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Examining the role of informative interventions on factors of green consumerism and green advertisement scepticism

Student ID: 201794129

ABSTRACT

This dissertation examined the impact of positive framing (intervention 1), greenwashing awareness information (intervention 2) and general product utility information (control condition) on measures of green consumerism, including environmental concern, attitude towards green products, self-reported green purchase behaviour, perceived environmental knowledge and scepticism towards green advertisements in relations to bamboo products. An online experiment was conducted to test the effects these two interventions and control condition. Furthermore, this dissertation also tested the moderating influence of the interventions on relationship between the measures of green consumerism and scepticism towards green advertisements. The findings showed that greenwashing awareness considerably impacted the consumers purchase behaviour, attitude and scepticism. However, the two interventions failed to have a significant effect on perceived environmental knowledge and concern. Contrary to what was expected, there was no significant moderating impacts present. One of the key limitations of this dissertation is that some of the variables were self-reported measures like the purchase behaviour and the future studies can make use of real time purchase data. The outcomes of this dissertation can be applied by the marketers to carefully frame the advertisement content since additional information does not necessarily make a difference in consumer behaviour.

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1. INTRODUCTION

In the beginning of 20th century, the environmental movements began which led to a widespread awareness about environmental contamination and degradation. The escalating environmental concerns and increase in global attention on sustainability, consumer inclination towards green products has spiked. The United Nations' Sustainable Development Goals (SDG) released in 2015 also endorsed this trend by including a goal to "Ensure sustainable consumption and production patterns". A recent SDG report (United Nations, 2024) highlights that only 17% of the targets have showed progress emphasising the need for stronger measures. As per a recent survey conducted across North America, Europe and Asia, close to 72% of the responses indicated that people are purchasing more eco-friendly products currently as compared to five years ago, with 81% expecting to purchase more over the next five years (Accenture, 2019). This major transition in consumer preferences has pushed environmentally responsible conduct to the forefront of many corporate agendas (Berry et al., 1998). For example, brands like IKEA and H&M have initiatives in place to become climate positive and to use sustainably sourced materials in their products while promoting circular economy (IKEA, 2020; H&M, 2021).

The companies, in order to communicate their sustainability initiatives have employed green marketing strategies to draw the attention of ecologically conscious consumers (Dangelico & Vocalelli, 2017) also known as green consumers. These strategies have not only widened the firms' customer base but also provided a competitive advantage. However, these green marketing claims do not represent company's environmental conduct legitimately. Although some firms are genuinely committed towards reducing their environmental footprints, others make misleading claims to be ecologically responsible (Delmas & Burbano, 2011). This practice is known as greenwashing. Despite consumers reacting positively to firms they have faith in, are taking measures against environmental issues (Carlson et al., 1993), green consumers usually possess anti-corporate biases (like distrust of global corporations, belief that companies exploit consumers, perception of making high profits etc) and do not trust advertising, which makes it hard to build confidence in the authenticity of green advertisements (Zinkhan et al., 1995). As a result, consumers have a sceptical view towards the green advertisements which in turn may impact their purchase decisions (Schmuck et al., 2018; Aji & Sutikno, 2015; Netto et al., 2020; Pomering & Johnson, 2009). The scepticism among the consumers can have a significant impact on consumer purchase behaviour, their attitude

towards green products and overall environmental concern. Hence, it is crucial for firms and policymakers to understand the factors influencing scepticism towards green products and take initiatives to lessen its impact to promote sustainable consumption.

By using misleading environmental claims in the advertisements, firm may create a negative impact not just on their direct consumers but also on their stakeholders. Greenwashing may have a positive effect initially in the form of increased profits for existing stakeholders (Solomon et al., 2008). However, the potential stakeholders who are looking to support authentic green products will be negatively affected by the use of greenwashing.

Scepticism is commonly observed in the industries or products that have a history of controversies pertaining to the environment or those viewed as having greater environmental impact. One such sector which has gained attention recently and observed a pronounced surge in green marketing is bamboo-based products industry. Bamboo is seen as a sustainable substitute to plastics as a result of its rapid growth, versatility and biodegradability. Instances of greenwashing were observed due to the sudden rise in popularity of bamboo products in which firms have made false claims related to the environmental benefits of their bamboo-based offerings (Dahl, 2010). There are several benefits of using bamboo as a raw material for various industries ranging from textile to construction materials. However, the sustainability benefits can considerably vary depending on its production process, processing and transportation methods. The gap between the actual and perceived impact of these products has added to consumer scepticism. Thus, bamboo products industry is an interesting case to study the dynamics of scepticism towards green advertisements.

Previous studies have looked to combat scepticism towards green advertisements and its potential impact. Understanding the aspects that impact green scepticism and formulating stronger strategies to reduce its impact is important for promoting responsible consumption and supporting the truly eco-friendly products. This dissertation aims at examining the relationship between consumer scepticism towards green advertising and environmental concern, green purchase behaviour, perceived environmental knowledge and attitude towards green products through different interventions with a specific emphasis on bamboo products. The findings of this study will have new insights on consumer behaviour for businesses looking to advertise authentic green products, policymakers seeking to encourage sustainable consumption and consumers who intend to make informed sustainable choices.

2. LITERATURE REVIEW

In recent times where attention towards sustainability and environment is growing globally, consumers' attitude towards eco-friendly products has emerged as a subject of great interest. In various industries, bamboo has caught the eye as a sustainable alternative making the interplay among attitudes, concern and scepticism towards green products overly intriguing. Despite expressing high interest in green products, the consumers tend to show a sceptic behaviour towards green advertisements due to the surge in misleading green marketing claims (Leonidou & Skarmeas, 2017). Unclear or false advertising can lead to certain repercussions for firms. Such claims can lead to consumers distrust towards corporations (Furlow, 2010). The literature review section of this dissertation will dive deeper into the concepts included in this study.

2.1 Green Marketing (GM) and Green Advertising (GA)

Green Marketing was first defined in the 1970s by Hennion and Kinnear as "concerned with all marketing activities that have served to help cause environmental problems and that may serve to provide a remedy for environmental problems" (Dangelico and Vocalelli, 2017). Over the years, several authors have defined it differently as the concept evolved and gained popularity. Green advertising is type of green marketing technique (Ongkrutraksa, 2007). Green advertising can be defined as statements that are used to influence the consumers' attitudes, thoughts and behaviour by promoting eco-friendly features of the product during its lifecycle from manufacturing to distribution, disposal or recycling (Matthes, 2019). Green advertising has been growing rapidly as a result of high consumer demand leading to a green trend (D'Souza & Taghian, 2005). In response to these trends, companies develop products that are eco-friendly and employ different strategies to show sensitivity towards the environment. Green advertisements use environmental claims such as "safe for the environment", "environment friendly" (Do Paço & Reis, 2016). Environmental claim is described as "a claim is a statement by a seller regarding the impact of one or more of its brand attributes on the natural environment" (Scammon & Mayer, 1995). Traditional advertising addresses three main functions (to inform, remind and persuade) and on the other hand, green advertising aims at creating awareness and optimistic attitude towards eco-friendly companies (D'Souza & Taghian, 2005).

There are four categories of green advertising claims discussed by Carlson, Grove and Kangun (1993) in their study which are discussed further.

1. Product oriented claims focus on the eco-friendly aspects of the product while the process orientation highlights the company's technologies, production techniques or disposal methods that benefit the environment.
2. Process oriented claims highlight the technology used by the organisation, production methods and disposal practices that benefit the environment.
3. Image oriented claims associate the company with an environmental cause that has great public support.
4. Claims related to environmental facts that indicate towards a particular verifiable environmental fact about the organisation, product or the process. However, when these claims are not applied appropriately it can lead to a product or a company being perceived negatively.

It is important that the companies or brands who employ green advertising stay true to their commitments and comply with all the environmental regulations and policies to ensure consumer trust. Lately, the consumers have been confused about the green claims made in the advertisements and are also distrustful of them (Shrum et al., 1995; Iyer & Bannerji, 1993). This is because consumers generally do not possess enough scientific or technical knowledge to understand substantiating information of the environmental claims (Furlow, 2010). Although there are firms that make sincere effort to produce environmentally friendly products, others make vague and confusing claims about the product to attract green consumers (Carlson et al., 1996). This is termed as "greenwashing".

2.2 Greenwashing

Baum (2012) defines greenwashing as "the act of disseminating misinformation to consumers regarding the environmental practices of a company or the environmental benefits of a product or service". There are several other studies that describe greenwashing differently, however, every description highlights two important behaviours that depict the process of partial disclosure which is hiding the company or the product's negative environmental impact and exposing only the positive impacts (Alexa et al., 2021). Additionally, since greenwashing appears in different forms, Terra Choice (2010) identified the primary ways in which the companies deceive the consumers and labelled it as "the seven sins of greenwashing" namely

sin of the hidden trade-off, sin of no proof, sin of vagueness, sin of irrelevance, sin of lesser of two evils, sin of fibbing and sin of worshipping false labels.

Companies engage in greenwashing practices because such green claims have proven to influence the consumer's perceptions and purchase behaviour positively (Volschenk et al., 2022). A study conducted by Segev, Fernandes and Hong (2016) examined the evolution of green claims by analysing advertisements (N=433) from 18 magazines and concluded that greenwashing is decreasing with time. However, the study conducted by Yang et al. (2020) in which they reviewed journal articles (N=67) on corporate greenwashing by MNCs in Asia revealed that cases of greenwashing have increased globally due absence of strict regulations. The Volkswagen Group was found guilty to have misrepresented the emissions data of one of its cars pointing to the widespread existence of greenwashing (Saino et al., 2017; Pizzetti et al., 2021).

The degree to which greenwashing has mislead the consumers is debatable. A study conducted by De Jong, Harkink and Barth (2018) used a randomised online experimental approach (N=261) to test consumer reaction to greenwashing firms selling hedonic or utilitarian products. They found that precise greenwashing had a negative impact on the way consumers perceived the brand and nuanced forms of greenwashing has very less impact on sense of deceit irrespective of consumer's environmental concern or knowledge. In contrast to this Isac et al. (2024) conducted a study in Pakistan (N=545) to understand the mediation impact of green brand trust and environmental knowledge, found that greenwashing mediated by environmental knowledge tends to influence consumer trust and purchase intention. The study further added that, consumers who possess strong environmental knowledge are expected to detect greenwashing than those with lower environmental knowledge.

False claims made by one brand can diminish the consumers intention to purchase green products from other brands (Wang et al., 2020). Greenwashing also causes information overload making it complicated for the consumers to evaluate the product (Gosselt et al., 2019; Walsh et al., 2007). Nyilasy et al. (2014) conducted a study on consequences of green advertising and a firm's ecological impact on brand attitude and buying intentions (N=230). The outcome indicated how consumers exhibit a doubtful behaviour upon realising the gap between firm's actual performance and its green advertising claims. Overall, these behaviours have led to consumers showing a sceptical behaviour towards green advertisements and therefore highlighting a need for further research.

2.3 Scepticism towards green advertisements (SGA):

Green advertisement scepticism can be described as low trust or distrust in claims related to the environment used in marketing communications (Mohr et al., 1998; Nguyen et al., 2019). In green advertising, scepticism is expressed through a critical evaluation of a brand's environmental claims, questioning its authenticity, reliability and intent. A thorough literature review on this topic indicates that the consensus on nature of scepticism is minimal. Although some scholars considered scepticism as a characteristic of consumer personality in their study (Skarmeas and Leonidou, 2013; Obermiller & Spangenberg, 1998), most of the studies considered it to be a result of situational drivers independent of personality (Patel et al., 2017; Vanhamme & Grobben, 2009). It is also worthy to note that scepticism is different from cynicism. While scepticism is backed up by enough evidence, cynicism corresponds to a direct negative behaviour irrespective of the evidences (Mohr et al., 1998).

There are several factors that leads to consumer scepticism towards green advertisements. Chen and Chang (2013) explored the consumer confusion and perceived risk aspect on Taiwanese consumers that occurs due to very complex or ambiguous information about the products. This study employed an empirical approach[1] and found that such complexity can lead to information overload making it hard for the consumers to differentiate between a genuine and misleading environmental claim. Leonidou and Skarmeas (2017) in their study (N=520) that tests the impact of consumer scepticism on CSR and its influence consumer related results, shed light on how consumers' lack of trust in the company's environmental credibility pushes them to seek additional information to find answers to their doubts. The existence of these factors causes the consumers to distrust the claims made in the ads and labels which will hinder the green communication efforts made by the brands and thereby diminish their market optimisation. Moreover, it can also result in the consumers subconsciously giving up the opportunity to conserve the environment by buying green products. Misleading or fake advertisements cause more damage (Newell et al., 1998) as compared to when an individual who simply purchases a product because he or she believes it to be environment friendly. This in fact may contribute to a constant state of cynicism about all green claims including the genuine ones.

[1] Structural Equation modelling (N=252)

For the purpose of this study, scepticism is considered as a state of doubt or uncertainty about the green claims or environmental effectiveness of green product.

2.4 Environmental Concern:

Environmental concern can be defined as the extent to which individuals are informed about the environmental issues and take initiative to address them, including willingness to contribute personally to their solution (Dunlap & Jones, 2002). Environmental concern is commonly regarded as an important predictor of environmentally friendly attitude and directly influences the environmentally conscious purchase behaviour (White & Simpson, 2013; McDonald et al., 2015; Pagiaslis & Krontalis, 2014; Bamberg, 2003). This intention is often viewed as a representation of sustainable conduct, pro-environmental behaviour and similar practices. However, high association with environmental concern does not translate into pro-environmental behaviour necessarily (Kollmuss & Agyeman, 2002).

As concern towards environment has grown among the consumers, it has led to an increase in green advertisements accompanied by a spike in consumer scepticism. Various studies have been conducted to investigate the relationship between environmental concern and scepticism towards green advertisements. These studies mostly highlight that consumers who are environmentally concerned show more sceptical behaviour due to high level of knowledge and involvement in environmental issues (Do Paco & Reis, 2016; D'Souza & Taghian, 2005). This paradox poses a challenge for the companies and researchers. On one side, environmental concern attracts people towards green products as a response to green claims while on the other side it fuels scepticism towards such claims. Nyilasy et al. (2014) as explained earlier, examined this paradox and found that companies with poor environmental performance have created a negative attitude among the green consumers by making false claims in their advertisements. Leonidou and Skarmeas (2017) present a detailed view, proposing that the link between scepticism and environmental concern can be non-linear. This implies that although environmental concern may increase scepticism initially, however, significant levels of concern my gradually reduce scepticism since consumers tend to show commitment towards any environmental initiatives. The non-linear behaviour questions the simplistic opinion that environmental concern leads to an increase in sceptical attitude, rather it suggests that it is variable depending on the extent of concern and additional contextual factors.

2.5 Perceived Environmental Knowledge (PEK):

In the domain of purchase behaviour, knowledge is considered as a key determinant affecting all the phases of decision making (Wang et al., 2018). Several researchers indicated that knowledge determines how consumers evaluate services or products in the market (Ostergaard & Bode, 2016). Environmental knowledge represents an individual's awareness of ecological standards, concepts and practices pertaining to environmental services or goods (Thyagaraj & Ahmad, 2015). Perceived environmental knowledge can also be defined as the individual's capacity to identify symbols, aspects and behaviour linked to the environment or eco-system (Laroche et al., 2001). Latest studies have recognised environmental knowledge as a fundamental factor in describing environmental attitudes, intentions and behaviours (Kumar et al., 2017; Jaiswal & Kant, 2018; Mostafa, 2007; Bamberg & Moser, 2007).

Literatures have identified two types of environmental knowledge called subjective and objective knowledge (Aertsens et al., 2011; Pagiaslis and Krontalis, 2014).

1. Objective knowledge refers to what the consumers actually know about the environment and existing issues.
2. Subjective (or perceived) knowledge stands for what the consumers think they know.

Although a consumer makes use of both subjective and objective knowledges while making a decision, it is debatable that perceived environmental knowledge is more relevant in shaping pro-environmental behaviour (Molina et al., 2013).

Since various studies state that environmental knowledge is an important aspect of purchase behaviour, it can be quite important to test its relationship with green advertisement scepticism. Scholars from different areas of research in advertising have found that knowledge is a vital facilitator of advertising impacts and crucial factor in evaluating the authenticity of advertising claims specifically when such claims are misleading (Hoch & Ha, 1986; Andrews et al., 2000). For example, Studies found that an individual's environmental knowledge determines how they assess the claims in the green advertisements which in turn influences their pro-environmental behaviour (de Sio et al., 2022; Neureiter et al., 2023). It enables the consumers to distinguish between the actual green products and conventional products fostering favourable attitude towards green products.

2.6 Attitude towards green products (ATGP):

Attitude towards green products has proven to be the epicentre of many studies in order to understand and predict the pro-environmental attitude and consumption of green products (Chan, 2001; Matthes & Wonneberger, 2014). Attitudes can serve as accurate predictors of green practices (Anvar & Venter, 2014; Padel & Foster, 2005) as it encompasses cognitive factors like favourability and sentiment driven aspects such as sense of pride and pleasure associated with buying green products (Chang, 2011).

The structure and elements of attitude are important aspects that need to be examined as they are significant while implementing marketing strategies. Chih et al. (2015) in their study propose a tricomponent attitude model which outlines a framework to comprehend the shaping of consumers' attitude through a three- dimensional psychological process:

1. The first phase is the cognitive phase which involves perceived values like personal knowledge and beliefs that takes into account both positive and negative perspectives.
2. Second is the affective phase that involves the emotional component which relates to the positive, negative or neutral feeling about a product or service. Consumers tend to remember these feelings and this might be pivotal in future decision-making processes.
3. The third phase involves behavioural intent or actual action stage as a result of attitude.

A study[2] conducted by Kanchanapibul et al. (2014) on effect of ecological knowledge and attitude on younger generations i.e Millenials and Gen Z found that they exhibit heightened involvement with the environment, creating a positive outlook towards green products and willingness to purchase environmentally friendly products by paying a premium price. Vakratsas & Ambler (1999) showed that advertising can act as an important tool in influencing or formation of attitudes[3]. Although advertising has the potential to shape consumer attitudes, the interplay between attitude towards green products and scepticism towards green advertisements is not extensively studied. However, there are studies which have concluded that scepticism has a negative impact on attitude (Chan & Cheng, 2013; Nyilasy et al., 2014). When consumers develop sceptical attitude towards the green claims, they often demonstrate

[2] An online survey was distributed (N=110), hypotheses were examined using Structural Equation Modelling.
[3] The researchers reviewed 250 books and journal articles to comprehend the effects of advertising on consumer attitudes and beliefs. The authors suggest that studies on advertising should include three dimensions called affect, cognition and experience.

a negative outlook towards the brand, green product as well as the advertisements. This potentially leads to consumers refraining from buying the products.

2.7 Green Purchase Behaviour (GPB):

Purchase behaviour in the context of green products has proven to be one of the most important factors (Mohr et al., 1998; Schlegelmilch et al., 1996; Matthes & Wonneberger, 2014). Green purchase behaviour corresponds to self-reported patterns that includes buying less environmentally damaging products, certified products and looking at the product ingredients label (Matthes & Wonneberger, 2014). Studies on green purchase behaviour conducted in the past were primarily directed towards determining the characteristics of environmentally responsible buyers.

Ecologically Conscious Consumer Behaviour (ECCB) scale developed by Roberts (1996) established a base for understanding the eco-friendly consumer profile by measuring their tendency to buy products that have lower negative contribution to the environment. Expanding this further, various other studies were conducted.

Barbarossa and De Pelsmaker (2016) compared the green products purchase behaviour of green (N=435) and non-green (N=473) consumers in their study and found notable differences in the purchase pattern of the two groups. The results also highlighted that concern for the environment was the main motive for green consumers while personal inconvenience was a stronger reason for non-green consumers to purchase green products. A study was conducted in India by Yadav and Pathak (2017) to test green product buying behaviour using an extended theory of purchase behaviour model and the result suggested that perceived behavioural control, subjective norm and attitude were significant predictors of green purchase behaviour. Moreover, research conducted by Witek and Kuźniar (2020) showed that demographic factors like age, gender, education and income also have an impact on the green buying behaviour. Consumer's concern towards the environment and the functional attributes of the product are the major determinants of green purchase behaviour (Joshi and Rahman, 2015). However, this discrepancy across studies over the years implies that there are multiple factors that play a substantial role in developing green purchase behaviour.

As the consumers associate themselves with green products more often, their experiences tend to mould their perceptions of green advertising. Consumers show reluctance to purchasing

green products when they become doubtful about the environmental claims made in the advertisements and labels (Mohr et al., 1998). Subsequently, consumers enthusiastic about buying green products tend to show sceptical behaviour towards green advertisements in general (Shrum et al., 1995). Hence it can be expected that the lack confidence in environmental claims would reflect on their purchase behaviour.

2.8 Intervention to combat greenwashing

There are multiple types of interventions that can be used to examine scepticism or greenwashing. These interventions use different strategies to create an impact on consumer perceptions and behaviours. One of them is positive framing of the information or product which involves introducing the participants to green claims by emphasising on the benefits of environmental practices. Positive framing of information can make a difference in the participants' responses in multiple ways. Spence and Pidgeon (2010), in their study[4] (N=161) examined the impact of framing a message in terms of gain and loss on socio cognitive factor with regard to climate change in UK and Europe. They found that gain frames were successful in creating concern towards climate change. Framing messages in a benefit focused appeal is also more persuasive[5] (Xu and Jeong, 2019). This highlights that, the way in which a piece of information is presented to the participants can potentially influence their responses in a survey.

Pre-bunking is another crucial intervention in which the spread of false claims is prevented beforehand. This is done by exposing the participants to a lighter version of false content and later describing why it was misleading. De-bunking is another intervention that targets and fixes false green claims. Studies like the ones conducted by Nyilasy et al. (2014) prove that de-bunking can considerably minimise consumer scepticism through clear counterarguments which dismisses misleading claims.

Information sharing is another type of intervention which focuses on sharing factual information and being transparent about a product or company's environmental impact. This can substantially modify the knowledge base that the participants' draw from while answering the questions in a survey. Providing the participants with information that creates awareness can minimise the misperception in some cases (Meng et al, 2023). However, Nyhan and Reifler

[4] The limitation of this study was that the impact of climate change can be different for other countries which can change the way individuals perceive things.
[5] This study examined the influence of benefit based and attribute-based message framing in green restaurant advertisements on consumer attitude and intensions to visit the restaurant in USA (N=363). ANOVA and T-test were employed for analysis.

(2015) found that in some cases providing a corrective information actually led to an increased misperception. Thereby highlighting the complexity of this relationship and creating room for further research. In this dissertation the experimental design is such that positive framing of benefits of bamboo and green advertisement awareness act as the test conditions.

2.9 Bamboo as a sustainable alternative

Bamboo as a friendly substitute to traditional materials is gaining significant attention in the green consumer market for its myriad purposes in housing, textiles, paper production, furniture, utensils, fuel and many more (Gupta & Kumar, 2008). It is a renewable, easily available, economical and sustainable resource with exceptional strength (Mohamed et al., 2007). However, on closer examination it was revealed that environmental impact of bamboo products is multifaceted.

Bamboo has a rapid growth rate of 91 cm per day (Ediriweera & Palihakkara, 2020) allowing it to be harvested frequently without being replanted. This is often cited as a major environmental benefit in marketing to portray bamboo products as greener compared to those made with other materials. However, the unethical expansion of bamboo plantations by clearing natural forests can cause a loss in biodiversity, indicating a potential disconnect between the reality and marketing claims. China is the largest producer of bamboo and it was reported that farmers in China converted their farmlands into bamboo plantations to make higher profits which has posed a serious threat not just to the biodiversity but has also led to soil erosion and water pollution (Song et al., 2011). Bamboo is known for its ability to absorb up to 12% CO_2 present in the atmosphere and release 35% extra oxygen than other plants. Bamboo is recognised as a sustainable alternative to woods like timber in the furniture industry due to its mechanical strength and versatility (Boran et al., 2013). Although these aspects can be beneficial, they can be exaggerated in green marketing failing to account for the complete lifecycle impact of bamboo (i.e manufacturing and transportation).

Greenwashing in bamboo products occurs in the form of claims like “chemical free processing” or “fully biodegradable”. To make furniture or the utensils strong, sturdy and long lasting, bamboo is chemically treated at high temperatures (Lee et al., 2018). Furthermore, to make the products water resistant and improve its tensile strength, bamboo is coated with chemicals like synthetic rubber and epoxy resin (Sain et al., 2024) which are non-biodegradable substances. When the product is coated with such chemicals it makes it difficult to be recycled, since

separating these layers of chemicals tedious process and requires a lot of energy. Manufacturing certain bamboo decorative items or construction items consumes high amount of electricity and leaves behind 41.4% of waste (Gan et al., 2022).

Moreover, exporting bamboo from countries like China and India to European countries where bamboo is not natively found can contribute to carbon emissions. The environmental benefits of bamboo products can be cancelled out when it is transported to larger distances especially in comparison to the locally sourced items (Vogtländer et al., 2010). This is highly relevant in the scenario of heavy items like furniture where emissions due to transportation constitutes a considerable share in overall environmental impact of the product.

Bouma, Wijk and Sijm (2022) conducted a study on Dutch market to check the impact of biobased bamboo drinkware. The results showed that several bamboo-based food packaging materials are mixed with materials like formaldehyde and melamine. These chemical substances have harmful reactions when they come in contact with food items and therefore are not a healthy alternative to plastics. The study also concluded that these packaging materials are neither recyclable nor biodegradable and eventually, are not safe for the environment either. These aspect of bamboo products are rarely addressed instead it is often downplayed in marketing.

3. RESEARCH QUESTIONS AND HYPOTHESES

This dissertation aims to explore factors impacting the scepticism towards green advertisements in the context of bamboo products. Following is the primary research questions studied in this research:

1. To examine the extent to which positive framing of green benefits of bamboo (intervention 1), greenwashing awareness information (intervention 2) and general product utility information (control condition) influences consumers' environmental concern.
2. To examine the extent to which positive framing of green benefits of bamboo (intervention 1), greenwashing awareness information (intervention 2) and general

product utility information (control condition) influences consumers' self-reported green purchase behaviour.

3. To examine the extent to which positive framing of green benefits of bamboo (intervention 1), greenwashing awareness information (intervention 2) and general product utility information (control condition) influences consumers' attitude towards green products.
4. To examine the extent to positive framing of green benefits of bamboo (intervention 1), greenwashing awareness information (intervention 2) and general product utility information (control condition) influences consumers' perceived environmental knowledge.
5. To examine the extent to which positive framing of green benefits of bamboo (intervention 1), greenwashing awareness information (intervention 2) and general product utility information (control condition) influences consumers' scepticism towards green advertisements.
6. To examine the moderating effect of positive framing of green benefits of bamboo (intervention 1), greenwashing awareness information (intervention 2) and general product utility information (control condition) in the relationship between environmental concern, attitude towards green products, perceived environmental knowledge and green purchase behaviour on consumers' scepticism towards green advertisements.

The hypothesis that will be tested in this study are as follows:

1. H1: Positive framing of benefits of bamboo and greenwashing awareness information have a stronger influence on consumers' environmental concern compared to general product utility information.
2. H2: Positive framing of benefits of bamboo and greenwashing awareness information has a stronger influence on consumers' self-reported green purchase behaviour compared to general product utility information.
3. H3: Positive framing of benefits of bamboo and greenwashing awareness information has a stronger influence on consumers' attitude towards green products compared to general product utility information.

4. H4: Positive framing of benefits of bamboo and greenwashing awareness information has a stronger influence on consumers' perceived environmental knowledge compared to general product utility information.
5. H5: Positive framing of benefits of bamboo and greenwashing awareness information has a stronger influence on consumers' scepticism compared to general product utility information.
6. H6a: Positive framing of benefits of bamboo has a positive moderating impact on relationship between environmental concern, attitude towards green products, green purchase behaviour, and perceived environmental knowledge and scepticism towards green advertisements.

   H6b: Greenwashing awareness information has a positive moderating impact on relationship between environmental concern, attitude towards green products, green purchase behaviour, and perceived environmental knowledge and scepticism towards green advertisements.

   H6c: General product utility information has a positive moderating impact on relationship between environmental concern, attitude towards green products, green purchase behaviour, and perceived environmental knowledge and scepticism towards green advertisements.

4. METHODOLOGY:

4.1 Conceptual framework

The conceptual framework for this dissertation is built on the study conduct by Do Paço and Reis (2016). The dependent variable (DV) is scepticism towards green advertisements and independent variables (IV) are environmental concern, attitude towards green products, green purchase behaviour and perceived environmental knowledge. This dissertation aims to examine the influence of a few other variables to understand its influence on green advertisement scepticism in as compared to the study conducted by Do Paço and Reis (2016) in the presence of interventions.

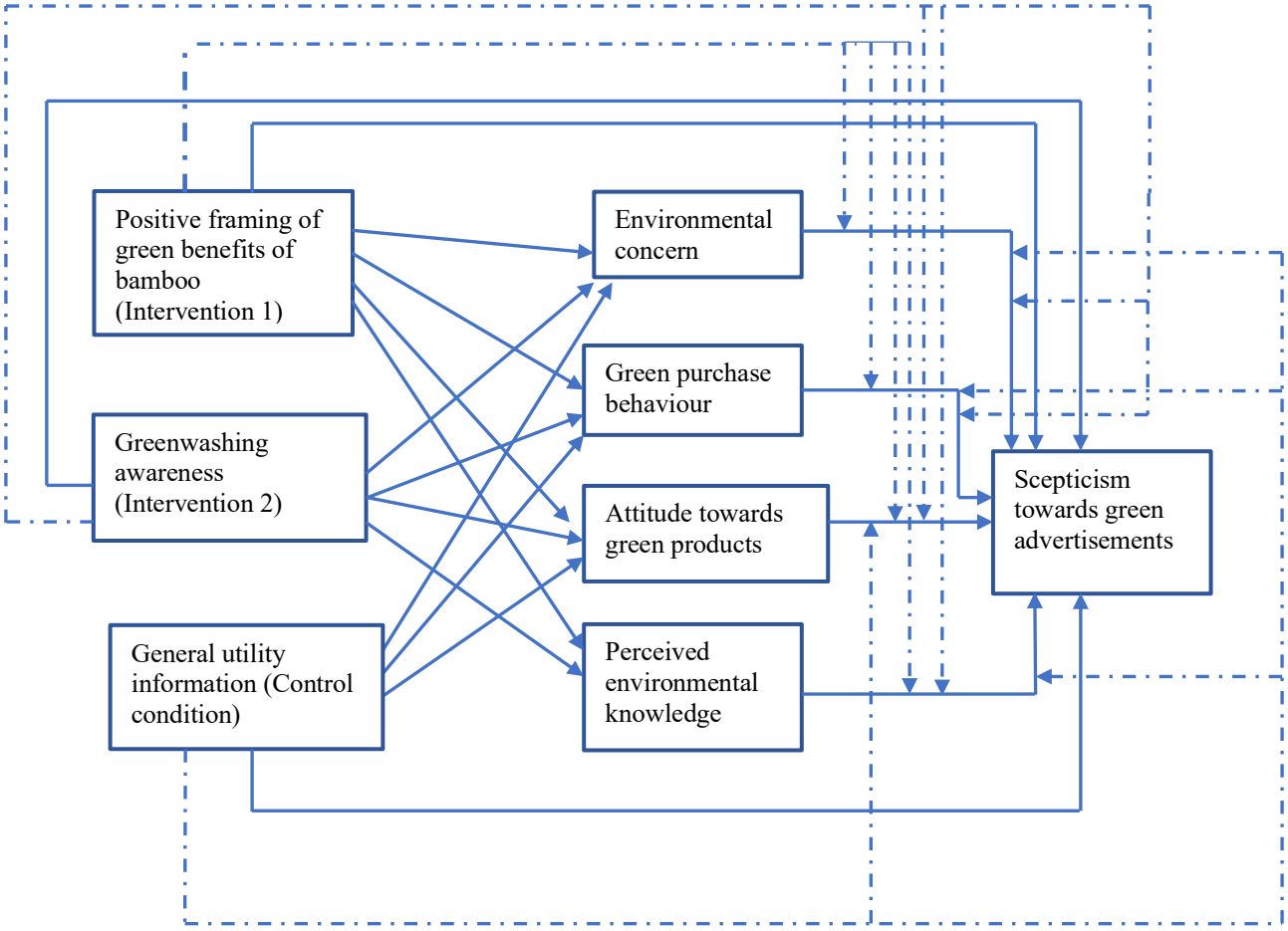


Figure 1: Conceptual Framework

4.2 Experimental design

In this dissertation, I've adopted an experimental approach to test the three different conditions that might affect consumers' scepticism towards green advertisements.

Participants were randomly assigned to one of the three conditions: intervention 1 ("positive framing of green benefits of bamboo"), intervention 2 ("greenwashing awareness information") or the control condition ("general product utility information"). Drawing a comparison between test and control conditions helps in examining the extent of influence. Furthermore, this study follows a post-test only approach which implies that all the variables are tested only after the participants are exposed to the test conditions. There are two types of test conditions and one control condition studied in this research. The test conditions are presented with a carefully designed information along with similar visuals and the control

condition is exposed to a more neutral advertisement. This experimental design allows to capture the possible effect of intervention on environmental concern, attitude towards green products, green purchase behaviour and perceived environmental knowledge and scepticism towards green advertisements.

After the experimental part of the study, the rest of the data was collected using an online survey method. Survey was the most suitable method of data collection for this research because it allows to reach a large number of participants, free of cost and is also effective for testing relationship between different variables (Saunders et al., 2009). The survey was developed on Qualitrics and circulated online (i.e on WhatsApp and Instagram) to achieve a sufficient sample size. The questions related to all the independent and dependent variables were close ended questions and the demographic questions like age and country of residence were open ended. Before circulating the survey, a pilot test was conducted across 5 participants via cognitive interviews to make sure any confusion or inaccuracies in the survey are resolved.

4.3 Procedure

The online experiment and survey were split into 8 sections. The first section contained the respondent consent form. In the beginning of the survey, participants were informed that taking part in the survey was completely voluntary.

In this section, the participants were informed that the survey will be anonymous and the data collected will only be used for the purpose of this dissertation.

In the next section, participants were exposed to the experimental conditions. This part contained three conditions and each respondent was presented with one of them randomly. The three conditions were:

1. Intervention 1: Positive framing of green benefits of bamboo – In this, the participants were given information about the positive aspects of bamboo like its rapid growth rate, ability to absorb CO_2 and how it can be a sustainable alternative to plastic.
2. Intervention 2: Greenwashing awareness information – In this, the participants were given information about what is greenwashing in advertisements and how to differentiate between a genuine and a misleading green advertisement with respect to bamboo products.

3. Control condition: General product utility information – In this, the participants were provided with a brief about the multipurpose utility of bamboo that was framed neutrally.

Along with each of the intervention conditions, the participants were presented with a sample advertisement. The positive framing condition was presented to the participants with an advertisement of bamboo utensils stating the benefits using it. The second intervention condition was combined with an advertisement of a bamboo wardrobe with claims developed using greenwashing language. The control condition was presented with a genuine advertisement of a bamboo sipper and had claims related to reusability and strength of the product. All the products in the advertisements were not displayed with a price tag or a brand name as this could potentially influence their answers. Detailed information about the survey is present in the appendix section.

All the participants had to answer the same set of questions irrespective of the advertisement they received. The third section of the survey contained five questions related to green advertisement scepticism. All the questions presented in this section were borrowed from scepticism set of measures designed by Mohr et al. (1998).

The fourth section included questions to measure the environmental concern of the participants and it had five questions adopted from the study conducted by Dunlap and Van Liere (2000). The fifth section contained five questions to test the participants' attitude towards bamboo products. The sixth section consisted of 6 questions to measure the green purchase behaviour focused on bamboo products.

The seventh section had four statements to capture the participants' perceived environmental knowledge. The final section of the survey had demographic questions like age, country of residence and gender.

All the variables tested in the survey were measured using a 5-Point Likert scale ranging from low to high. In the scale, 1 was associated with "Strongly Disagree" and 5 with "Strongly Agree". This scale was used to measure the level of agreement with the statements and as it has a good reliability (Joshi et al., 2015). Although there are various advantages of using a Likert scale, but there are few disadvantages. A major issue with this scale is closed format in this scale, potentially limiting participants to express their full views on the topic and making

information to be distorted (Li, 2013). It can also lead to central tendency bias, in which the participants avoid choosing extreme points of the scale in their responses (Douven, 2018). Ensuring the validity of the scale by critically examining the questions/statements before presenting it in the questionnaire can help in tackling these disadvantages.

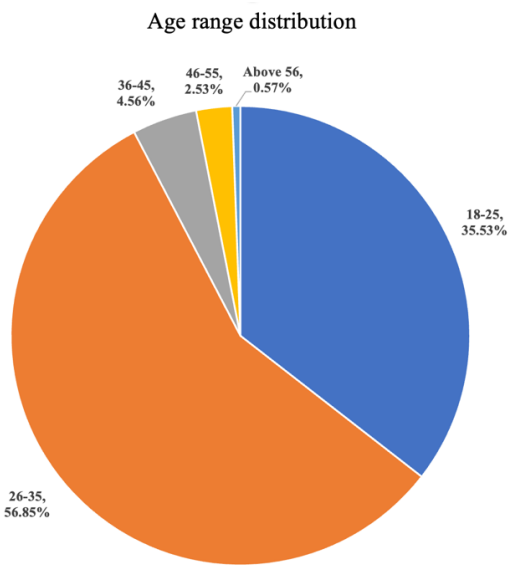
5. DATA ANALYSIS:

5.1 Sample

I've used non-probability sampling technique called 'snowball sampling'. This was done on voluntary basis. While voluntary response facilitated the participants to opt out of the study depending on their preferences, implementation of snowball sampling urged the participants to share the survey further into their family, friends and other social networks.

A total of 253 responses were collected through the online survey, out of which 200 responses had a 100% completion rate. The incomplete responses were filtered out and only the usable ones were retained. In the next stage, participants who did not provide consent or had a response time of less than 60 seconds were removed. Overall, 197 complete and viable responses were used for the analysis. All the cleaning operations were performed using Microsoft Excel, the unnecessary columns were removed and the data was converted to CSV format.

For the demographic variable age, the distribution was such that the highest percentage of participants were in the range '26-35' followed by '18-25' range. The age range '36-45' and '46-55' had a participation percentage between 2.5-4.5. Age above 56 had the lowest participation percentage (see Figure 2).



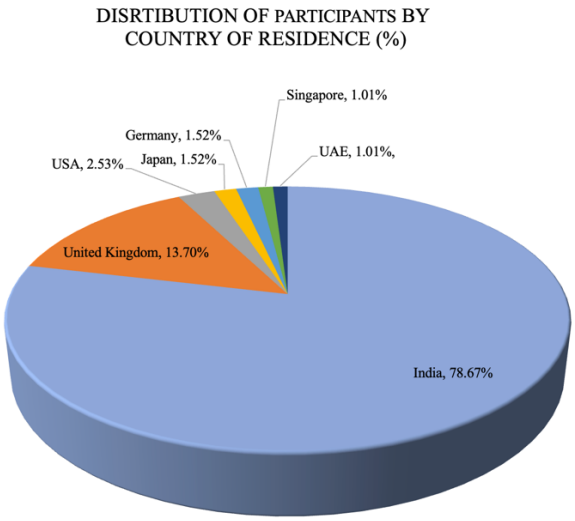


Figure 2: Age distribution of participants Figure 3: Country wise distribution of participants

Highest number of participants were residents of India with a percentage of 78.67% followed by United Kingdom with 13.70%. The third highest participation was from USA with 2.53%. Japan and Germany showed equal participation. Singapore and UAE had the lowest participant percentage (see Figure 3).

Moreover, 53.81% of the participants were females and 45.18% were males. The distribution is shown in the Figure 4 below.

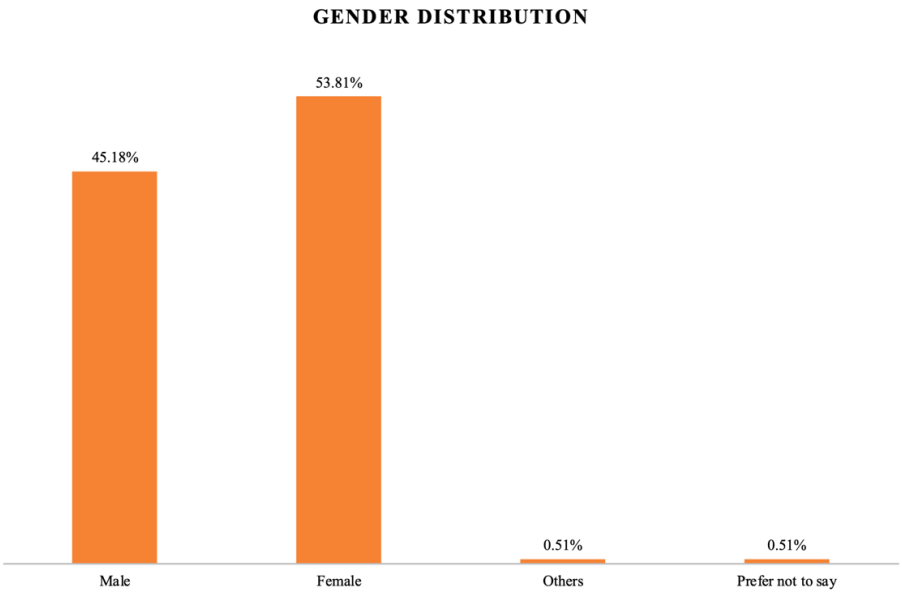


Figure 4: Gender distribution of participants

Additionally, the participants were also asked, about their eco-friendly products purchase pattern in the past 6 months. It was observed that 61.92% of the participants said that they have purchased green products several times while 8.12% said they have not. The absolute numbers for these categories are provided in the appendix.

5.2 Descriptive Statistics

All the analysis was carried out using R studio and a 95% confidence interval was assumed for the purpose of this study. This implies that if p-value was found to be <0.05 the relationship between the variables was concluded as significant.

From the table below it can be observed that the participants showed moderate scepticism towards green advertisements since the mean value was 3.41. However, they showed a higher level of environmental concern with mean of 4.09 and an optimistic outlook towards green products (mean=3.71). Perceived environmental knowledge and green purchase behaviour were also observed to be moderately high. The data also presented a variation in participants' attitudes and behaviours which is indicated by the standard deviation and variance values ranging from 0.58-0.75.

Variables	Mean	Median	SD	Variance
Scepticism towards green advertisements	3.41	3.60	0.58	0.34
Environmental concern	4.09	4.20	0.58	0.34
Attitude towards green products	3.71	3.80	0.75	0.56
Perceived environmental knowledge	3.56	3.75	0.67	0.45
Green purchase behaviour	3.66	3.80	0.68	0.46

Table 1: Overall statistics of the variables

Further, it is important to examine the internal consistency of the variables to assess the reliability of the scales and this wass done through Cronbach alpha values. It is generally preferred that the constructs have a Cronbach alpha value greater than 0.7 as this indicates higher internal consistency between the items. The analysis showed that perceived environmental knowledge, green purchase behaviour had an alpha value greater than 0.7 and

attitude towards green products had a value of 0.9, environmental concern and scepticism towards green advertisements had an alpha value less than 0.7.

Constructs	Cronbach Alpha
Attitude towards green products	0.90
Green purchase behaviour	0.79
Perceived environmental knowledge	0.76
Scepticism towards green advertisements	0.58
Environmental concern	0.47

Table 2: Cronbach Alpha values for each construct

To evaluate the validity of measurement framework, factor loadings obtained through confirmatory factor analysis (CFA) were assessed. These factor loadings indicate the relationship of each item with the underlying construct. Higher factor loadings represent higher item-construct correlation. The lowest factor values were observed for 2nd ,4th item of environmental concern and 2nd, 5th item of scepticism towards green advertisements (refer to Appendix). Inter item correlation was checked to ensure construct validity and the values for all constructs were found to be between 0.20 and 0.43 indicating reliability of all the measures.

5.3. H1: ANOVA

To test the first hypothesis, mean, SD and standard error of the three conditions were calculated for the variable environmental concern.

Conditions	No.of participants(N)	Mean	SD	Std.Error	CI Lower	CI Upper	Min	Max
Positive framing	73	4.07	0.638	0.074	3.92	4.22	1	5

Greenwashing awareness	63	4.14	0.531	0.066	4.00	4.27	1	5
Control condition	61	4.08	0.564	0.072	3.93	4.22	1	5

Table 3: Summary statistics of environmental concern across three conditions

From the table above it can be observed that the mean for all three conditions is somewhat similar. The greenwashing awareness condition has a slightly higher mean as compared to the positive framing and control condition possibly because of the relevance of green advertisement information with increased environmental concern. Further, to check the differences between the conditions, I've computed an analysis of variance (ANOVA).

Conditions	**Sum of squares**	**df**	**Mean square**	**F**	**Sig.**	**Coefficient (Eta-squared)**
Between Groups	0.21	2	0.090	0.267	0.765	0.002
Within Groups	65.85	194	0.339	NA	NA	NA
Total	66.03	196	NA	NA	NA	NA

Table 4: Results of ANOVA analysis across three conditions for environmental concern

The results of ANOVA suggested that the difference between the three conditions was not statistically significant (p=0.765). This indicates that the three conditions had a negligible impact on the participants' environmental concern. Hence, H1 is not proven since the variance between the groups is marginally small and statistically insignificant.

5.4 H2: ANOVA

Conditions	No.of participants(N)	Mean	SD	Std.Error	CI Lower	CI Upper	Min	Max
Positive framing	73	3.75	0.692	0.080	3.59	3.91	1	5
Greenwashing awareness	63	3.4	0.572	0.072	3.26	3.54	1	5
Control condition	61	3.81	0.693	0.088	3.64	3.99	1	5

Table 5: Summary statistics of green purchase behaviour across three conditions

Conditions	Sum of squares	df	Mean square	F	Sig.	Coefficient (Eta-squared)
Between Groups	158.14	2	79.072	7.344	0.001	0.070
Within Groups	2088.77	194	10.766	NA	NA	NA
Total	2246.92	196	NA	NA	NA	NA

Table 6: Results of ANOVA analysis across three conditions for green purchase behaviour

From Table 5 it can be observed that control condition has a slightly higher values as compared to the positive framing and greenwashing awareness condition contradicting the hypothesis H2. The results of ANOVA showed this difference to be statistically significant. I've used the Turkey's Honest Significant Difference (HSD) test as a post-hoc analysis test to identify which conditions specifically differ from each other.

Conditions	Mean Difference	Sig.	CI Lower	CI Upper
Positive framing - Greenwashing awareness	-1.76	0.005	-3.09	-0.43
Control condition - Positive framing	0.29	0.859	-1.04	1.64
Control condition - Greenwashing awareness	0.67	0.001	0.67	3.45

Table 7: Results of Turkey HSD for green purchase behaviour

The results of the test indicate that greenwashing awareness is significantly different from positive framing and the control condition indicating a stronger effect while positive framing and control condition don't have a significant difference. Hence H2 is partially proven.

5.5 H3: ANOVA

Conditions	No.of participants(N)	Mean	SD	Std.Error	CI Lower	CI Upper	Min	Max
Positive framing	73	3.82	0.713	0.083	3.65	3.99	1	5
Greenwashing awareness	63	3.46	0.745	0.093	3.27	3.64	1	5
Control condition	61	3.83	0.735	0.094	3.64	4.01	1	5

Table 8: Summary statistics of attitude towards green products across three conditions

Conditions	Sum of squares	df	Mean square	F	Sig.	Coefficient (Eta-squared)
Between Groups	142.95	2	71.479	5.357	0.005	0.052
Within Groups	2588.13	194	13.340	NA	NA	NA
Total	2731.09	196	NA	NA	NA	NA

Table 9: Results of ANOVA analysis across three conditions for attitude towards green products

From Table 8 it can be observed that control and positive framing condition have a slightly higher mean as compared to greenwashing awareness condition for attitude towards green advertisements. Table 9, presents the results of ANOVA and p-value is less than 0.05 making it statistically significant. I've also conducted a post-hoc test and the results indicate that H3 is partially proven since only greenwashing awareness has a greater impact on attitude towards green products.

Conditions	Mean Difference	Sig.	CI Lower	CI Upper
Positive framing - Greenwashing awareness	-1.81	0.012	-3.29	-0.32
Control condition - Positive framing	0.03	0.998	-1.46	1.53
Control condition - Greenwashing awareness	1.84	0.014	0.29	3.39

Table 10: Results of Turkey HSD for attitude towards green products

5.6 H4: ANOVA

Conditions	No.of participants(N)	Mean	SD	Std.Error	CI Lower	CI Upper	Min	Max
Positive framing	73	3.53	0.761	0.089	3.35	3.71	1	5
Greenwashing awareness	63	3.52	0.520	0.065	3.39	3.65	1	5
Control condition	61	3.63	0.702	0.089	3.45	3.81	1	5

Table 11: Summary statistics of perceived environmental knowledge across three conditions

From the table above it can be observed that the mean for all the three conditions has similar values for perceived environmental knowledge. The results of ANOVA confirmed that there is no statistically significant difference between the three conditions (p=0.582); hence H4 is rejected.

Conditions	Sum of squares	df	Mean square	F	Sig.	Coefficient (Eta-squared)
Between Groups	7.87	2	3.935	0.541	0.582	0.005
Within Groups	1408.84	194	7.262	NA	NA	NA
Total	1416.72	196	NA	NA	NA	NA

Table 12: Results of ANOVA analysis across three conditions for perceived environmental knowledge

5.7 H5: ANOVA

Conditions	No.of participants(N)	Mean	SD	Std.Error	CI Lower	CI Upper	Min	Max
Positive framing	73	3.27	0.626	0.073	3.12	3.41	1	5
Greenwashing awareness	63	3.63	0.527	0.066	3.49	3.76	1	5
Control condition	61	3.36	0.520	0.066	3.23	3.50	1	5

Table 13: Summary statistics of scepticism towards green advertisements across three conditions

Conditions	Sum of squares	df	Mean square	F	Sig.	Coefficient (Eta-squared)
Between Groups	112.83	2	56.415	7.095	0.001	0.068
Within Groups	1542.43	194	7.950	NA	NA	NA
Total	1655.26	196	NA	NA	NA	NA

Table 14: Results of ANOVA analysis across three conditions for scepticism towards green advertisements

From the Table 13 it can be observed that greenwashing awareness condition has a higher mean value compared to control and positive framing condition for scepticism towards green advertisements. Table 14, showed that the results of ANOVA have a statistically significant difference. I've conducted the post-hoc test and confirmed the difference between the three conditions separately and the results indicate that H5 is only partially proven.

Conditions	Mean Difference	Sig.	CI Lower	CI Upper
Positive framing - Greenwashing awareness	1.78	0.001	0.63	2.92
Control condition - Positive framing	0.47	0.593	-0.67	1.63
Control condition - Greenwashing awareness	1.30	0.028	-2.50	-0.11

Table 15: Results of Turkey HSD for scepticism towards green advertisements

5.8. H6: Regression analysis

To analyse the moderating impact of the interventions and control condition, a moderating regression analysis was performed. Checks for assumptions of regression like normality, linearity and multicollinearity was performed. Shapiro-Wilk normality test was performed to test normality and data was found to be non-normal ($p = 0.0004$). Further the skewness was checked and the value suggests that the data is mildly negatively skewed since the value was between -0.5 and -1. However, since the skewness is negligible the data can be assumed to be close to normality. Linearity was tested using the plots of residuals and fitted values of the model and it suggested that the assumption of linearity was met. Further, multicollinearity was tested using Variance Inflation Factor (VIF) of the model. All the variables displayed a value between 1-3 indicating moderate correlation, hence satisfying the assumption.

Coefficients	Estimate	St.Error	t-value	Pr(>|t|)
Intercept	2.58415	0.59726	4.327	2.46e-05
Environmental concern-Positive framing	0.10824	0.14914	-0.726	0.46889

Attitude towards green products- Positive framing	0.11839	0.16102	0.735	0.46312
Green purchase behaviour- Positive framing	0.02278	0.18130	0.126	0.90013
Perceived environmental knowledge- Positive framing	0.02215	0.14121	0.157	0.87554

Table 16: Results of MRA for Positive framing of benefits of bamboo

Moderation regression analysis (MRA) was conducted three times in order to prove the hypotheses H6a, H6b and H6c. The first model tested the moderating impact of positive framing of green benefits of bamboo on the IVs which in turn impacted the DV. The model explains 12.92% (R^2 =0.1292) of variance in scepticism towards green advertisements. The results highlighted that the intervention had a positive interaction with attitude towards green products, green purchase behaviour, perceived environmental knowledge and a negative interaction with environmental concern. However, the influence on scepticism towards was not statistically significant for all the interactions. Hence there is no sufficient evidence to prove the hypothesis H6a.

Coefficients	**Estimate**	**St.Error**	**t-value**	**Pr(>|t|)**
Intercept	2.27452	0.44990	5.056	1.02e-06
Environmental concern- Greenwashing awareness	0.01834	0.15899	0.115	0.90827
Attitude towards green products- Greenwashing awareness	-0.13370	0.14215	-0.941	0.34813

Green purchase behaviour-Greenwashing awareness	0.06115	0.17549	0.348	0.72788
Perceived environmental knowledge-Greenwashing awareness	0.09421	0.16128	0.584	0.55984

Table 17: Results of MRA for greenwashing awareness

The second model tested the moderating impact of greenwashing awareness on IVs which in turn impacted the DV. The model explains 14.25% (R^2 =0.1425) of variance in scepticism towards green advertisements. The results highlighted that the intervention had a positive interaction with environmental concern, green purchase behaviour, perceived environmental knowledge and a negative interaction with attitude towards green products. However, the influence on scepticism was not statistically significant for all the interactions. Hence there is no sufficient evidence to prove the hypothesis H6b.

Coefficients	**Estimate**	**St.Error**	**t-value**	**Pr(>|t|)**
Intercept	2.38712	0.45018	5.303	3.2e-07
Environmental concern-Control condition	0.01697	0.16878	0.101	0.920033
Attitude towards green products-Control condition	0.09074	0.15544	0.584	0.560085
Green purchase behaviour-Control condition	0.04412	0.18104	0.244	0.807747

Perceived environmental knowledge-Control condition	-0.18337	0.16143	-1.136	0.257429

Table 18: Results of MRA for control condition

The third model tested the moderating impact of control condition on IVs which in turn impacted the DV. The model explains 10.43% (R^2 =0.1043) of variance in scepticism towards green advertisements. The results highlighted that the control condition had a positive interaction with environmental concern, green purchase behaviour, attitude towards green products and a negative interaction with perceived environmental knowledge. However, the influence on scepticism was not statistically significant for all the interactions. Hence there is no sufficient evidence to prove the hypothesis H6c.

6. DISCUSSION

6.1. General discussion

This dissertation focused on testing the impact of three different conditions such as positive framing of green benefits of bamboo, greenwashing awareness information and general product utility information on outcomes measures including environmental concern, attitude towards green products, perceived environmental knowledge, self-reported green purchase behaviour and green advertisement scepticism. Furthermore, this dissertation also explored the moderating role of each of these interventions on the relationship between independent variables (EC, ATGP, GPB, PEK) and dependent variable (SGA).

The hypothesis H1 stated that the consumers who were exposed to positive framing of green benefits of bamboo and greenwashing awareness information will have a higher influence on the consumers' environmental concern than those in the control condition. Analysis showed that, greenwashing awareness had a stronger influence than the control condition as well as the positive framing condition. However, there were no differences between positive framing and control condition. The results of H1 were not aligned with the result of the study conducted by Spence and Pidgeon (2010) which found that positively framed messages had a significant impact on participants' environmental concern in particular, climate change. Moreover, it is

also not in line with the study conducted by Meng et al. (2023) in which they found that exposing the participants to factual or awareness information can have a positive impact on their pro environmental behaviour like environmental concern. This deviation in results from that found in previous studies could have occurred because environmental concern has become a deeply rooted subject in recent times where greenwashing awareness might drive environmental concern. Furthermore, emotions also play a major role in shaping environmental concern because of the continued exposure to environmental disasters. Hence providing an awareness information on greenwashing had slightly higher impact on participants' EC. The insignificant results shows that the increased concern existed regardless of any additional intervention.

The hypotheses H2 states that the consumers who were exposed to positive framing of benefits of bamboo and greenwashing awareness will have a higher influence on self-reported green purchase behaviour than those in the control condition. The result of analysis suggests that greenwashing awareness had a greater influence on participants' green purchase behaviour. However, there were no differences between positive framing and control condition, hence, the hypothesis is partially proven. The reason for greenwashing awareness being significantly influential on consumers' green purchase behaviour could be that, the factual information and the advertisement provided might have instilled a sense of confidence in their decision-making process which then led to a positive outcome. However, the absence of a considerable effect for positive framing may highlight that the participants of that condition found the information to be exaggerated due to increasing awareness regarding greenwashing practices hence having a lesser impact.

The hypotheses H3 states that the consumers who were exposed to positive framing of benefits of bamboo and greenwashing awareness will have a higher influence on attitude towards green products than those in the control condition. It was observed that greenwashing awareness had a greater influence on attitude towards green products than the positive framing and control conditions. Additionally, the control and positive framing conditions had a similar influence and hence it can be said that the hypothesis is partially proven. This finding challenges the outcome of the study by Xu and Jeong (2019) which checked the impact of attribute and benefit-based message framing on consumers' behaviours and attitudes towards green restaurants. They found the benefit based or positive framing of messages to be more persuasive in shaping consumers' attitude towards green restaurants. Greenwashing awareness

information might have given a clarity to the participants which strengthened their attitudes and hence had a significant impact. Interestingly, although greenwashing awareness had a lower mean compared to positive framing and control condition, it had a stronger significance in the post-hoc tests suggesting that information that creates awareness is more successful in moulding attitudes than mere positive information. Moreover, positive framing which is generally very convincing, might have come across as superficial indicating that participants' attitude towards green products was already strong enough to be influenced by any additional information.

The hypothesis H4 states that the consumers who were exposed to positive framing of benefits of bamboo and greenwashing awareness will have a higher influence on consumers' perceived environmental knowledge than those in the control condition. It was observed that, control condition had a higher influence on perceived environmental knowledge, than both positive framing and greenwashing awareness. This finding differs from the results of the study by Sheng et al. (2023) in which they found that behavioural impact messages like awareness information or benefit framing of information positively influences participants' environmental knowledge. The unexpected outcome for H4 was probably encountered due to the interventions being too complex or not captivating to enhance the participants' environmental knowledge. Further, the lower means for the two intervention conditions might indicate a situation of information overload where the participants failed to absorb the information effectively. Results of ANOVA suggest that hypotheses cannot be proven and this indicates that the participants in the control condition possessed a higher knowledge irrespective of any additional information.

The hypotheses H5 states that the consumers who were exposed to positive framing of benefits of bamboo and greenwashing awareness will have a higher influence on scepticism towards green advertisements compared to control condition. The findings show that greenwashing awareness has a significant greater impact than control and positive framing conditions thereby proving the hypothesis partially. The results for H5 indicates that just framing the benefits of bamboo positively might be influential but might not be enough to reduce the scepticism if the concerns or uncertainties are not addressed clearly. This accentuates the importance of the quality and relevance of information provided to the consumers intended for reducing scepticism.

Further, the hypotheses H6a, H6b and H6c states that positive framing of green benefits of bamboo, greenwashing awareness and control condition have a positive moderating impact on the relationship between the independent variables (EC, GPB, ATGP, PEK) and dependent variable (SGA). The results from the analysis did not find any evidence proving the moderating impact of the interventions or the control condition on the association between independent and dependent variable. This indicates that the relationship between IVs like environmental concern, green purchase behaviour, attitude towards green products and perceived environmental knowledge and scepticism towards green advertisements is rather a direct and is not modified by the kind of information provided. The lack of moderating impact could imply that the information provided as interventions were not adequate enough to alter the established relationship. The strength of positive framing might have been limited because the intervention was not directly engaging with particular beliefs of the participants. It could also suggest that individual differences like cognitive prejudices played a crucial role in influencing the relationship in case of greenwashing awareness. Further, the results of control condition indicates that the absence of any new convincing information might have led the participants to rely on pre-existing knowledge while answering the questions. Additionally, it might also be worthy to note that providing more tailored or concentrated interventions that promptly engage with the existing perceptions and attitudes of the participants could potentially help in getting better response.

6.2 Limitations and future research

The present research has few limitations that need to be acknowledged while interpreting the results. The smaller sample size that was obtained for this dissertation, might not have been sufficient to compute more complex interplay between the interventions and the variables. Future research should focus on conducting a large-scale study with diverse group participants such as to increase the generalisability of the results. Moreover, the three interventions used in this dissertation were potentially limited when it comes to their impact on key outcome measures. Future studies could make use of more interactive or tailored interventions which have proven to be effective in shaping opinions and behaviours of the consumers like nudging or pre bunking. Another limitation is that the study was specific to bamboo products which can reduce the generalisability of the outcomes. Giving the context of a different product or category can generate different degree of interactions and responsiveness. Studies in the future should experiment with a wider range of products or topics to determine if the results are valid

across other contexts. The present study also tested subjective and self-reported measures which may differ based on different biases that people have. Hence future studies can incorporate objective measures to provide a comprehensive analysis of the constructs such a field-controlled trials on actual purchase data.

6.3 Practical implications

The findings of this study have several significant implications for marketers and policy makers. First, it provides insights for companies involved in education, behaviour change programs and information distribution. The different outcomes obtained due to the interventions implies that, presentation of any information can have a considerable impact on its effectiveness. Hence the companies advertising eco-friendly products specially bamboo products should consider how would they add the content and how would they frame of the information in order to address the specific requirements and traits of the green consumers because additional new information might not lead to behavioural change. Secondly, the results also suggest that the marketers can make use of factual information or information that creates greenwashing awareness to influence the consumers' purchase behaviour and also reduce scepticism towards green advertisements. Additionally, for policymakers, this study outlines the need to avoid overselling a green product by providing too much information instead use proofs to make consumers aware of the false claims to drive engagement. The absence of notable moderating effects implies that although, information can affect the outcomes it might not be successful in modifying the cognitive beliefs.

7.CONCLUSION

To conclude, in this dissertation, I checked the impact of interventions like positive framing of green benefits of bamboo, greenwashing awareness and general product utility information (control condition) on each of the independent variables (environmental concern, attitude towards green products, perceived environmental knowledge, green purchase behaviour) and dependent variable (scepticism towards green products) in context of bamboo products. I also checked for the existence of any moderation influence of these conditions on the relationship between the independent and dependent variable.

Primary data was collected through an online survey and the analysis was performed using ANOVA tests, post-hoc tests and regression analysis. ANOVA and Turkey HSD tests were

conducted to check the impact of the three conditions on different variables and moderation regression analysis was performed to examine the moderating effects. The results partially supported the hypotheses that, providing awareness or factual information about green products (bamboo) to the consumers can influence their purchase behaviour, attitude towards green products and also scepticism towards green advertisements. However, effectiveness of the intervention which provided the benefits of bamboo was limited by aspects like relevance of the content and perceived reliability. The lack of moderating impact of the interventions indicates the demand for inspection of underlying mechanisms.

Since the sample size was limited which means that there could have been some biases in the results hence reducing the generalisability of the study. Future researches can aim to explore larger samples and could also look into diverse contexts. Regardless of the limitations, the outcomes of this dissertation provide insights about the influence of different types of interventions on consumers' behaviour and attitude.

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9. Appendix

1. Absolute number of participants (Age):

Age range	Number of participants
18-25	70
26-35	112
36-45	9
46-55	5
56+	1

2. Absolute number of participants (Gender):

Gender	Number of participants
Male	89
Female	106
Others	1
Prefer not to say	1

3. Absolute number of participants (Country of residence):

Country	Number of participants
India	155
United Kingdom	27
USA	5
Germany	3
Japan	3
Singapore	2
UAE	2

4. Results of Confirmatory Factor Analysis (CFA):

Latent Variables	Estimate	Std.Error	Std.lv
Environmental Concern			
Envcon_1	1.000		0. 0.551
Envcon_2	0.258	0.190	0.142
Envcon_3	0.929	0.171	0.512
Envcon_4	0.272	0.204	0.150
Envcon_5	0.798	0.161	0.440
Green Advertisement Scepticism			
Scep_1	1.000		0.653
Scep_2	0.325	0.123	0.212
Scep_3	0.984	0.191	0.642
Scep_4	0.716	0.143	0.467
Scep_5	0.230	0.133	0.150
Attitude towards green products			
Atgp_1	1.000		0.620
Atgp_2	1.103	0.088	0.684
Atgp_3	1.244	0.095	0.771
Atgp_4	1.259	0.101	0.780
Atgp_5	1.126	0.105	0.698
Green purchase behaviour			
greenPB_1	1.000		0.714
greenPB _2	0.942	0.101	0.672
greenPB _3	0.832	0.094	0.594
greenPB _4	0.615	0.091	0.439
greenPB _5	0.830	0.111	0.593
Perceived environmental knowledge			
Pek_1	1.000		0.522
Pek_2	1.380	0.173	0.721
Pek_3	1.227	0.165	0.641
Pek_4	0.913	0.141	0.477

5. Inter item correlation:

Constructs	Values
Environmental concern	0.1755
Green purchase behaviour	0.4352
Attitude towards green products	0.4352
Perceived environmental knowledge	0.4461
Scepticism towards green advertisements	0.2226

Ethics form

Internal research ethics application form

For module LUBS5579 covered by University of Leeds ethical approval reference AREA 17-055.

Student ID	201794129
Your name	Karkala Priya Kamath
Degree Programme	MSc Business Analytics and Decision Sciences
Provisional title/ topic area	Eco-Friendly or Eco-fraud? A Comparative Study of GenZ and Millennials' skepticism towards Green Advertising on Social Media.
Name of dissertation supervisor	Vedran Lesic

Are you planning to conduct fieldwork with (data on) human participants for your dissertation?	Please tick the relevant box
Yes (This includes online research methods and secondary data analysis).	✓
No, I am conducting library based research or content/ media analysis only.	

If you ticked 'no' you do not need to take further action in respect of ethical approval. Please proceed to the declarations on page 8 and 9.

If you ticked 'yes' you need to complete the rest of this form.

You MUST submit discuss your research design and the ethical issues it raises with your dissertation supervisor and receive their signed approval **before you approach any participants or collect any data**.

You MUST attach a copy of your research proposal to this form.

You MUST include a copy of your ethics form (signed by your supervisor), together with your research proposal, as an appendix to your final dissertation submission.

INTERNAL RESEARCH ETHICS APPLICATION
Part A: Compliance with the module's block ethical approval

Ethical review is required for all research involving human participants, including research undertaken by students within a taught student module. Further details of the University of Leeds ethical review requirements are provided in the *Research Ethics Policy* available at: http://ris.leeds.ac.uk/ResearchEthicsPolicies and at www.leeds.ac.uk/ethics.

1. Will your dissertation involve any of the following?	Yes	No
New data collected by administering questionnaires/interviews for quantitative analysis	✓	
New data collected by qualitative methods		✓
New data collected from observing individuals or populations		✓
Working with aggregated or population data		✓
Using already published data or data in the public domain		✓
Any other research methodology, please specify:		✓

2. Will any of the participants be from any of the following groups? (Tick as appropriate)	Yes	No
Children under 16		✓
Adults with learning disabilities		✓
Adults with other forms of mental incapacity or mental illness		✓
Adults in emergency situations		✓
Prisoners or young offenders		✓
Prisoners or young offenders		✓
Those who could be considered to have a particularly dependent relationship with the investigator, e.g. members of staff, students		✓
Other vulnerable groups, please specify:		✓

3. Will the project/dissertation/fieldwork involve any of the following: (You may select more than one)	Yes	No
Patients and users of the NHS (including NHS patients treated under contracts with private sector)		✓

Individuals identified as potential participants because of their status as relatives or carers of patients and users of the NHS		✓
The use of, or potential access to, NHS premises or facilities		✓
NHS staff - recruited as potential research participants by virtue of their professional role		✓
A prison or a young offender institution in England and Wales (and is health related)		✓

If you have answered 'yes' to ANY of the above questions in 2 or 3 then you will need to apply for full ethical review, a faculty committee level process. This can take up to 6-8 weeks, so it is important that you consult further with your supervisor for guidance with this application as soon as possible. Please now complete and sign the final page of this document. The application form for full ethical review and further information about the process are available at http://ris.leeds.ac.uk/uolethicsapplication.

If you answered 'no' to ALL of the questions in sections 2 and 3 please continue to part B.

INTERNAL RESEARCH ETHICS APPLICATION
Part B: Ethical considerations within block ethical approval

4. Will the research touch on sensitive topics or raise other challenges?	Yes	No
Will the study require the cooperation of a gatekeeper for initial access to groups or individuals who are taking part in the study (eg students at school, members of self-help groups, residents of a nursing home)?		✓
Will participants be taking part in the research without their knowledge and consent (eg covert observation of people in non-public places)?		✓
Will the study involve discussion of sensitive topics (eg sexual activity, drug use)?		✓
Could the study induce psychological stress or anxiety or cause harm or have negative consequences beyond the risks encountered in normal life?		✓
Are there any potential conflicts of interest?		✓
Does any relationship exist between the researcher(s) and the participant(s), other than that required by the activities associated with the project (e.g., fellow students, staff, etc)?		✓
Does the research involve any risks to the researchers themselves, or individuals not directly involved in the research?		✓

If you have answered 'yes' to any of the questions in (5), please describe the ethical issues raised and your plans to resolve them on a separate page. Agree this with your supervisor and submit it with this form. Again, you MAY be referred for light touch or full ethical review.

5. International Research Does your research involve participants outside of the UK?	Yes	No
Are any of your research participants located outside of the UK, e.g., will you be gathering data through Skype interviews with participants located overseas?	✓	
Will any of the fieldwork or research require you to travel outside of the UK to collect data?		✓

If you have answered 'yes' to either part of question (5), please describe the ethical issues raised with: gaining consent and gathering data from participants located overseas, securely storing and transferring data from the field back to the UK, any cultural issues that may be relevant. Please outline your plans to resolve this on a separate page and ensure that you have completed a risk assessment form. Agree this with your supervisor and submit it with this form.

You MAY be referred for light touch or full ethical review if you are unable to demonstrate that you have resolved the ethical issues relating to international research.

6. Personal safety Where will any fieldwork/ interviews/ focus groups take place?	Yes	No
At the university or other public place (please specify below).		✓
At my home address		✓
At the research subject's home address		✓
Some other location (please specify below).		✓

If you conduct fieldwork anywhere except at the university or other public place you need to review security issues with your supervisor and have them confirmed by the Module Leader who may refer you for light touch or full ethical review. Write a brief statement indicating any security/personal safety issues arising for you and/or for your participants, explaining how these will be managed. Agree this with your supervisor and submit it with this form.

Please note that conducting fieldwork at the research subject's home address will require strong justification and is generally not encouraged.

A risk assessment is required before any data is gathered for any dissertation project, please view the Health and Safety advice on the module's Minerva pages.

7. Anonymity	Yes	No
Is there any potential for data to be traced back to individuals or organisations, for instance because it has been unanonymised or anonymised in such a way that there remains risk (eg highlighting people's positions within an organisation, which may reveal them).		✓

If you have answered 'yes' to question 7, please discuss this further with your supervisor. You need to provide a strong justification for this decision on a separate sheet. **This application will need to be reviewed by the dissertation Module Leader and may require a full ethical review.**

8. Data management issues

Will the research involve any of the following activities at any stage (including identification of potential research participants)?		Yes	No
Examination of personal records by those who would not normally have access			✓
Sharing data with other organisations			✓
Use of personal addresses, postcodes, faxes, e-mails or telephone numbers			✓
Publication of direct quotations from respondents			✓
Publication of data that might allow identification of individuals to be identified			✓
Use of audio/visual recording devices			✓
Storage of personal data on any of the following:			
	FLASH memory or other portable storage devices		✓
	Home or other personal computers		✓
	Private company computers		✓
	Laptop computers		✓

If you have answered 'yes' to any of the questions under 8, you must ensure that you follow the University of Leeds Information Protection Policy: http://www.leeds.ac.uk/informationsecurity and the Research Data Management Policy: http://library.leeds.ac.uk/research-data-policies#activate-tab1_university_research_data_policy.

You are obliged to provide a copy of your anonymised data to your supervisor for their records and to destroy other copies of your data when your degree has been confirmed.

Dissertation Research Ethical Approval: Declaration

For students	Please tick as appropriate
Option 1: I **will NOT** conduct fieldwork with (data on) human participants for my dissertation.	
Option 2: I **will** conduct fieldwork with (data on) human participants for my dissertation.	✓

For **options 1 and 2** - I confirm that:

The research ethics form is accurate to the best of my knowledge.

I have consulted the University of Leeds Research Ethics Policy available at http://ris.leeds.ac.uk/ResearchEthicsPolicies.

I understand that ethical approval will only apply to the project I have outlined in this application and that I will need to re-apply, should my plans change substantially.

For **option 2** only:

I am aware of the University of Leeds protocols for ethical research, in particular in respect to protocols on **informed consent**, **verbal consent**, **reimbursement for participants and low risk observation**. If any are applicable to me, signing this form confirms that I will carry out my work in accordance with them. http://ris.leeds.ac.uk/PlanningResearch

Student's signature:
Date: 14/07/2024

For supervisors	Yes	No
No further action required		
I confirm that the dissertation is in line with the module's block ethical approval (Part A & question 8).	✓	
I have discussed the ethical issues arising from the research with the student and agree that these have been accurately and fully addressed.	✓	
I have reviewed the student's research proposal.	✓	
I have reviewed the student's Risk Assessment Form.		
Further actions required		
Refer to dissertation Module Leader for further review / discussion.		
The dissertation falls outside the module's block ethical approval and the student was advised to apply for full ethical review.		

Supervisor's signature: Vedran Lesic

Date: 23/07/2024