted in the context of sustainable consumption where researchers have studied the role of sustainable information towards dissonance of consumers show that there is a significant association between sustainable information and cognitive dissonance. For example, the study of Rolling et al (2021), explores the association between animal fur labeling and cognitive dissonance. It is concluded in the study that pro-social individuals who value animal welfare when encountering luxury brands that label animal fur usage in the product etiquette cause them to experience greater cognitive dissonance. Other researchers in animal fur usage and cognitive dissonance also claimed the same results (Leak et al. 2015). Furthermore, a study conducted by (Qin et al. 2011) states that the reduction of cognitive dissonance acts as a motivator for consumers to seek sustainable information in green products. Thereby, validating the stance that there is an association between cognitive dissonance and sustainable information.

The differences in the findings of this study and prior studies can be attributed to the contexts where the studies have been conducted. Such as the study of Rolling et al (2021) was conducted in the context of luxury products and luxury consumers while in this study the primary product

to represent sustainable information was a sustainable detergent and the sample was mainly composed of students. Moreover, the sample size was low in order for the study to make generalized conclusions about the results.

How does cognitive dissonance influence the consumer's avoidance-coping towards sustainable products and how does moral identity moderate the relationship between the variables?

The results from hypothesis 2 of this study, suggest that there is a low negative influence of cognitive dissonance on avoidance coping. This association can be seen from the Beta value (-0.446) of regression 2. The results suggest that a one-unit increase in cognitive dissonance is likely to bring a 0.446 decrease in avoidance coping of consumers.

Many studies have been conducted to study the construct of cognitive dissonance and coping (Harmon-Jones et al., 2017; Roese and Summerville, 2005; Harmon-Jones, 2004; Gosling et al., 2006; Gilovich et al., 1995). However, these studies are not conducted in the context of sustainable consumption and the presence of relevant literature in the case of this construct is scarce.

In order to yield a comparison between this study and prior studies, Van and Kaufmann's (2018) study is referred to where it is stated that people when experiencing high levels of cognitive dissonance are likely to employ avoidance coping mechanisms. It can be referred from the findings of De et al (2016) and Van and Kaufmann (2018), that when cognitive dissonance increases among people likewise their avoidance-coping also increases. Hence, the literature claims a positive relationship between both variables.

However, the results of this particular study are in conflict with the literature. One reason attributed to this discrepancy is the context of studies being different and the other one is the smaller sample size of the study that acts as a major barrier to achieving generalized results. Another reason that can be a contributing factor for this discrepancy is that the avoidance-coping scale of the present study is a trait-based measure for avoidance while prior studies (Sollberger

et al. 2017), have used visual representation (climate change images case of Sollberger et al 2017) to measure avoidance.

The results from hypothesis 3 of this study, suggest that there is a potential interacting or moderating effect of moral identity on cognitive dissonance and avoidance coping. This association can be seen from the Beta value (1.193) of regression 3. The results suggest that if moral identity is included as a moderator to the relationship between Cognitive dissonance and Avoidance coping the relationship between the variables is strengthened and turned out to be positive.

Prior studies have claimed not to study cognitive dissonance and avoidance coping individually rather it is suggested by researchers (Hirsh and Kang, 2016) that both the constructs should be studied in presence of individual factors such as moral identity. In a study conducted by Yang et al (2021), it is stated that people decrease their cognitive dissonance by restricting moral identity internalization to help with synchronizing their moral cognitions with their past unethical pro-organization behaviors. “Internalization” means the significance of moral characteristics in one’s self-concept. Based on the results of Yang et al (2021), it can be stated that moral identity is important in defining the relationship between cognitive dissonance and sustainable consumption. Although the studies that have been quoted as a reference are not conducted in the context of sustainable consumption but still help in defining the role moral identity plays in defining the relationship between cognitive dissonance and certain unethical behaviors. Hence, it can be concluded that the results of this study are in congruence with the prior studies.

How does Avoidance-coping influence consumers’ sustainable consumption?

The results from hypothesis 4 of this study, suggest that there is a low positive influence of avoidance coping on consumers' sustainable consumption. This association can be seen from the Beta value (0.580) of regression 3. The results suggest that a one-unit increase in avoidance coping results in a 0.580 increase in sustainable consumption of consumers.

The literature on coping is limited and mainly in the context of climate change (Boykoff and Osnes, 2019; Van et al 2010; Ojala, 2013). Moreover, the study of Homburg and Stolberg (2006), claims that consumers use problem-focused coping to deal with environmental problems thereby, helping them in becoming more sustainable in their choices. Furthermore, the study of Stoll-Kleemann et al (2001), used the sample of Swiss citizens to justify that a variety of coping mechanisms such as denial are used by the consumers to deal with feelings of dissonance to escape the effort of changing their consumption patterns to more sustainable themes. However, it can be seen that the literature on the construct of avoidance coping and sustainable consumption suggests that if consumers use avoidance coping mechanisms, they are likely to not indulge in sustainable consumption. The prior studies' results are mainly in conflict with the findings of this study concerning the construct of avoidance coping and sustainable consumption.

One of the reasons that could be attributed to the incongruence of findings is that the respondents were not likely to understand the avoidance coping questionnaire items in the manner they were supposed to be understood for this research. The biases associated with vague concepts in the items can be thought of one of the reasons, where respondents might have misinterpreted the questionnaire items or there could be instances where consumers were less likely to disclose their avoidance attitudes. Lastly, the sample size of the study was small enough to not yield the representation of the entire population therefore, no generalization can be made upon the findings of this study.

Are there gender-based differences in the perceived sustainability of the product (detergent)?

A supplementary analysis was conducted with the help of a means comparison test, specifically the “independent sample T-test” to find gender-based differences between males and females on the perceived sustainability of the product (detergent).

The results from T-tests show that the perceived sustainability of the product between females and males is not the same and they do differ by 0.950. Females rank higher on the mean thereby suggesting that female has evaluated the product (detergent) to be more sustainable in relation to males.

Many studies have been conducted in the context of sustainable consumption discussing gender-based differences (Hunter et al. 2004; Zelezny et al. 2000; Johnsson-Latham, 2007). All these studies have concluded that women are depicted as having more sustainable consumption behaviors in comparison to men.

However, income can be a significant factor in defining general trends for these gender differences in sustainable consumption (Axsen et al. 2007; Kurz et al. 2015). Moreover, differences in sustainable consumption can also be associated with societal stereotypes and adherence to gender role norms (Dahl et al. 2013). Although this study doesn't take into account societal stereotypes, income, and adherence to gender norms factors in defining the gender-based differences in consumers' perceived product sustainability, the results of the study are congruent with the findings of prior studies.

6.2 Managerial Implications

This study develops an exploratory narrative in understanding sustainable consumption by means of examining associations of sustainable information, cognitive dissonance, avoidance coping, and individual factors (Moral Identity). Nevertheless, some managerial and practical implications can be extracted from the findings of this study as well as prior studies particularly conducted in the context of sustainable consumption for two specific audiences namely (1) the Public Sector and (2) the Private Sector (Marketers and Managers).

The public sector and the governmental bodies should emphasize policies and rules for companies operating in consumer goods industries to have evident and clear eco-labeling or representation of sustainability information with certain predefined requirements. Earlier efforts

made by the sustainability scientists and the proof evident from eye-tracking studies (Babakhani and Dolnicar, 2020), have shown that consumers now pay attention to sustainable information and eco-labeling of products. Therefore, one of the most effective ways to promote sustainable consumption under the big umbrella is by means of enforcements issued by governmental bodies for manufacturers to include impactful sustainable information on their product labels. Adherence to product packaging should be drafted under a structured regime for every industry and product category.

The cost of sustainability acts as a major resistance for many producers to going green (Rossi et al. 2016). Green products are priced higher in comparison to the same products without the ecological emphasis (Dangelico and Pujari, 2010). Hence, not pose an obligation on low-income consumers to buy them. Consumer behavior scholars and marketers need to emphasize the sustainability benefits and campaigns through product packaging in such a way that consumers' cognitive dissonance stemming from the purchase of high-priced green products is catered by means of sustainable benefits entitled in the product labeling. Moreover, research has shown that consumers use coping mechanisms in abstaining from sustainable consumption. Marketers along with consumer psychologists need to gather solutions to address or bypass these traditional avoidance coping mechanisms used by the consumer to justify their unsustainable choices. The present study and literature provide enough evidence on the strategies for marketers that can intrinsically and extrinsically persuade consumers towards more sustainable choices.

Furthermore, an important giveaway for sustainability managers from the empirical findings of this study is taking into account individual characteristics such as “moral identity” and “self-concept” while working on increasing the reach of their sustainable product. Although, taking into account individual characteristics for a product designed for a larger target audience is difficult indeed this is one of the effective ways of overcoming consumers' cognitive dissonance and avoidance coping (Berlin and Covey, 2006).

6.3 Limitations and Future Research

The present study has several limitations that are acknowledged. First and foremost, is the sample size of the study which acts as a major limitation in generalizing the findings of the study. In the study of Tabachnick et al (2007), it is suggested that a minimum sample (N) must be greater than 50 + (8*k) for testing the goodness of model fit and sample (N) greater than 104 + k for testing individual predictors, where k is the number of predictors or independent variables being used in a regression model. In accordance with Tabachnick et al (2007), the present study ought to have a 110 sample size in order to achieve significant and generalized results in terms of the overall goodness of fit statistics of the model and regression coefficients. Therefore, it is recommended for future researchers to overcome the time constraint barrier of this study and test the same empirical model with greater sample size.

Another limitation that is associated with the statistical data analysis method in this study, is that the regression analysis was conducted in sequential parts which posed a barrier to assessing the overall R-square (goodness of fit statistics of the conceptual framework) of the model. In the study of Hair et al (2019), it is stated that when examining statistical models with latent variables, scholars usually adopt the regression analysis method given by Preacher and Hayes (2008) to sequentially test model parts without taking into account the entire model structure which brings limitations to the study findings and overall model diagnostics. To overcome this problem, Hair et al (2019) suggest using partial least squares structural equation modeling (PLS-SEM) to test the entire theoretical structure of the model. Based on the recommendations by scholars on the statistical data analysis method, future researchers are suggested to test the conceptual model presented in the study with the PLS-SEM methodology.

Moreover, the sample of the study consisted of more male respondents rather than an equal proportion of both genders. Likewise, the sample was not diverse enough to gather data on different nationalities and occupations and then use mean comparison tests such as ANOVA to find respondents' differences in perceived product sustainability shown in the eye-tracking measurements. In accordance with the limitation associated with the diversity of demographic data, future researchers are suggested to collect diverse respondent data in terms of nationality,

occupation, and education levels and then find differences based on the aforementioned variables and perceived product sustainability.

Another limitation associated with the study is the use of shortened scales or metrics used for measuring questionnaire variables of the study. In order to control the length of the questionnaire, adopted scales were shortened by excluding certain items, thereby limiting the measurement goals of the variables. In light of this limitation, it is asserted that future researchers must use validated scales with more questionnaire items as a means to measure the variables of this study.

However, the initial proposed research design of the present study was between-subjects but with the posed time constraint modifications were made to the research design where a multi-method quantitative methodology was followed. It is expected that more valuable findings could have been generated by following a between-subjects design, where some of the participants were shown sustainability information in a product while others were not. The association of sustainability information with cognitive dissonance and avoidance of respondents could have been gauged in a more precise and accurate way. Lastly, one of the participants in the study sample was known to the research theme. Therefore, it is believed that there could be potential biases in that specific response. Based on the prior discussed limitations, it is recommended that future researchers incorporate between-subjects design with the purpose of unraveling the impact of sustainable information on cognitive dissonance, avoidance coping, and sustainable consumption in a broader perspective.

7. REFERENCES

The following Section alphabetically presents the Harvard-style references of the articles, journals, and books sources used. Lastly, it presents an appendices subsection which includes adopted questionnaire used for the purpose of data collection and regression analyses plots for all three regression analyses conducted in the study and image of sustainable product used in the study.

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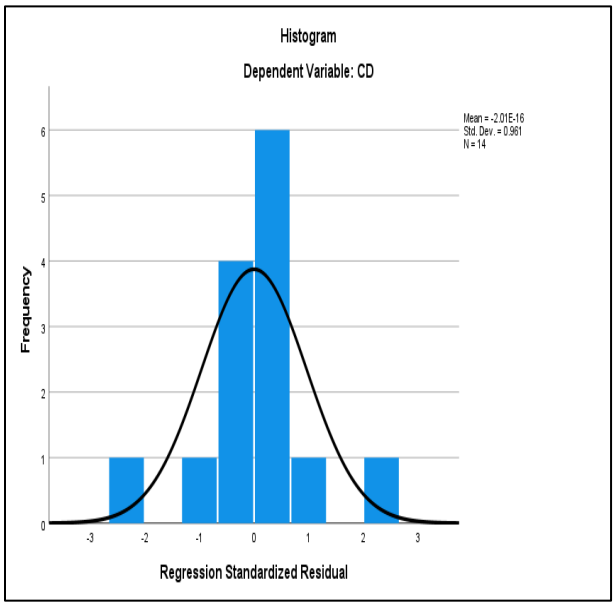
7.1 Appendices

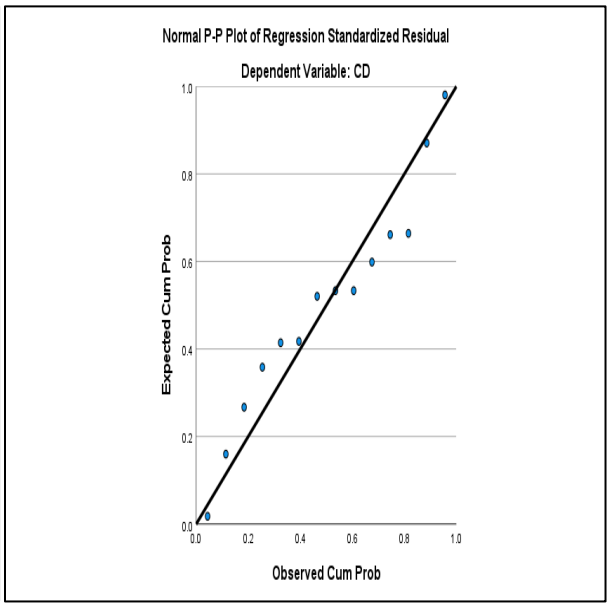
Appendix A: Study Measurement Scale

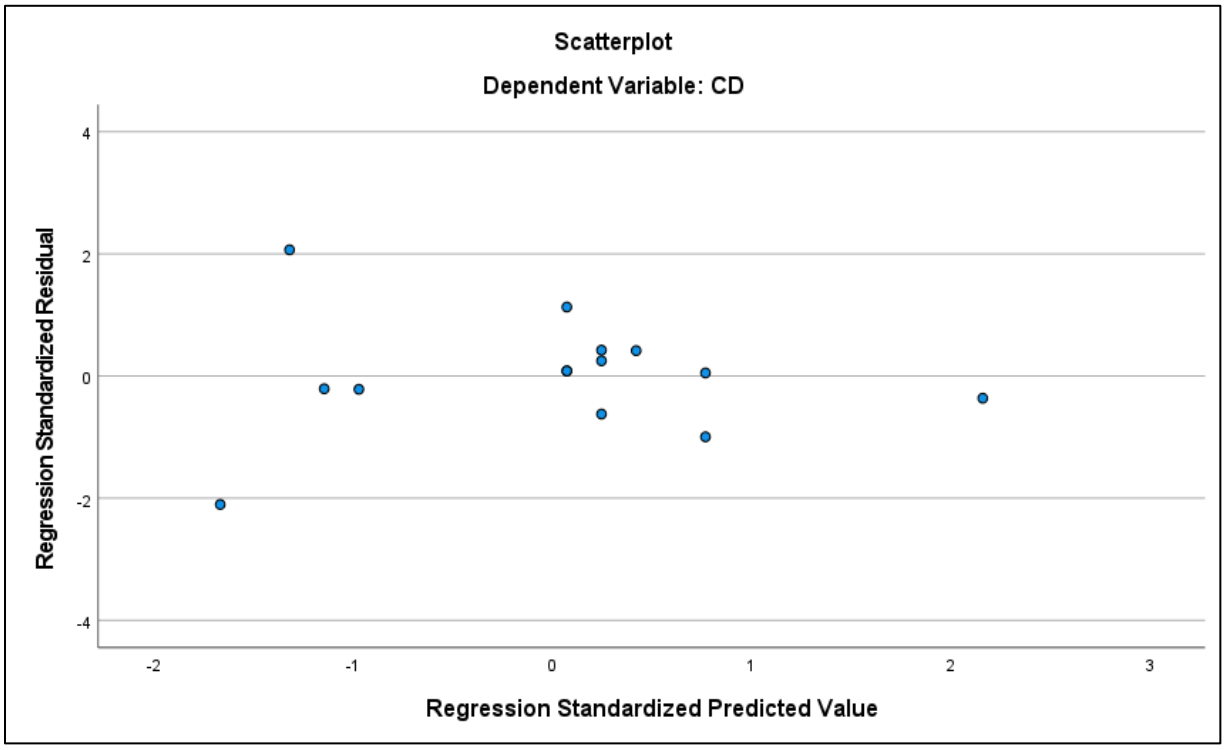
Questionnaire	
Variables	***Items***
Cognitive Dissonance *Sweeney et al. (2000)*	1. While seeing the product, I was in despair 2. While seeing the product, I felt uneasy 3. While seeing the product, I felt annoyed 4. While seeing the product, I wondered if I really needed this product 5. While seeing the product, I wondered would it be the right thing to buy this product
Avoidance-Coping *Kuo et al. (2006)*	6. I try to block out or forget about what's bothering me. 7. I tell myself that my problems will go away on their own 8. I keep my emotions to myself and do not show them. 9. I choose to resolve my problems in ways that would attract the least attention to me 10. I just accept the fact that this happens and tell myself that I can't do much about it. 11. I get involved in other activities to keep my mind off the problem (e.g., study harder so as not to think about the problem). 12. I engage in activities my parents would not approve to ease my anxiety or nervousness, such as smoking, drinking, and doing drugs.
Moral Identity *Black and Reynolds, (2016)*	13. I try hard to act honestly in most things I do. 14. Not hurting other people is one of the rules I live by. 15. It is important for me to treat other people fairly. 16. Lying and cheating are just things you have to do in this world. 17. Doing things that some people might view as not honest does not bother me.

	18. If people treat me badly, I will treat them in the same manner. 19. I will go along with a group decision, even if I know it is morally wrong. 20. Having moral values is worthless in today's society
Sustainable Consumption *Armstrong et al (2016)*	21. I can maintain my and family's health and safety through sustainable consumption. 22. I can save my money through sustainable consumption. 23. I can contribute to making our society and the earth better by sustainable consumption. 24. Sustainable consumption helps me with getting inner satisfaction. 25. I can be recognized as a socially good person through sustainable consumption.
Perceived Product Sustainability	26. Please recall the product you saw in the beginning and indicate, to what extent you agree with the following statement: *The product was Sustainable*

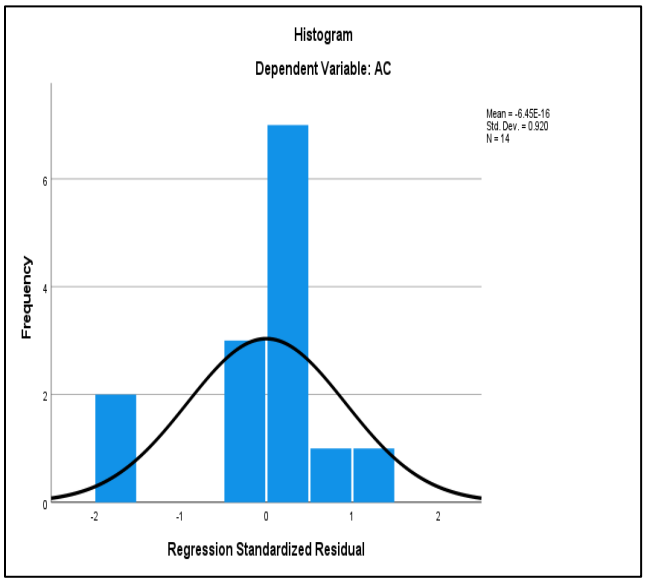
Appendix B1: Regression Analysis 1 plots

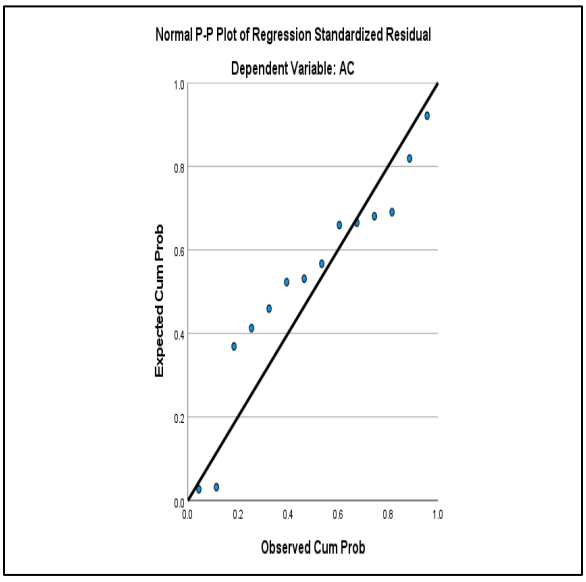


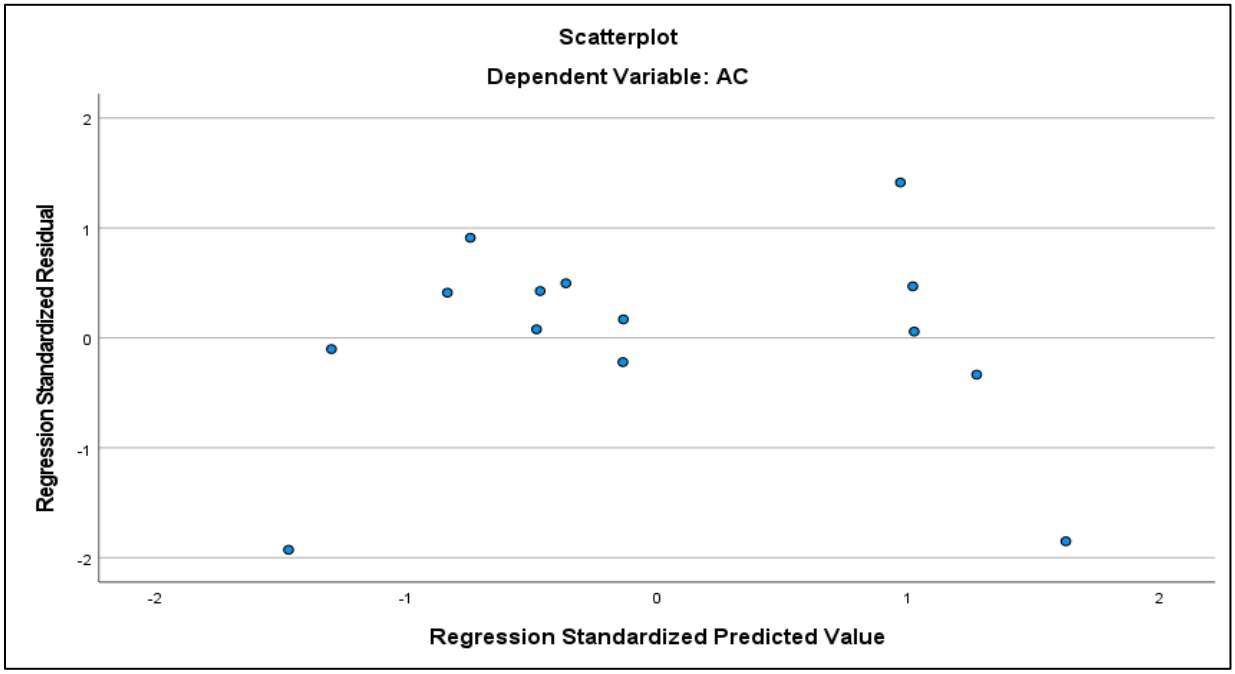




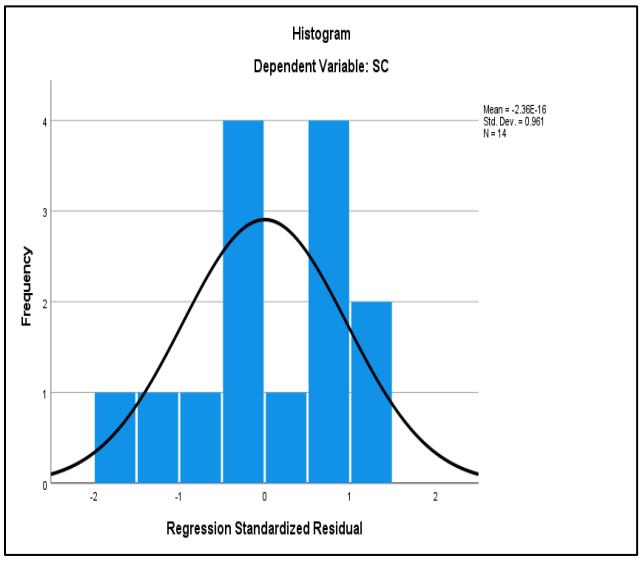
Appendix B2: Regression Analysis 2 plots

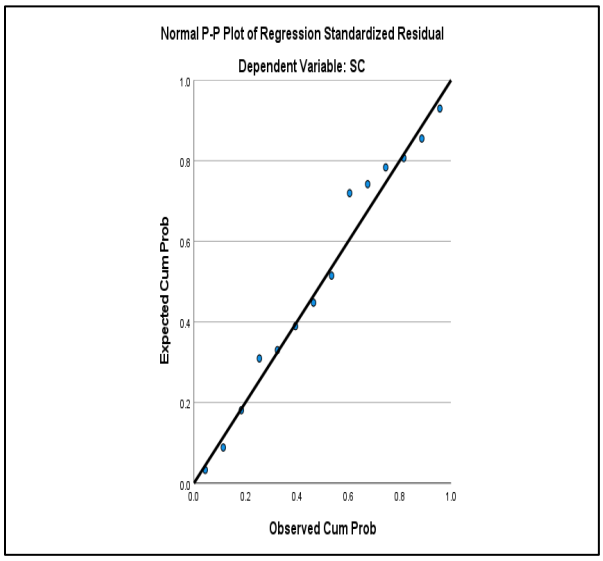


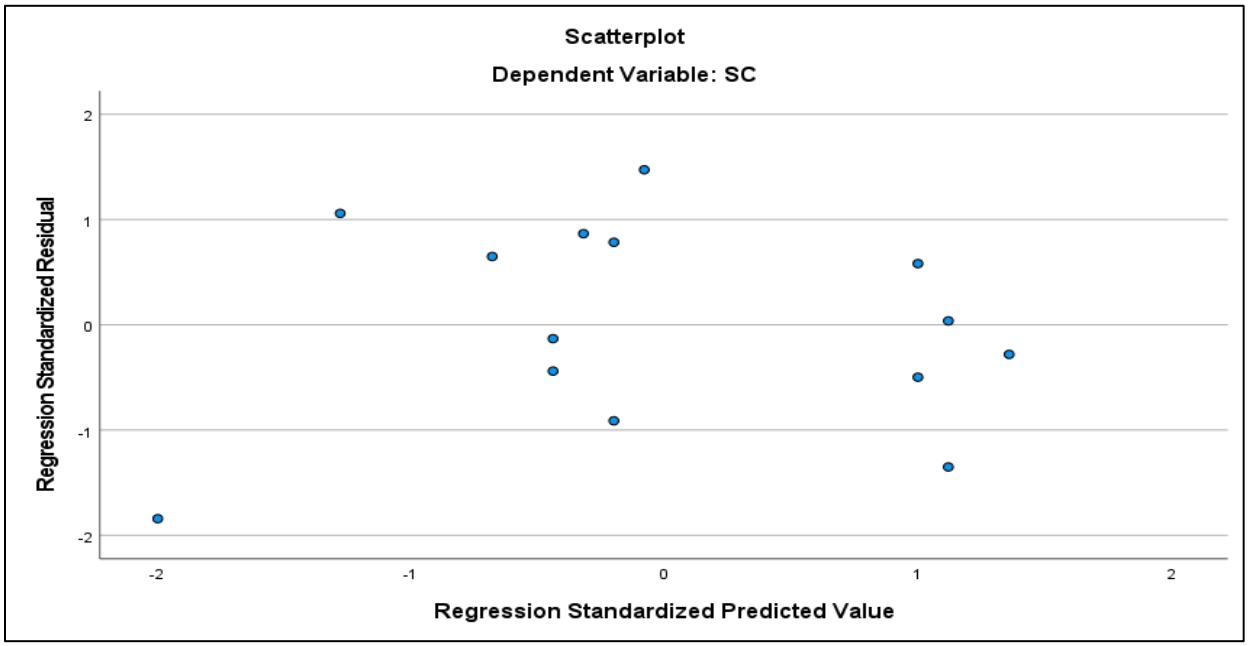




Appendix B3: Regression Analysis 3 plots







Appendix C: Sustainable Product (Sustainability Information)