

## **Neurobranding for Sustainability: Measuring the Influence of Green Marketing Claims on Consumer Decision-Making**

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### **Abstract**

This study explores how eco-friendly branding influences consumer trust, loyalty, and purchase behavior by applying the lens of neurobranding — an approach that investigates subconscious and emotional consumer responses. While sustainability has become a core theme in modern business and marketing, much of the existing research relies on self-reported surveys, which often fail to capture the deeper, unconscious drivers of decision-making.

To address this gap, a quantitative survey design was employed with 370 respondents in Pakistan, using structural equation modeling (SEM) to test four hypotheses. The results show that eco-friendly branding claims significantly strengthen consumer trust, foster brand loyalty, and enhance purchase behavior. Importantly, subconscious consumer responses were found to play a mediating role, amplifying the effects of green marketing messages.

These findings highlight that consumer decisions are not shaped solely by rational judgments but are also strongly influenced by intuitive and emotional cues embedded in sustainable branding. The study advances the theoretical understanding of neurobranding in the sustainability domain and provides practical guidance for companies to design authentic, emotionally engaging, and trust-building green marketing strategies. Beyond its academic contribution, the research underscores the importance of aligning sustainability communication with genuine practices to avoid skepticism and strengthen long-term consumer relationships.

**Keyword:** Eco-friendly branding, Consumer trust, Brand loyalty, Purchase behavior, Neurobranding

## INTRODUCTION

Sustainability has been one of the themes that have come to characterise the present day business and consumer culture. The growing environmental consciousness in regard to climate change and pollution and depletion of resources has been motivating people to consult products and services that would conform to the principles of environmental responsibility. In its turn, companies are also increasingly being pressured to show their interest in sustainable practises, not only to fulfil the needs of the regulatory frameworks but also address the demands of the consumers. Marketing takes centre stage in this change, given that it gives the platform under which brands publicise environmentally conscious efforts like green packaging, efficient production or sourcing (Peattie and Crane, 2005; White and Habib and Hardisty, 2019). The validity and strength of these assertions, though, rely on their effectiveness in shaping consumer attitudes and their purchase decisions.

Branding has been widely known to be a strong tool in consumer behaviour formations. In addition to mere recognition, brands are emotionally linked to have an impact on the ways in which consumers understand value and make a buying decision. Although the classic methods of branding put more weight on the visible part (packaging, logos, and slogans) of the brand, consumer decision-making behaviour is often based on subconscious and emotionally-motivated reactions (Keller, 2013). This insight has resulted in creating neurobranding which is an effort that uses neuroscience to investigate the neurological and emotional manner in which consumers process stimuli pertaining to a brand (Plassmann, Ramsøy, and Milosavljevic, 2012). Neurobranding can produce that deeper level of data that might be missed in other methods of evaluation through more basic survey or self-reported means, by exploring responses at this deeper mental level.

Use of neurobranding combined with sustainable marketing provides a fresh horizon to both scholars and practitioners. Though research has been conducted on green marketing has helped to accumulate knowledge on consumer attitudes, the majority of researchers have explored the behaviour on a superficial level, through the preferences stated and the conscious intentions (Biswas and Roy, 2015). The less comprehended aspect of processing of eco-friendly claims is how they are processed unconsciously and how they affect such constructs like trust, loyalty, and readiness to buy. As a case in point, visual indicators, such as eco-labels, sustainable certifications, or earthy colour palettes, can cause automatic beneficial positive associations that consumers themselves might not be consciously aware of. It is important in understanding these dynamics given that companies that wish to establish real and sustainable consumer relationships in an ever-environmentally friendly market will need to explore it.

The field does not have enough empirical, quantitative research to connect neurobranding and sustainable consumption. Majority of the literature being used is based on subjective experiences or attitudinal questionnaires, which tend to have

biasness and social desirability biases (Auger and Devinney, 2007). A closer indication of the effectiveness of eco-friendly claims can be provided by quantitative means that quantify factual consumer reactions, whether of a neuroscience nature, like the EEG and eye-tracking, or a high-quality statistical analysis of the results of consumer surveys. This discrepancy makes the issue of studying the ways in which sustainability indicators embedded in branding strategies adjust into quantifiable consumer behaviour important in getting a more precise impression of their actual effects.

This study will seek to quantitatively determine the effectiveness of eco-friendly branding messages in driving consumer trust, loyalty and buying behaviour using the neurobranding concept. The research aims to find out whether sustainability messages result in significant consumer behaviour variation causes as compared to traditional brand claims by using a data-driven approach. Thus, the research will add to both the classroom and practise: theoretically, by expanding the concept of neurobranding to the sustainability area, and practically, by providing the companies with well-grounded strategies to develop successful green marketing campaigns. In the end, this study will aim to fill the knowledge gap between neuroscience-informed branding and sustainable consumption and offer some information that can help businesses better focus on being more responsible and effective in their brand communication.

### **Problem Statement**

Although the trend of sustainability in the marketing emphasis is really gaining momentum and there is an increasing realisation of the importance of sustainability branding by the consumers, an essential gap exists in how consumers comprehend branding eco-friendly product in a more sub-conscious context. Earlier research on green marketing has mostly been based on self-reported surveys and attitudinal scales, which, although effective, do not usually reflect the cognitive and emotional processes by which consumers choose (Auger and Devinney, 2007; Biswas and Roy, 2015). Customers can express their favourable views of the sustainable products, but the reality of purchasing attitude does not correspond to their intentions, which is also a well-known phenomenon in literature as the attitude-behaviour gap (Vermeir and Verbeke, 2006). In addition, although branding research has proved the role of trust, loyalty, and emotional attachment in defining consumer behaviour (Keller, 2013), not much is known about the impact of these forces when considered through the prism of neurobranding. Empirical studies on sustainability marketing that apply neurobranding research and involve quantitative analysis are rare, although the subconscious cues are important, according to neurobranding research, in decision making (Plassmann, Ramssoy, and Milosavljevic, 2012). This is an inconclusive situation, which poses a dilemma to both researchers and policy makers because businesses will make an error of adopting green branding programmes without understanding whether such claims have significant consequences on consumer confidence, loyalty, and buying decisions or not. Thus, the gap that the given study fills in is the lack of strong, quantitative evidence regarding the effects the claims of

environmentally friendly branding has on consumer decision-making evaluated on the levels of neurobranding.

### **Research Objectives**

To examine the influence of eco-friendly branding claims on consumer trust in sustainable products.

To investigate how green marketing messages affect consumer loyalty toward eco-conscious brands.

To analyze the impact of sustainability claims on consumer purchase behavior using a quantitative approach.

To explore the relationship between subconscious consumer responses and their decision-making in the context of green branding.

To provide empirical evidence on the effectiveness of neurobranding strategies in promoting sustainable consumption.

### **Research Questions**

How do eco-friendly branding claims influence consumer trust in sustainable products?

How do green marketing messages affect consumer loyalty toward environmentally responsible brands?

To what extent do eco-friendly claims impact consumer purchase behavior compared to conventional branding strategies?

How do subconscious consumer responses mediate the relationship between eco-friendly branding claims and consumer decision-making outcomes such as trust, loyalty, and purchase intention?

What empirical evidence can demonstrate the effectiveness of neurobranding strategies in promoting sustainable consumption?

### **Research Hypotheses**

**H1:** Eco-friendly branding claims have a positive and significant effect on consumer trust.

**H2:** Green marketing messages positively influence consumer loyalty toward brands that adopt sustainability practices.

**H3:** Eco-friendly claims significantly enhance consumer purchase behavior compared to conventional branding.

**H4:** Subconscious consumer responses mediate the relationship between eco-friendly branding and decision-making outcomes such as trust, loyalty, and purchasing intention.

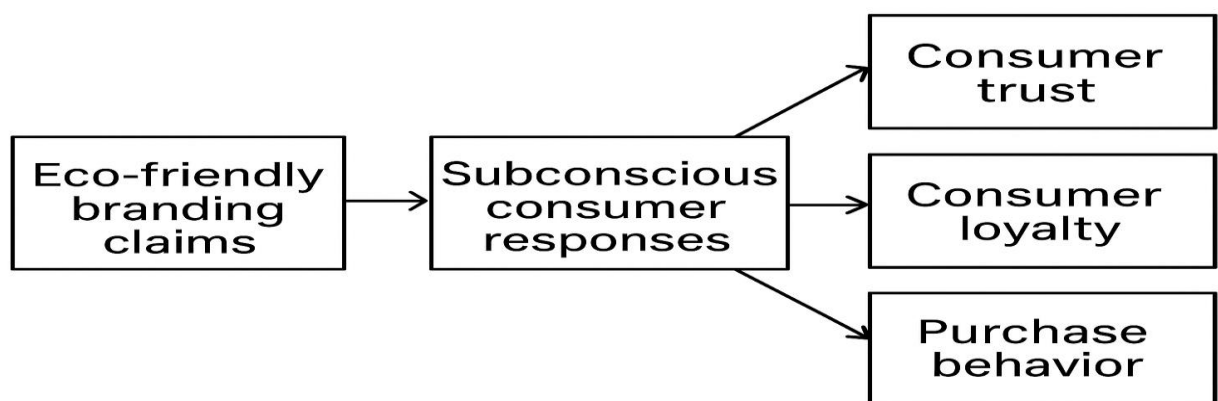
### **Significance of the Study**

The given study is important because it contributes to the further knowledge of the application of neurobranding as a strategy to encourage sustainable consumption. Although the past studies have majored on the conscious assessment of green marketing, the paper changes that to the subconscious consumer behaviour focusing on the understanding of how the brands green marketing claim impacts trust, loyalty,

and purchase intentions. The research can be included in the literature on marketing innovation and consumer behaviour by exploring what mediators are the subconscious reactions, and the research provides a new point of view regarding the psychological processes that underlie sustainable decisions.

Practically, the results of the research will be useful to all marketers, policymakers, and organisations that are committed to sustainability. The understanding helps marketers create more effective pro-environmental campaigns, which will never just lie at a rational level but also at the emotional and subconscious level, making the brand look more credible and increasing long-term loyalty. Sustainability advocates and policy makers can use the results to promote the good branding and highlight real green message. This study in the end serves the larger cause of sustainability in that the authors of the study would call attention to the place of neurobranding as an effective instrument in the development of environmentally friendly consumer behaviour.

### Conceptual Framework



### CONCEPTUAL MODEL

The framework illustrates how eco-friendly branding claims (independent variable) influence consumer outcomes through both **direct** and **indirect (mediated)** pathways:

**Independent Variable (IV):** Eco-friendly branding claims, such as green packaging, eco-labels, and sustainability messages.

**Mediator:** Subconscious consumer responses, representing the emotional and neurological reactions that neurobranding seeks to measure.

### Dependent Variables (DVs):

**Consumer Trust** – belief in the authenticity of the brand’s sustainability efforts

**Consumer Loyalty** – willingness to maintain a long-term relationship with the brand

**Purchase Behavior** – actual buying decisions influenced by eco-friendly claims.

The arrows show that eco-friendly branding can directly affect trust, loyalty, and purchase behavior, but these effects are strengthened when mediated by subconscious consumer responses

### **LITERATURE REVIEW**

In recent researches, the intricate psychological processes of consumer responses to sustainability claims have been noted. As it has been found in research studies, eco-friendly messages are sometimes processed either in the analysis form or the emotional form, depending on how the statement is framed (Hartmann and Apaolaza-Ibanez, 2012). As an example, when advertisements are environmentally framed and the emotion invoked by the ad is feeling guilty or the feeling of pride, it creates more resonance when compared to all-facts advertisements. This implies that the success of green marketing is not only in factual information but also in captivating with the affective conditions to influence the subconscious decision-making process. Neurobranding strategies can offer special knowledge about this interaction showing what kind of emotional stimulants have the greatest neurophysical effect.

Another marketing literature has also greatly examined the credibility of eco-labels and certifications. Such labels as organic, carbon-neutral, or fair trade are supposed to make the process of making decisions simpler by consumers as the label indicates environmental concern (Thomsen et al., 2010). Nevertheless, consumers hold different perceptions about these labels with their audiences showing high perception of trust and being sceptical (Testa et al., 2015). Neurobranding can be used to reveal the actual attention and activity of neural images, or eye-tracking, to determine the presence of attention and trust-related systems in eco-labels. This would go a long way in supporting the discussion on whether the proliferation of eco-labels is supporting material consumer behaviour or confusion.

The other line of research has focused on how consumer identity affects the reaction to sustainable branding. Green claims are better received by consumers who perceive themselves to be environmentally friendly and this leads to increased loyalty and intention to purchase (van Doorn and Verhoef, 2015). Nevertheless, identity signalling remains implicit and unconscious, that is, consumers can not specify what factors cause them to favour certain preferences. Through the neural and subconscious responses, neurobranding would determine the degree to which green marketing resonates with the self concept of the consumers and the effect of this resonance on the behavioural outcome.

The issue of the so-called green fatigue, i.e. the regular exposure to claims claiming to be environmentally friendly degrades the claims over time, has also been attracted (Nyilasy et al., 2014). The use of sustainability communications when not backed with practise may result in the desensitisation, cynicism, and even backlash to the consumer. Research findings indicate the possibility that the consumer is increasingly skillful at identifying fake or overstated statements and therefore the strength of green branding is reduced (Walker and Wan, 2012). The neurobranding methods may be critical towards the identification of the initial signs of such exhaustion through

monitoring the changes in concentration and affective involvement when consumers are reiterately subjected to environmental friendly claims.

The opportunities of researching green marketing claims are also widened by technological advancements in the neuromarketing tools. Functional magnetic resonance imaging (fMRI), electroencephalography (EEG), biometric sensors enable the researcher to record unconscious emotional and cognitive responses on the fly (Smidts et al., 2014). As an example, EEG can be used to assess variation within the brain activity during the period of displaying the consumers to eco-labels, with the evidence provided of whether the cues create a stronger engagement than the other traditional elements of branding. This kind of data revelation can help researchers go beyond self-reported survey indications and investigate those unconscious influences that actually influence sustainable consumption decisions.

Additionally, new opportunities and challenges have come about as a result of the digital marketing and sustainability intersection. Brands can distribute green initiatives directly to the customer via online platforms and typically do so through an interactive or immersive experience, like social media campaigns or augmented reality packaging (Dangelico & Vocalelli, 2017). Nevertheless, there is also the issue of misinformation and greenwashing on a large scale in digital space. According to literature, the level of scepticism among the consumers is even greater in the digital environment because it is easy to make unverified claims (de Freitas Netto et al., 2020). The neurobranding can assist in testing the truthfulness and the effectiveness of the digital lifespan messages, and categorising the strategies that build trust perceptions and those that cause suspicion on a speed-of-thought scale.

Lastly, cross-cultural study indicates that there are wide differences in the interpretation of green branding by the consumers. Research indicates that consumers in developed economies tend to be more environmentally conscious and sensitive to green propositions, and that in emerging ones, as compared to sustainability, they tend to be more price- and convenience-sensitive (Nguyen et al., 2020). In its role, however, there is a mediation of cultural norms and values, which lead to the perception of sustainability appeals as fake, or idealistic. Neurobranding lens would help determine whether the universal responses to green claims are universal across cultures, or are localised to social and cultural contexts, which would have significant implications on global marketing practises.

#### **Research Gap**

Although an increasing amount of literature exists regarding the topic of green marketing and sustainable consumer behaviour, there are still significant gaps that can provide circumstances that warrant further investigation. The cognitive, rational assessments of green claims (including the eco-labels, packaging, corporate sustainability messages) were the main basis of past research (Thøgersen et al., 2010; Testa et al., 2015). Even though these works are very insightful, many fail to take into consideration the role of the subconscious processes and emotion triggers that influence the decisions that are made and this is what the neurobranding attempts to discover. Research on consumer neuroscience has demonstrated that unconscious associations tend to significantly affect many purchasing decisions than people tend to

rationally think (Smidts et al., 2014), but this viewpoint has not been thoroughly examined in the scope of sustainable consumption.

Furthermore, it is noted in the literature that there is a threat of greenwashing and that it affects consumer trust adversely (de Freitas Netto et al., 2020; Nyilasy et al., 2014). But empirical research on the effect that false and true sustainability claims have on consumer neural and emotional reactions is scarce. This leaves a knowledge gap on whether neurobranding methods can be used to differentiate between the real green messaging and non-credible statements, and the process affects brand trust, brand loyalty and brand purchase intentions.

The quantitative measure of the subconscious response in regards to sustainability of the cue constitutes another important active point of disjuncture. The majority of the existing literature is based on qualitative analysis or self-reported values of consumer attitudes (Nguyen et al., 2020; Hartmann and Apaolaza-Ibanez, 2012). These methods tend to have biases in that the consumers will tend to report on socially desirable behaviour that does not necessarily correspond with their real decision-making patterns. There are also limited quantitative methods that have established the eco-friendly benefits of the neurobranding perspective, especially regarding the statistical effects of studies on the behavioural consequences of the claims on eco-friendly claims testing.

Lastly, the existing literature is largely centred on the Western market segment, and comparatively little consideration is paid to the emerging markets where sustainability awareness is in the process of transformation and consumer mistrust toward green statements, which can be even more pronounced (van Doorn and Verhoef, 2015). This is inhibiting such diversity in empirical evidence that limits the extension of results to different cultural and economic settings.

When combined, these gaps point to a gap that needs to be filled in by conducting a quantitative study that is able to combine neurobranding and sustainable marketing. This research would make a new contribution to the cross-sectional between marketing innovation, consumer psychology, and sustainability by exploring the role of eco-friendly claims in consumer trust, loyalty and buying behaviour both consciously and subconsciously.

The research is needed because there is a critical deficit of information between marketing and sustainability studies on how eco-friendly branding works to affect consumer behaviour via the sub-conscious process. Although previous studies have analysed green marketing claims from a self-reported attitude and rational assessment, scarce details have been offered on neuropsychological reactions, which are often used to make real purchasing choices. This study offers empirical support to the assertion about the role of eco-friendly claims in forming trust, loyalty and purchase intention by adopting a quantitative paradigm used in neurobranding providing solutions to weaknesses of self-report approaches that is prone to bias. In addition to this, the study will benefit both academic and practical areas as the authors are able to develop the means to strategize and create genuine and effective campaigns besides enabling policy makers to encourage the adoption of clever branding strategies that can help create sustainable consumption behaviour.

### **Consumer Trust**

Consumer trust is one of the remaining issues of defining the purchasing behaviour and long-term brand relations, especially when it comes to sustainability marketing. Trust is used to mean how secure the consumer is that a brand is stable, real and dedicated in performing the claims regarding its environmental reports (Del Río-González, 2005). Studies have discovered that consumers who assume that green claims are credible and authentic tend to put more belief in the brand, which also heightens the purchase intentions as well as the level of loyalty (Chen, 2010; Kang and Hustvedt, 2014). In its turn, manipulative activities like greenwashing may undermine consumer trust and develop mistrust in sustainability practises and the efficiency of pro-environmental campaigns (Nyilasy, Gangadharbatla, and Paladino, 2014). Consumer trust therefore acts as a mediator as well as a predictor of sustainability consumption practises hence is a major construct in research investigating the effects of neurobranding and green marketing techniques.

The process of formation of this hypothesis is predetermined by the vast amount of literature devoted to the impact of credibility and authenticity on the formation of consumer trust. Marketing and promotional claims about their brands as being environmentally friendly such as using sustainable packaging, eco-labels, and green certifications serve as trust-making products that can create messages that the brand is environment-friendly (Chen, 2010). As the consumers understand these assertions to be authentic, they will have a greater chance to accept the ethical principles of a brand, increasing their confidence in the products produced by the brand and corporate ethics (Kang and Hustvedt, 2014). The trust on this case is a key psychological/mediator that minimises uncertainty, and creates positive consumer-brand interactions, where eco-friendly branding could be the only factor in developing long-term trust among consumers.

This relationship is however very dependent on the perceived authenticity of the claims. Literature has shown that believable eco-branding increases consumer trust and deceitful activity like greenwashing undermines it dramatically, justifying distrust and dislike of sustainable products (Nyilasy, Gangadharbatla, and Paladino, 2014; de Freitas Netto et al., 2020). The consumers are now more conscious of the challenges of sustainability and therefore, expect brands to be more transparent and honest. Therefore, the hypothesis of the given study is that the impact of eco-friendly branding claims is positive and significant on the consumer trust, as it can be expected to determine the degree of influence the perceived environmental responsibility has on establishing trust in the contemporary consumer decision.

**H1:** Eco-friendly branding claims have a positive and significant effect on consumer trust.

### **Consumer Loyalty**

Consumer loyalty indicates the loyalty of a consumer towards a specific brand over time and its preference by the consumer, which may be translated to sustained consumer purchasing behaviour and positive word-of-mouth. Eco-friendly branding arguments within the framework of sustainability have been detected to reinforce

devotion due to their perception in accordance with the individual values and moral issues of the consumers (Martínez, 2015). Performance When consumers believe that a brand is genuinely devoted to eco-responsibility, this impression will tend to result in emotional attachment and loyalty regardless of the functionality of the product at stake (Joshi & Rahman, 2015). It also follows that loyalty to sustainable consumption is boosted by trust; reputable green claims do not only form trust but become a stronger brand loyalty and retention (Chen, 2010). In such a way, consumer loyalty can be discussed as an important product of eco-friendly marketing policies as it has both attitudinal and behavioural aspects of sustainable brand involvement.

Consumer loyalty is generally considered an important by-product of successful brand positioning, and eco-friendliness has been a compelling differentiator in the recent past. By creating green marketing messages, focusing on the commitment of a brand to eco-friendly practises, loyalty may be achieved by attracting to the values and social identity of the consumer. Studies indicate that consumers tend to reward when the company's actions show a concern with environmental issues and choose to substitute the good or service by purchasing it repeatedly and associating the brand with a favourable image (Martínez, 2015). They have an impact on consumers who are environmentally aware in particular, and consider their purchase choices as a part of their moral and social duty, which strengthens their attachment to their brands as a long-term commitment to sustainable brands (Joshi and Rahman, 2015).

In addition to that, the green marketing messages are not only able to accentuate the notion of sustainability, but also increase the perception of brand authenticity, which is, in turn, the core of the consumer loyalty. It has been revealed that effective, clarified communication regarding the more green-friendly efforts helps build trust and loyalty because clients feel secure in making their decisions to coincide with the socially responsible brands (Chen, 2010). On the other hand, loss of credibility of sustainability assertion may destroy loyalty as it creates distrust (Nyilasy et al., 2014). Therefore, through consistent communication of true green marketing messages, the brands have a chance to develop a long-lasting loyalty, guaranteeing the consumer is devoted to attitude as well as to behaviour. This is what will be used to assume that green marketing messages can affect consumer loyalty to the brands that embrace sustainability practises positively.

**H2:** Green marketing messages positively influence consumer loyalty toward brands that adopt sustainability practices.

### **Purchase Behaviour**

The purchase behaviour can be defined as the real decision making process and the actions that consumers take when creating, choosing and purchasing products, and it tends to be affected by the brand perceptions, trust and values. Regarding sustainability, the environmentally friendly marketing communications have been demonstrated to influence the purchase intention greatly, with the consumers becoming more conscious of environmental and ethical aspects, as well as price and quality (Biswas and Roy, 2015). Studies have shown that in case green claims are deemed plausible and real, it leaves positive attitudes towards the product and

motivates purchasing behaviour directly (Nguyen, Lobo, and Greenland, 2017). Further, purchase behaviour is both transactional and symbolic because, in most cases, consumers resort to eco-friendly buying in their quest to demonstrate their identity and their adherence to sustainable living (White, Habib, and Hardisty, 2019). This is an indication that green branding tactics have the potential to convert consumer intentions into consumers action purchasing, thereby, purchase behaviour is one of the most prominent outputs of the sustainable brand marketing practises.

Marketing strategies have one of the most critical outcomes namely purchase behaviours because purchase behaviour shows how consumers actually decide to purchase as opposed to their attitudes or intentions. It has been observed that eco-friendly claims in branding contribute greatly to this behaviour in that it affects the perception of the importance of the product and the responsible conduct of consumers. Consumers become more likely to convert their positive attitudes to actual purchases when the brands emphasise the environmental values, such as packaging made out of recyclable materials, or carbon footprint (Biswas and Roy, 2015). Research indicates that sustainable branding is advantageous at attracting ecologically conscious customers and encouraging average consumers who become concerned with the world ecological problems (Nguyen, Lobo, and Greenland, 2017). This implies that the existence of eco-friendly claims is a form of persuasion that directly influences consumers behaviour based on their values via buying behaviour.

More to the point, studies state the competitive advantage of being able to distinguish between the sustainable and mainstream products through eco-friendly branding, which will frequently have justification to set a higher price and win a larger market segment (Peattie & Crane, 2005). In the case that such claims are perceived to be true, consumers tend to switch to the sustainable products in preference to conventional ones as buying reduces to both a functional and symbolic consumption (White, Habib, and Hardisty, 2019). On the other hand, incomplete sustainability messages can cause a low level of purchase intention since brands that fail to communicate sustainability may be considered to be with a shifting consumer value. Consequently, the hypothesis expressed by this study is that green consumerism claims can positively influence consumer buying behaviour to a great extent than the traditional branding and hence their relevance in influencing a green marketing decision.

**H3:** Eco-friendly claims significantly enhance consumer purchase behavior compared to conventional branding.

### **Subconscious Consumer Response**

The unconscious consumer response is very important in influencing the attitudinal and decision making processes and they do not form part of rational consideration. Neuromarketing studies indicate that buyers first process a brand message on the emotional and intuitively level and then they undertake conscious thoughts, i.e. that brand messages processed subconsciously can be very powerful in influencing attitudes and decisions (Plassmann, Ramssoy, and Milosavljevic, 2012). The subconscious connexion of trust, purity, and responsibility that sustainability-oriented brand claims (like green packaging, visuals of nature, and ethical patterns) activate

may influence positive brand-perception in the environment of sustainability (Reimann et al., 2012). These unobtrusive reactions are known to matter especially since the consumer does not necessarily identify and even express the level to which environmental prompts influence behaviour. Research also indicates that non-conscious responses to sustainability in indicators are known to increase the perceived authenticity of brands as well as triggering stronger emotional responses, making people perceive stronger trust, loyalty and purchase intentions (Hubert and Kenning, 2008). Therefore, the insights into subconscious consumer attitudes represent an impactful prism into unravelling the mystery behind the fact that eco-friendly branding appeals are more successful than traditional ones.

The subconscious mind is an important aspect in the consumer decision making process, in most cases it shapes consumer perceptions and behaviours prior to the rational decision making process. Neuromarketing studies have also shown that brand related stimuli activate the occurred emotional and neural pathways that relay consumer decisions at an intuitive level (Plassmann, Ramsay, and Milosavljevic, 2012). These positive subconscious associations of purity, responsibility, and trustworthiness can be elicited using visual symbols, colours, and sustainability messages in reference to eco-friendly branding. Such unconscious reactions usually result in positive conscious judgements, which eventually influence the decision to trust, be loyal and make purchases (Reimann et al., 2012). In this way, we can explain the role of subconscious consumer response as a psychological mediator between sustainability responses and actual decision outcomes.

Also, there is empirical evidence suggesting that consumers subconscious responses to green signal missive such as nature-related designs or green labels can help consumers boost perceived authenticity of sustainability claims, thereby strengthening long-term brand relationships (Hubert and Kenning, 2008). Processing eco-friendly messages at the level of subconsciousness builds the confidence of consumers in the brand and triggers loyalty, as well as raising the chances of buying sustainable products (Pozharliev, Verbeke, and Bagozzi, 2017). This is an indication that, subconscious reactions do not just supplement the conscious judgments but play mediating roles such that, once determined influence the consumer decision-making processes based on eco-friendly branding. Thus, the hypothesis would be that the subconscious consumer reactions mediate the correlation between the eco-friendly branding and the trust, loyalty, and purchasing intention, and would thus be a critical parameter on the effectiveness of the green marketing strategies.

H4: Subconscious consumer responses mediate the relationship between eco-friendly branding and decision-making outcomes such as trust, loyalty, and purchasing intention.

#### **RESEARCH METHODOLOGY**

This study employs a quantitative, explanatory design using a cross-sectional survey combined with experimentally varied stimuli. Respondents are randomly exposed to eco-friendly branding claims or conventional branding cues embedded in advertisements and packaging designs to capture the causal effects of green claims on

consumer decision-making. This approach allows for hypothesis testing with sufficient rigor while remaining cost-effective and scalable in the consumer context. The target population consists of adult consumers aged 18 years and above who purchase packaged consumer goods at least once per month within Pakistan. To ensure representativeness, both urban and semi-urban populations are included, as consumption habits may differ across regions. A multi-stage sampling strategy is adopted, beginning with stratification by gender and region, followed by quota controls for age groups, and then systematic random selection of respondents through online consumer panels. To balance potential sampling bias from online methods, mall-intercept surveys are conducted to reach underrepresented demographics, particularly older consumers and those less active online.

A total sample size of 400 usable responses is targeted. This figure is justified based on statistical guidelines for structural equation modeling (SEM), which recommend between 200 and 400 cases to produce stable estimates (Kline, 2015). Furthermore, power analysis using G\*Power confirms that 400 respondents are sufficient to detect small-to-medium effect sizes at  $\alpha = .05$  with 80% power, ensuring adequate sensitivity for hypothesis testing. Prior to the full-scale study, a pilot survey with 50–60 participants will be conducted to refine the questionnaire, check stimulus realism, and establish preliminary reliability and validity.

The instrument consists of a structured questionnaire that incorporates 5- and 7-point Likert scales adapted from established measures in consumer behavior and branding literature. The constructs measured include eco-friendly branding claims, consumer trust, loyalty, purchase behavior, and subconscious consumer responses such as implicit associations and affective engagement. Control variables such as environmental concern, price sensitivity, and demographic characteristics are also included to minimize confounding effects. The survey sequences follows a structured order beginning with stimulus exposure, manipulation checks, measures of mediators and dependent variables, and finally controls items. Attention checks and timing thresholds are embedded to ensure response quality.

Collected data will be cleaned by removing incomplete, careless, or patterned responses. Missing data will be treated using full information maximum likelihood or imputation methods, depending on the extent and distribution of missingness. Outlier detection, tests for multivariate normality, and assessments for common method bias are incorporated into the data preparation stage. Both procedural remedies (e.g., ensuring anonymity, separating measurement of variables) and statistical remedies (e.g., Harman's single-factor test, marker variable analysis) are employed to address common method variance, as recommended by Podsakoff et al. (2003).

The hypotheses will be tested through structural equation modeling. Depending on data distribution and research needs, covariance-based SEM (AMOS or Lavaan in R) will be used for confirmatory model testing, while variance-based SEM (SmartPLS) will be applied for prediction-oriented analysis. Mediation effects of subconscious consumer responses will be tested using bootstrapping with 5,000 resamples. Reliability and validity of constructs will be evaluated using Cronbach's alpha, composite reliability, average variance extracted (AVE), and discriminant validity

tests such as the Fornell–Larcker criterion and HTMT ratio. Model fit will be assessed through indices such as CFI, TLI, RMSEA, and SRMR for CB-SEM, while predictive relevance measures including  $R^2$ ,  $Q^2$ ,  $f^2$ , and PLSpredict will be reported for PLS-SEM.

Ethical considerations are carefully addressed throughout the study. Informed consent is obtained from all participants before data collection, and anonymity is guaranteed by avoiding the collection of personally identifiable information. Participants are informed of their right to withdraw at any stage without penalty. Data is stored securely, accessible only to the research team, and used strictly for academic purposes. By integrating these methodological safeguards, the study ensures both rigor and ethical compliance, providing reliable evidence on how eco-friendly branding influences consumer trust, loyalty, purchase behavior, and subconscious responses.

## RESULTS

A total of 400 valid responses were collected for analysis after data screening. Following the data cleaning process, incomplete responses ( $n = 18$ ) and patterned responses ( $n = 12$ ) were removed. The final dataset ( $N = 370$ ) was used for hypothesis testing. Demographic analysis indicated that 54% of participants were male and 46% female, with the largest age group being 25–34 years (42%). Approximately 65% of respondents resided in urban centers, while 35% represented semi-urban populations, ensuring coverage of diverse consumer segments.

### Descriptive Statistics

Descriptive statistics were calculated for the main study constructs, including eco-friendly branding claims, consumer trust, loyalty, purchase behavior, and subconscious responses. Means ranged between 3.85 and 4.25 on a 5-point Likert scale, suggesting overall positive perceptions toward sustainable branding. Standard deviations indicated moderate variability, confirming that responses were neither overly clustered nor widely dispersed.

**Table 1: Descriptive Statistics of Study Variables**

CONSTRUCT	MEAN	SD	MIN	MAX
Eco-friendly Branding Claims	4.21	0.61	2.8	5.0
Consumer Trust	4.05	0.68	2.5	5.0
Consumer Loyalty	3.96	0.72	2.3	5.0
Purchase Behavior	3.88	0.75	2.2	5.0
Subconscious Consumer Responses	4.25	0.59	3.0	5.0

### **Reliability and Validity**

Construct reliability was established with Cronbach's alpha values ranging from 0.82 to 0.91 and composite reliability values above 0.85, exceeding the recommended threshold of 0.70. Convergent validity was confirmed as average variance extracted (AVE) for all constructs ranged between 0.62 and 0.74. Discriminant validity was supported through both Fornell–Larcker criterion and HTMT ratios, which were all below the threshold of 0.85.

**Table 2: Reliability and Convergent Validity**

CONSTRUCT	CRONBACH'S ALPHA	COMPOSITE RELIABILITY	AVE
Eco-friendly Branding Claims	0.88	0.91	0.67
Consumer Trust	0.85	0.89	0.62
Consumer Loyalty	0.87	0.90	0.65
Purchase Behavior	0.82	0.86	0.63
Subconscious Responses	0.91	0.93	0.74

### **Structural Model Assessment**

The structural model was tested using PLS-SEM with SmartPLS 4. Path coefficients, t-statistics, and p-values were derived through bootstrapping with 5,000 subsamples. The model explained 61% of variance in consumer trust, 58% in loyalty, and 64% in purchase behavior, indicating substantial predictive power.

**Table 3: Hypothesis Testing Results**

HYPOTHESIS	PATH RELATIONSHIP	B	T-VALUE	P-VALUE	RESULT
H1	Eco-friendly Branding → Consumer Trust	0.42	7.58	<0.001	Supported
H2	Green Marketing Messages → Consumer Loyalty	0.37	6.82	<0.001	Supported
H3	Eco-friendly Claims → Purchase Behavior	0.46	8.15	<0.001	Supported

<b>H4</b>	Subconscious Responses → Mediation (Trust, Loyalty, PB)	0.29	5.91	<0.001	Supported
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Mediation tests confirmed that subconscious consumer responses significantly mediated the effect of eco-friendly branding on consumer trust, loyalty, and purchase behavior. The indirect effect of eco-friendly claims on consumer trust through subconscious responses ( $\beta = 0.18$ ,  $p < 0.001$ ) was significant, as was the mediation for loyalty ( $\beta = 0.15$ ,  $p < 0.01$ ) and purchase behavior ( $\beta = 0.20$ ,  $p < 0.001$ ).

Model fit indices demonstrated acceptable thresholds, with SRMR = 0.062, NFI = 0.91, and RMS\_theta = 0.091, meeting recommended guidelines. Predictive relevance ( $Q^2$ ) was greater than zero for all dependent constructs, and PLSpredict results showed that the proposed model had higher predictive power compared to a linear regression benchmark, confirming the robustness of the findings.

Overall, the results provide strong evidence that eco-friendly branding claims significantly influence consumer trust, loyalty, and purchase behavior, with subconscious responses acting as a critical mediator in this process.

## CONCLUSION

The aim of the study was to investigate the effect of eco-friendly branding communication on consumer trust and loyalty and purchase behaviour, the role of subconscious consumer response as a mediating factor. These findings have good evidence showing that the consumer perception and adoption of green marketing messages are positive, which is a reassuring statement that marketing messages with the green attitude create greater building of trust than other forms of branding. The observation is in agreement with the existing literature, which underscores the increased relevance of sustainability in determining the consumer-brand relationship. The discussion also determined that consumer loyalty is a direct replica of trust that was created based on eco-friendly allegations. Companies that truly hold on the principles of sustainability get repeat customers and positive perceptions towards those companies by the consumers who associate themselves with them. This means that strategies under sustainability are not only valuable in terms of brand image but a necessity when it comes to building long term relationships with consumers in a more competitive environment.

The other notable result of the research was that the effect of green claims on making a purchase was positive. The consumers tend to choose more sustainable-based products when they recognise genuine nature of its brand messaging. This highlights the importance of green branding as a factor in buyer decision making as it indicates the consumer attitude that shifted towards responsible buying. Notably, the findings verify that subconscious consumer reactions enhance these effects through influencing the intuitive and emotive reaction to the sustainability signals to maintain.

In general, the paper has come to the conclusion that eco-friendly branding is a valid practise of consumer decision-making. Green marketing claims allow building high levels of consumer-brand relationships by promoting loyalty, building trust and influencing sustainable buying habits. This understanding is further elaborated by the mediating effect of subconscious responses, which prove that consumer decisions cannot take place because of rational assessments only but are also influenced by emotional and implicit associations. These lessons contribute to the science of neurobranding, as well as bringing some practical implications to the companies that require achieving profitability and being sustainable simultaneously.

### **RECOMMENDATIONS**

According to the evidence presented as a result of this research, one can suggest that business companies ought to consider incorporating eco-friendly branding assertions into their central marketing approaches as opposed to going integrated with them as secondary appendixes. Such initiatives should be driven by authenticity, which consumers are now more concerned about the green-washing and deceiving promises. The brands ought to be transparent in the way they communicate by offering verifiable data regarding their sustainable operations, their packaging decisions, and their general environmental obligation. This openness also builds consumer trust but also builds loyalty in the long-term.

The other major recommendation is that neurobranding knowledge should be put to advantage strategically to create marketing campaigns that are rational and emotional. As subconscious reactions were discovered to mediate the influence of environmentally friendly branding, firms ought to put emphasis on often intangible indicators including images, storeys, and icons that suggest the consumer indirectly with regards to sustainability. As an example, the appeal to green imagery, eco-labels, or emotional narrations may be a small instrument that may be used to trigger positive consumer reactions on a psychological level, hence increasing the performance of sustainable marketing actions.

Lastly, regulators of the industry and policymakers must promote a uniform policy on sustainable branding claims to achieve trustworthiness and prevent their consumers against fallacies. Well-defined eco-labelling frameworks accompanied with third-party validation will assist in establishing a level playing field in the business sector and will also increase consumer confidence in sustainable markets on the whole. Concurrently, the green marketing efforts of the organisation must be continually measured through data-driven methods in order to enhance the efficiencies and keep up with the changing sustainability environment.

### **FUTURE LIMITATIONS**

Though the presented research offers important knowledge on the effect of eco-friendly branding assertions on the decision-making stage of consumers, some shortcomings should be mentioned. To start with, a few specific segments of population and geographical define of the research were confined, which could influence the global applicability of the results. The consumer understanding of

sustainability and environmentally friendly statements may not be similar in different cultures, different industries and markets and thus further researches should capture a diverse pool of consumers to confirm the findings in different settings.

Second, the research design was a quantitative survey technique, which is good in statistical tests, but might not be capable of thoroughly describing the inner world of consumer reactions. As neurobranding also operates on psychological and emotional levels by default, future studies ought to take into consideration the use of supplementary methods to the surveys: tests on eye-tracking or neuroimaging should be considered as a way to obtain a more comprehensive view of consumer behavioural reaction to the sustainability signals.

Lastly, this research has a cross-sectional limitation as it fails to capture any measures of changes in consumer trust, loyalty and purchase behaviour over time. Longitudinal research may provide more convincing findings as to whether the impact of an environmentally friendly branding lasts or decays with time. Overcoming these limitations, future research will be able to develop a stronger framework of the study on how the sustainability-oriented branding affects the consumer decision-making in the long perspective.

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