FROM SKEPTICISM TO TRUST: FACTORS THAT MITIGATE GREENWASHING PERCEPTIONS

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Abstract

The concept of a green world introduced in 1972 has significantly influenced business practices aimed at environmental protection. Lot of business firms started altering their practices to comply with the concept of green world. The phenomena of greenwashing emerged while firms falsely claimed green practices without making efforts to protect the environment from the adversities of their business operations. This led to consumer skepticism and altered buying decisions. On the other hand, certain firms faced greenwashing perceptions among their customers while the firms were following eco-friendly practices. This study addresses the prevention of greenwashing perceptions among Generation-Z customers residing in urban areas of the country. Utilizing the business websites and customer responses, this research explores the link of Greenwashing Perceptions with Green Information Quality, Environmental Communication, Green Transparency, Brand Credibility and Pro Environmental Behaviour. Cross-sectional survey method has been used in data collection from 323 respondents. Correlation and regression analysis have been made using structural equation modelling for obtaining empirical results. The framework of the study is based on several previous studies conducted on the antecedents of greenwashing perceptions. The study contributes to societal wellbeing and addresses the organizational challenges by suggesting measures to prevent greenwashing perceptions which ultimately support sustainable practices and improve customer trust.

1. INTRODUCTION

To moderate humanity's impact on the earth for achieving sustainability and eco-friendliness; the concept of Green World was introduced in 1972 during a UN Conference. It became so popularized that it influenced almost all fields of life. The firms performing businesses of commodities and services adopted the policies to play their role in environmental protection along with their premier motive of profit earnings. The firms with little commitment with green world were also supposed to eliminate the practices those were harming the environment (Aragòn-

Correa et al., 2020). They started claims like others but did not follow sustainability practices (De Freitas Netto et al., 2020). Their strategies were termed green washing and woke washing. The customers became aware with greenwashing practices, and they responded accordingly in their buying decisions.

The problem of green washing worked like a dual edge sword. On one side, it damaged environment protection plans and on the other side decreased sales volumes due to the shift in clientele (Szabo & Webster, 2021). The business

firms are now concerned about the prevention of this greenwashing and wokewashing perceptions among their perspective customers to expand their sales volumes. Perhaps this growing concern of business community led the researchers' community to study the issue in different ways and to find appropriate solutions. Mostly, the customers' perception of greenwashing about a particular business concern leads toward the betrayal from the business concern. Resultantly their purchase intention from that business firm is inversely affected. The impact of greenwashing perception on purchase intention has been studied from multiple dimensions during the last two decades (Setiawan & Yosephani, 2022). Four recent studies from the last three years are Nurul Marliza Putri Hesti et al. (2024); Sun & Shi (2022); Lu et al., (2022); Setiawan & Yosephani (2022). The phenomena of greenwashing perception results in decrease in the business volume of victim firms. The firms facing greenwashing perception among their customers need a practical solution for their sustainable future.

Keeping in view the growing concern over greenwashing perception, this study investigates how Green Information Quality, Environmental Communication, Green Transparency, and Brand Credibility effects Greenwashing Perception. The study also examines the moderation effect of Pro-Environmental Behaviour, offering a novel insight into customer responses to green marketing. The study addresses the contemporary issue of sustainability marketing by proposing certain authentic measures to business firms which contribute towards societal wellbeing and build trust to prevent greenwashing perceptions. Intention is to finally propose certain measures to the victims of the problem without compromising the environmental green concern.

At the exploratory stage of the study, following research questions were derived with collective deliberation and due diligence after studying the existing literature on the very issue for which justifiable reasoning has been given under the heading of framework while drafting the hypotheses for this quantitative study to see maximum possible positions of five determinant variables in the mechanism:

- Is there a significant relationship between Greenwashing Perception and Green Information Quality?
- Is there a significant relationship between Greenwashing Perception and Environmental Communication?
- Is there a significant relationship between Greenwashing Perception and Green Transparency?
- Is there a significant relationship between Brand Credibility and Green Information Quality?
- Is there a significant relationship between Brand Credibility and Environmental Communication?
- Is there a significant relationship between Brand Credibility and Green Transparency?
- Is there a significant relationship between Greenwashing Perception and Brand Credibility?
- Does Brand Credibility mediate the relationship between Greenwashing Perception and Green Information Quality?
- Does Brand Credibility mediate the relationship between Greenwashing Perception and Environmental Communication?
- Does Brand Credibility mediate the relationship between Greenwashing Perception and Green Transparency?
- Does Pro Environmental Behavior moderate the relationship between Greenwashing Perception and Green Information Quality?
- Does Pro Environmental Behavior moderate the relationship between Greenwashing Perception and Environmental Communication?
- Does Pro Environmental Behavior moderate the relationship between Greenwashing Perception and Green Transparency?

2. LITERATURE REVIEW
2.1 Greenwashing Perception (GWP)
The global sustainability imperatives and market environment compelled business firms to leverage green practices to meet consumer demand of being eco-friendly. While

greenwashing deceptive environmental claims eroded trust and market integrity, particularly among digitally savvy Generation-Z consumers (Delmas & Burbano, 2011; Leonidou et al., 2010a). Greenwashing refers to the practice of deceiving consumers regarding the environmental sustainability practices adopted during manufacturing of their product or operations. Research has shown that greenwashing has negative impacts on customer trust and brand reputation, resulting suspicion in green messages (Delmas & Burbano, 2011b). The perception of greenwashing arises when consumers detect discrepancies between a firm's environmental messaging and its actual practices, leading to reduced purchase intentions and negative brand evaluations (Ha et al., 2022). Recent studies emphasize that greenwashing perception is influenced by factors such as vague or misleading claims, lack of third-party certifications, and inconsistent corporate behaviour, all of which amplify consumer distrust (Parguel et al., 2015). Notably, Bharadwaj et al. (2022) highlighted that firms engaging in greenwashing risk long-term reputational damage, particularly when consumers perceive a misalignment between environmental claims and corporate actions, further exacerbating scepticism in sustainability focused markets. From a theoretical lens of signalling theory, greenwashing perception emits misleading environmental signals, weaken trust in corporate communications (Connelly et al., 2011). Peloza et al. (2015) underscores that consumer scepticism toward CSR claims is acute when firms' actions misalign with their sustainability narratives which distort credibility if not restored through corrective actions. Understanding the dimensions of greenwashing perception is critical for firms aiming to maintain credibility in their sustainability efforts.

2.2 Green Information Quality (GIQ)
Green information quality refers to relevance, accuracy, and completeness of environmental information disclosed by firms. Quality of green information can install trust on the part of consumers and stimulate pro-environmental

behaviour. Empirical research shows that green information quality is a starting point for successful green marketing and can impact consumer attitudes as well as purchasing behaviour (Chen & Chang, 2013). Empirical evidence suggests that green information quality serves as a cornerstone of effective green marketing, positively influencing consumer attitudes and purchase decisions (Chen & Chang, 2013; Iyer & Reczek, 2017). For instance, Iyer & Reczek (2017) highlight that detailed and substantiated environmental claims enhance perceived authenticity, reducing scepticism and mitigating greenwashing perceptions. On the other hand, poor information quality, such as vague or incomplete disclosures, exacerbates consumer distrust and diminishes the efficacy of green marketing strategies. Leonidou et al. (2010a) demonstrates that authentic CSR communication, underpinned by high-quality information, positively shapes consumer attitudes, particularly among younger demographics. Theoretically, green information quality aligns with the elaboration likelihood model, as accurate and substantive disclosures encourage central-route processing, leading to favourable evaluations of sustainability efforts (Petty & Cacioppo, 1986). This study hypothesizes that green information quality negatively impacts greenwashing perception (H1) and positively impacts brand credibility (H4), with pro-environmental behaviour moderating this relationship between green information quality and greenwashing perception (H8).

2.3 Environmental Communication (EC)
Green communication refers to the communication and practices that firms employ to communicate their green activities and sustainable practices. Successful green communication can inform and enlighten the public, build a good brand image, and trigger pro-environmental behaviour. Green communication should be transparent and genuine to prevent accusations of greenwashing (Leonidou et al., 2010). Transparent and authentic communication is essential to avoid perceptions of greenwashing, as consumers are increasingly

vigilant about the sincerity of environmental claims (Ottman, 2011). Research by Ottman (2011) underscores that green communication must align with actual corporate practices and be supported by credible evidence, such as certifications or lifecycle assessments, to build trust. Sheth and Sinha (2015) argue that effective green communication requires a strategic integration of stakeholder engagement and consistent messaging to reinforce brand authenticity and mitigate greenwashing perceptions in competitive markets. Digital marketing's role in sustainability is evident by Varadarajan (2017) which highlights that innovative communication strategies, such as ESG (Environmental, Social, Governance) disclosures on social media, reduce consumer scepticism by enhancing accessibility and engagement. Du et al. (2010) further note that interactive digital platforms amplify the impact of green communication. This study posits that environmental communication negatively impacts greenwashing perception (H2) and positively impact brand credibility (H5), with pro-environmental behaviour moderating the effect of environmental communication over greenwashing perception (H9).

2.4 Green Transparency (GTY)

Green transparency refers to the transparency and openness with which business companies disclose their environmental processes and footprints. Transparency in communication can help generate consumer trust and build stronger brand authenticity. Green transparency is said to be associated with improved stakeholder relations and will have a positive effect on consumer behaviour (Dawkins, 2005). Schnackenberg & Tomlinson (2016) argue that transparency, when coupled with accountability mechanisms such as third-party audits, significantly reduces consumer skepticism and enhances the perceived legitimacy of green initiatives. Bharadwaj et al. (2022) note that transparent disclosure of sustainability metrics, such as carbon footprints or supply chain practices, can serve as a critical mitigator of greenwashing perceptions, particularly in industries with high environmental scrutiny.

Homburg et al. (2013) demonstrates that transparency in CSR initiatives enhances stakeholder trust, especially when supported by accountability mechanisms like third-party validations. From a stakeholder theory perspective, transparency addresses the information needs of diverse audiences, enhancing organizational legitimacy (Freeman & Boeker, 1984). This study hypothesizes that green transparency negatively impacts greenwashing perception (H3) and positively impacts environmental communication (H6), whereas pro-environmental behaviour moderates the effect of green transparency over greenwashing perception (H10). Firms that prioritize green transparency are better positioned to cultivate long-term consumer loyalty and mitigate the adverse effects of greenwashing accusations.

2.5 Brand Credibility (BC)

Brand credibility is the degree to which customers feel that a brand is credible and reliable. Brand credibility has a major influence on the behaviour and attitude of customers. Brand credibility has been shown to counteract the adverse effect of greenwashing and create consumer loyalty (Erdem & Swait, 2004a). Brand credibility depends on congruent communications, openness, and perceived authenticity of green claims (Erdem & Swait, 2004a). High brand credibility can mitigate the negative effects of greenwashing perceptions by reinforcing consumer confidence in a firm's environmental claims (Erdem & Swait, 2004b). Research by Leonidou et al. (2010) demonstrates that brand credibility, built through consistent and authentic communication, fosters consumer loyalty and reduces scepticism toward green initiatives. Moreover, credible brands are more likely to benefit from positive word-of-mouth and stronger consumer-brand relationships, which further counteract greenwashing perceptions (Leonidou et al., 2010). Sheth & Sinha (2015) add that brand credibility is enhanced when firms align their green marketing strategies with authentic corporate social responsibility practices, creating a cohesive narrative that resonates with environmentally conscious consumers. Ganesan

et al. (2009) underscores that credibility serves as a relational asset, reducing consumer uncertainty in markets prone to misinformation. This study hypothesizes that brand credibility negatively impacts greenwashing perception (H7), contributing to consumer response insights by examining how Generation-Z's trust thresholds influence their evaluations of credible brands.

2.6 Pro Environmental Behaviour (PEB)

Pro-environmental behaviour involves actions by individuals to reduce their impact on the environment. Few identified determinants of pro-environmental behaviour are socio-demographic characteristics, psychological characteristics, habits, and situational characteristics. These allow for the strategic planning of interventions for instilling sustainable habits (Steg & Vlek, 2009). These determinants provide a framework for designing interventions to promote sustainable consumer habits. For instance, Kollmuss & Agyeman (2002) highlighted psychological factors, such as environmental awareness and personal values, significantly influence pro-environmental behaviour, particularly when supported by credible and transparent green communication. Understanding these drivers enables marketers to tailor strategies that align with consumer motivations, thereby enhancing the effectiveness of green marketing campaigns and reducing the impact of greenwashing perceptions (Kollmuss & Agyeman, 2002). Gustafsson et al. (2016) suggests that fostering pro-environmental behaviour requires firms to engage consumers through emotionally resonant and value-driven communication, which strengthens the link between green information quality and sustainable actions. Peloza et al. (2015) highlights that marketing strategies fostering emotional engagement and social norms amplify pro-environmental behaviours, aligning with societal well-being goals. This study posits that pro-environmental behaviour moderates the relationships between greenwashing perception and green information quality (**H11**), environmental communication (H12), and green transparency (**H13**), offering insights into how Generation-Z's environmental values shape their responses to green marketing, addressing the challenge being faced by business firms due to greenwashing perceptions.

2.7 Research Framework

After going through the literature, it was perceived that the customers of those organizations which remain involved in green / environmental communication would trust more on these organizations which would ultimately result in mitigating their perceived greenwashing. The researchers believed green communication with good information quality and transparency would do build brand credibility of the organizations which would decrease greenwashing perception about the brand. Whereas it is a matter of heuristic that the person with pro environmental behaviour would differ from others in the magnitude of his perceptions about greenwashing perception. This difference would do cause moderation effect on the relationships of independent variables and mediating variables on dependent variable. Brief justifiable reasoning for each framed hypothesis is given here after in addition to the above stated literature review. This reasoning ultimately sketches the comprehensive conceptual framework of the study.

Green Information Quality defines the accuracy, completeness, timeliness, and appropriateness of information that companies release about their green practices. Through the disclosure of high-quality green information by firms, stakeholders will be inclined to trust their claims more, and hence they are less likely suspicious of greenwashing or deceptive environmental marketing. Gustafsson et al. (2016) emphasize that high-quality information, when delivered through credible communication channels, enhances consumer confidence in a firm's environmental commitments, thereby reducing the likelihood of greenwashing accusations. Thus, higher green information quality is believed to have a negative impact on greenwashing perception. Thus, we posit **H1**: Green Information Quality has a significant negative

impact on Greenwashing Perception. The hypothesis chimes Attribution Theory of Marketing, which accounts for how people form inferences about causes of actions or statements. People are likely to credit green claims as having sincere intent rather than deception when Green Information Quality is high clear, correct, and verifiable. It decreases suspicion, and by consequence, Greenwashing Perception is less. It also relies on Signaling Theory, where good-quality information is a reliable signal for real environmental commitment. They both describe how higher Green Information Quality translates to less perceived greenwashing.

Green Communication or Environmental Communication means that companies are engaged in communicating its green activities, green values, and environmental practices. When environmental communication happens persistently, it can create the stakeholders' confidence and decrease uncertainty towards the firm's intentions. Furthermore, consistent and engaging communication channels, such as social media or sustainability reports, amplify the impact of green communication on consumer perceptions and behavior's (Du et al., 2010). Again, Attribution Theory of Marketing and Signaling Theory supports the inverse relationship between environmental communication and greenwashing perception. Thus, there is expected to be a negative relationship where improved environmental communication reduces greenwashing perception. **H2**: Environmental Communication has a significant negative impact on Greenwashing Perception.

Green Transparency is traceability, honesty, and openness of green practices and environmental claims of a company. With companies offering publicly available and verifiable data on their green activities, for instance, as third-party certifications, life-cycle analyses, or supply chain disclosures-it can lower consumers' cynicism and uncertainty. Transparency is particularly effective in countering greenwashing perceptions, as it allows consumers to verify a firm's environmental

claims through accessible and reliable information (Schnackenberg & Tomlinson, 2016). Thus, more Green Transparency should be related to less greenwashing perception. **H3**: Green Transparency has a significant negative impact on Greenwashing Perception. **H3** is grounded in Legitimacy Theory, which states that organizations strive to align with societal expectations and try to maintain legitimacy. Green Transparency means openly sharing environmental data, policies, and performance. This signals accountability and ethical behaviour. Signalling Theory would say, such transparency acts as a trust-building signal, reducing stakeholder doubts.

Green Information Quality is the reliability, relevance, intelligibility, and openness of the environmental messages communicated by a firm. Upon seeing good-quality green information, this improves the credibility of the brand message and reinforces the belief of the brand as competent and credible. Hence, authors posit **H4**: Green Information Quality has a significant positive impact on Brand Credibility. Environmental Communication entails how a company communicates its green ethics, environmental goals, and environmentally friendly behaviour. If the communication is brief, consistent, and aligned with actual behaviour, it reflects corporate ethics and the build-up of stakeholder trust. Szabo & Webster (2021) supports the concept that favourable environmental messages will ensure a Credible Brand reputation by lowering skepticism and affirming the environmentally friendly image of the company. Good Environmental Communication will thus build Brand Credibility. **H5**: Environmental Communication has a significant positive impact on Brand Credibility. Signalling theory does support the hypothesis.

Green Transparency is the openness of disclosing environmental activities, objectives, and performance in a verifiable and observable way to stakeholders. Through disclosure of their sustainability actions by way of statements, third-

party verification, or progress reports, firms minimize information asymmetry and establish claims of accountability and integrity. Hence, more Green Transparency should have a positive effect on Brand Credibility. **H6**: Green Transparency has a significant positive impact on Brand Credibility. Again, signalling theory and stakeholders theory supports the statement.

Brand Credibility is how much a brand may be perceived as reliable, trustworthy, and capable of living up to its claims. If a customer believes that a brand is very credible, then it is less likely that he will question greenwashing, including deceptive marketing practices. A trustworthy brand minimizes suspicion about the authenticity of green claims and thus minimizes greenwashing perception. Therefore, increased Brand Credibility should decrease Greenwashing Perception. **H7**: Brand Credibility has a significant negative impact on Greenwashing Perception.

Brand Credibility is a key psychological process by which consumers decode green-related information. High quality green information, effective environmental communication, and open sustainability disclosures all contribute positively towards a brand's credibility through enhanced trustworthiness, reliability, and perceived authenticity. A credible brand, on the other hand, eliminates suspicion and lowers the extent of greenwashing perception. Brand Credibility should thus mediate the negative relationship between green dimensions (quality, transparency and communication) and greenwashing perception. **H8**: Brand Credibility mediates the relationship between Greenwashing

Perception and Green Information Quality. **H9**: Brand Credibility mediates the relationship between Greenwashing Perception and Environmental Communication. **H10**: Brand Credibility mediates the relationship between Greenwashing Perception and Green Transparency.

Here, we posit moderation hypotheses, in which Pro Environmental Behavior moderates the direction, or the strength of Greenwashing Perception associated with green information measures (Quality, Transparency, Communication). Pro environmental behavior refers to the propensity of an individual to behave towards environmental sustainability, e.g., recycling, carbon footprint reduction, or purchasing green brands. An individual with higher pro environmental behavior will be inclined to criticize green claims and require organizations to be more transparent and authentic. Consequently, their greenwashing concept would rely more on the quality, transparency, and consistency of green information. Based on this rationale, pro environmental behavior will most likely intervene in the relationship between greenwashing perception and said four antecedents. **H11**: Pro Environmental Behavior moderates the relationship between Greenwashing Perception and Green Information Quality. **H12**: Pro Environmental Behavior moderates the relationship between Greenwashing Perception and Environmental Communication. **H13**: Pro Environmental Behavior moderates the relationship between Greenwashing Perception and Green Transparency.
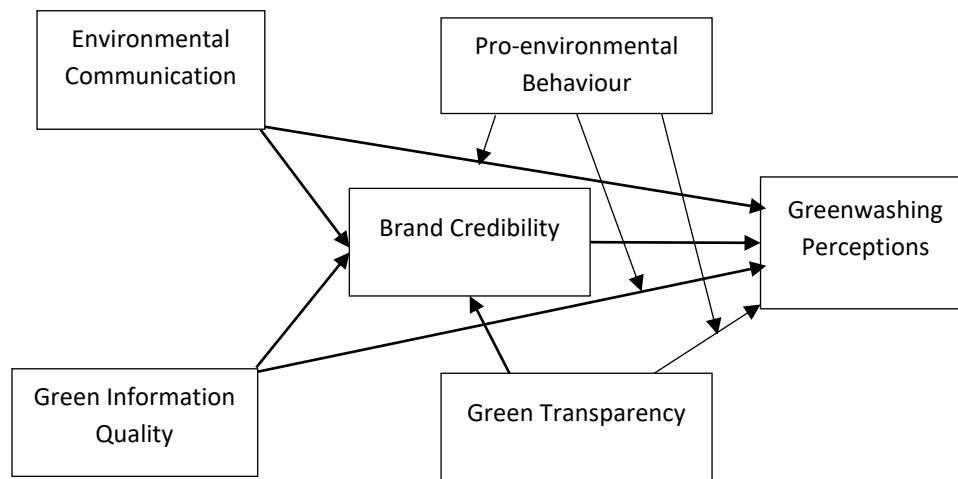
Conceptual Framework Model

Figure 1. Conceptual Model of the Study

3. METHODOLOGY

Researchers have used quantitative research design with cross-sectional research methods. Hypotheses testing was made based on data analysis. The authors of this research article focused on the consumers of food items as the respondents of the study belonging to the z-generation (1990 to 2010) residing in urban areas of the country. The survey questionnaires were filled by the respondents in both ways through online response and printed hard form. The buyers of consumer products of a certain company residing in urban areas were determined as a population for this research work. Population was determined without any discrimination against culture or creed. Sample size of 310 was determined in consultation with field experts keeping in view the number of items in the questionnaire. To persuade the respondents for an open-minded response, they have been briefed through introductory remarks about the research and were assured about the secrecy of their personal data. Total 360 responses (115 online and 245 manual) responses were collected. After removing the duplicates, irrelevant and unusual records, it yielded 323 records for data analysis.

4. DATA COLLECTION

The items to measure the variables were derived from the scales which were already used by the researchers. The measurement scale for Pro Environmental Behaviour have already been used by Mateer et al. (2022). Items provided in Mateer et al. (2022) are as follows:

Please rate how frequently you have participated in the following activities:

a) Bought environmentally friendly and/or energy efficient products

b) Walked or rode a bike when traveling short distances

c) Reused or mended items rather than throwing them away

d) Composted food or yard and garden refuse

e) Avoided buying products with excessive packaging

f) Bought organic vegetables

g) Used rechargeable batteries

h) Minimized use of heating or air conditioning to limit energy use

i) Car-pooled when traveling to a destination

j) Talked to others in your community about environmental issues

k) Worked with others to address an environmental problem or issue

l) Participated as an active member in a local environmental group

m) Signed a petition about an environmental issue

n) Donated money to support local environmental protection

The measurement scale for Green Information Quality have already been used by Kumar et al. (2021). Detail is as under:

a) The information arguments are strong

b) The information arguments are reasonable

c) The information arguments are convincing

d) The information arguments are persuasive

e) The information effectively supports its arguments

f) The information arguments are good

g) The information is trustworthy

h) The information is unbiased

i) The information is believable

j) The information provides sufficient information for readers

k) The information provides relatively comprehensive information

l) The information provides all necessary topics

m) The information provides complete description

The measurement scale for Environmental Communication have already been used by Kassing et al. (2010). Detail is as under:

a) I enjoy listening to discussions about the environment.

b) I ignore people who talk about the environment.

c) Discussing the environment is important.

d) Listening to discussions about environmental issues energizes me.

e) I skip over news stories about the environment.

f) It is necessary to discuss environmental issues.

g) I make it a point to discuss environmental concerns.

h) It bores me to hear others discuss environmental issues.

i) Conversations about environmental issues can make a difference.

j) I change the channel when a story about the environment airs.

k) I find myself regularly discussing the environment.

l) I usually learn something when I listen to others talking about the environment.

m) I ignore online stories about environmental issues.

n) I enjoy discussing the environment.

o) Talking about environmental concerns is important to our future.

p) I attend to televised news reports about environmental issues.

q) Talking about the environment is unimportant.

r) I like to get people talking about environmental concerns.

s) I disregard news reports about environmental concerns.

t) I start discussions about environmental issues.

The measurement scale for Green Transparency have already been used by Lin et al. (2017). Detail is as under:

a) This brand explains clearly how it controls the emissions caused by its production processes that could harm the environment.

b) Overall, this brand provides the information needed to understand the environmental impact of its production processes.

c) This brand provides relevant information regarding environmental issues associated with its production processes.

d) The environmental policies and practices of this brand are provided to customers in a clear and complete way.

The measurement scale for Brand Credibility has already been used by Erdem & Swait (2004b) whose items are as under:

a) This brand reminds me of someone who's competent and knows what he/she is doing.

b) This brand has the ability to deliver what it promises.

c) This brand delivers what it promises.

d)   This brand's product claims are believable.

e)   Over time, my experiences with this brand have led me to expect it to keep its promises, no more and no less.

f)   This brand has a name you can trust.

g)   This brand doesn't pretend to be something it isn't.

h)   The quality of this brand is very high.

i)   In terms of overall quality, I'd rate this brand as a . . . .

j)   I'd have to try it several times to figure out what this brand is like.

k)   I never know how good this brand will be before I buy it.

l)   I need lots more information about this brand before I'd buy it. (R)

m)   I know what I'm going to get from this brand, which saves time shopping around.

n)   I know I can count on this brand being there in the future.

o)   This brand gives me what I want, which saves me time & effort trying to do better.

The scale to measure Greenwashing Perception was adopted from Sun & Shi (2022) whose items are as follows:

a)   The company omits or hides important information to make green claims sound better than they are.

b)   The company is misleadingly literal about its environmental attributes.

c)   The company is visually or graphically misleading about its environmental attributes.

d)   The company's green claims are vague or unprovable.

e)   The company exaggerates the reality of its green features.

To refine the questionnaire certain items were removed. Keeping in view the validity, reliability in the very contextual location and the respondent's interpretation levels and interest, the final version of the questionnaire was trimmed to contain 31 items. Five-point Likert psychometric scale (Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree) was used for measuring each item. For online responses, the questionnaire was executed through google forms by sharing the link on social media. In addition, the authors obtained responses by personally approaching the respondents and getting responses over a printed questionnaire. Reliability for each construct of the variables was checked by measuring scale reliability. Cronbach Alpha value of the constructs of the variables was recorded as follows:

Table 1. Cronbach Alpha Values of the Constructs of the Variable Measured through Questionnaire

Variable Name	Cronbach Alpha Value	Reliability
GIQ	.805	Good
EC	.809	Good
GTY	.792	Good
BC	.787	Acceptable
GWP	.865	Good
PEB	.767	Acceptable

5.   DATA ANALYSIS

To analyse the data rigorously, various statistical tools and techniques have been used with the help of IBM SPSS Statistics and IBM SPSS Amos.

Path analysis through structural equation modelling and regression analysis has been carried out rigorously along correlation tests. Demographic data of 323 respondents who participated in this research is tabulated below along with frequency distribution:

5.1 Frequency Distribution
Table 2. Frequency Distribution of Respondents w.r.t. Gender

Gender	Frequency	Percent	Cumulative Percent
Female	92	28.5	28.5
Male	231	71.5	100.0
Total	323	100.0	

Table 3. Frequency Distribution of Respondents w.r.t. Age

Age Group	Frequency	Percent	Cumulative Percent
18 to 25	126	39.0	39.0
26 to 35	197	61.0	100.0
Total	323	100.0	

Table 4. Frequency Distribution of Respondents w.r.t. Education

Qualifications	Frequency	Percent	Cumulative Percent
Graduation	124	38.4	38.4
MBBS / Engineering / LLB / BS / MSc / MA	37	11.5	49.9
MS / M.Phil	138	42.7	92.6
PhD	24	7.4	100.0
Total	323	100.0	

Table 5. Frequency Distribution of Respondents w.r.t. Income

Income Slabs	Frequency	Percent	Cumulative Percent
100000 or less	204	63.2	63.2
100000 to 199000	75	23.2	86.4
200000 to 299000	18	5.6	92.0
300000 or above	26	8.0	100.0
Total	323	100.0	

5.2 Correlations Test
Table 6. Pearson Correlation Coefficient Values of Relationships between the Variables

	GIQ	EC	GTY	BC	PEB	GWP
GIQ	1					
EC	.542[**]	1				
GTY	.353[**]	.388[**]	1			
BC	.678[**]	.479[**]	.470[**]	1		
PEB	.313[**]	.215[**]	.319[**]	.322[**]	1	
GWP	-.383[**]	-.340[**]	-.217[**]	-.352[**]	-.068	1

(GIQ-Green Information Quality; EC-Environmental Communication; GTY-Green Transparency; BC-Brand Credibility; PEB-Pro Environmental Behavior; GWP-Greenwashing Perception)
**. Correlation is significant at the 0.01 level (2-tailed).

Pearson Correlation coefficients empirically **support the hypotheses H1, H2, H3, H4, H5,** **H6, H7** which means that all direct effects of IVs (GIQ, EC, GTY) over DV (GWP) and MV (BC)

are evident. However, we further proceed for regression analysis to test all our hypotheses.

5.3 Path Analysis for Hypotheses Testing

Path analysis of proposed model of this study was made to test the hypotheses in sequence. This was made through statistical approximation of the model using SPSS and AMOS.

5.3.1   Impact of Independent Variables on Dependent Variable: To test H1, H2 and H3 structural equation model (SEM) was constructed between the independent variables Green Information Quality (GIQ), Environmental Communication (EC), Green Transparency (GTY) and dependent variable Greenwashing Perception   (GWP).
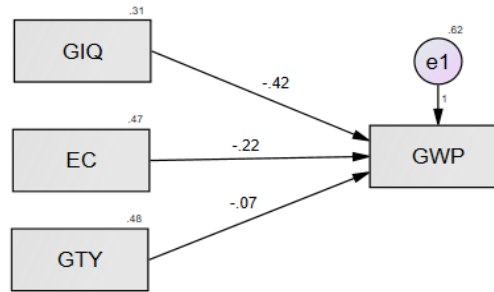

Figure 2. SEM Constructed between Independent Variables and Dependent Variable

Table 7. Regression Weights for SEM between Independent Variables and Dependent Variable

			Estimate	S.E.	C.R.	P
GWP	<--	GIQ	-.422	.079	-5.352	***
GWP	<--	EC	-.216	.064	-3.389	***
GWP	<--	GTY	-.069	.064	-1.081	.280

The figure and table show regression estimate between independent variables (GIQ, EC, GTY) and dependent variable (GWP). The slope of the equations, i.e. β values (-0.422 and -0.216) show moderate negative relationships of two independent variables (GIQ and EC) with GWP. P-value for these regression estimates show significance at $\leq$ 0.010 level. Whereas the relationship of another independent variable, GTY with dependent variable (GWP) is not significant in regression weights analysis. This

implies that **H1** and **H2** are approved whereas **H3** is rejected.

5.3.2   The Impact of Independent Variables (GIQ, EC, GTY) on Mediating Variable (BC): To test the hypotheses, H4, H5 and H6 structural equation model was run whose results are shown below:
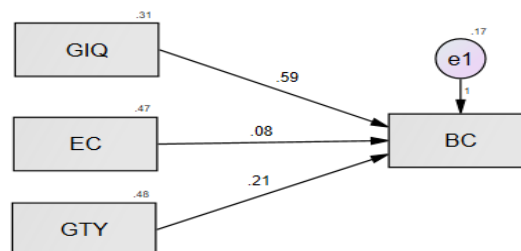

Figure 3. SEM Constructed between Independent Variables and Mediating Variable

Table 8. Regression Weights for SEM between Independent Variables and Mediating Variable

			Estimate	S.E.	C.R.	P
BC	<~~	GIQ	.591	.042	14.171	***
BC	<~~	EC	.079	.034	2.334	.020
BC	<~~	GTY	.213	.034	6.356	***

The figure and table show regression estimate between independent variables (GIQ, EC, GTY) and mediating variable (BC). The slopes of the equations i.e. β values (0.591 and 0.213) show positive relationships between the independent variables (GIQ and GTY) and the mediating variable (BC). P-values for these regression estimates are 0.000 which shows maximum significance. Whereas the slope of the equation i.e. β values (.079) for another independent variable (EC) shows less significant relationship of this independent variable (EC) with dependent variable (BC) because P-value is 0.020 which shows significance at ≤ 0.050 level. This implies that **H4**. **H5** and **H6** are approved.

5.3.3   Impact of Mediating Variables on Dependent   Variable
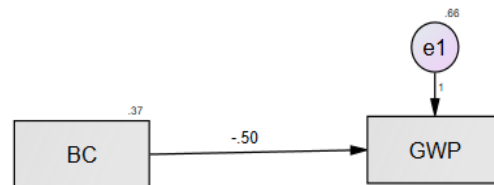

Figure 4. SEM Constructed between Mediating Variable and Dependent Variable

Table 9. Regression Weights for SEM between Mediating Variable and Dependent Variable

			Estimate	S.E.	C.R.	P
GWP	<~~	BC	-.505	.075	-6.753	***

To test **H7**, path analysis test was run to see the relationship between the mediating variable (BC) and dependent variable (GWP). Figure and table show that slope of the equation, i.e. β values (-0.505) with P-value 0.000 which means that there is a significant relationship between Brand Credibility and Greenwashing Perception. This approved our hypothesis **H7**.

5.3.4   Supposed Mediating Role of Mediator (BC) on the Relationship between Independent Variables (GIQ, EC, GTY) and Dependent Variable (GWP): To empirically test **H8**, the acceptance of **H1**, **H4** and **H7** is prerequisite which has been fulfilled. Hence the mediation test was conducted to test mediation of BC between   GIQ   and   GWP
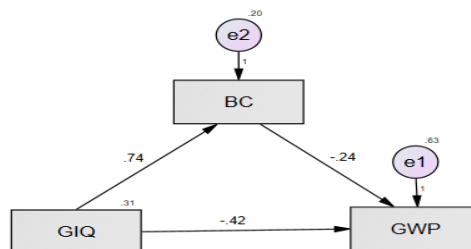
.

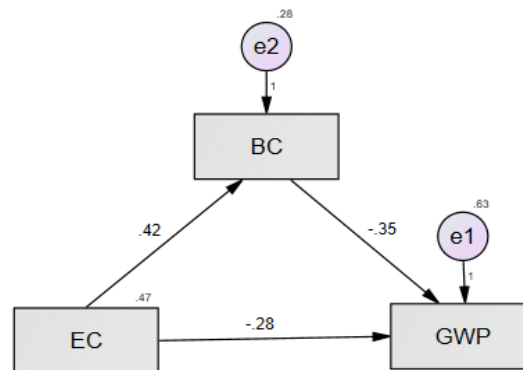**Figure 5. SEM Showing Mediation Effect of BC on the Relationship between GIQ and GWP**

Table 10. Regression Weights for SEM Showing Mediation Effect of BC on the Relationship between GIQ and GWP

			Estimate	S.E.	C.R.	P
BC	<--	GIQ	.737	.044	16.558	***
GWP	<--	GIQ	-.417	.108	-3.854	***
GWP	<--	BC	-.245	.099	-2.462	.014

To prove the mediation of BC between GIQ and GWP, three conditions are required to be fulfilled in mediation test, i.e. GIQ-BC relationship (IV-MV) should be significant; BC-GWP relationship (MV-DV) should also be significant; GIQ-GWP relationship (IV-DV) should not be significant in this mediation test. The figure and table show that first condition is met. The second condition is met to some extent whereas third condition is not met. Here IV-MV is significant with P-value 0.000 whereas MV-DV is significant but at 0.050 level because P-value is 0.014. On the other hand IV-DV is again significant with P-value 0.000 in this mediation test which should not be significant in the presence of MV. Hence **H8** is rejected.

To test **H9**, the acceptance of **H2**, **H5** and **H7** is prerequisite which has been fulfilled. Hence the mediation test was conducted to test mediation of BC between EC and GWP.

Figure 6. SEM Showing Mediation Effect of BC on the Relationship between EC and GWP

Table 11. Regression Weights for SEM Showing Mediation Effect of BC on the Relationship between GIQ and GWP

			Estimate	S.E.	C.R.	P
BC	<--	EC	.420	.043	9.781	***
GWP	<--	EC	-.279	.073	-3.820	***
GWP	<--	BC	-.353	.083	-4.234	***

To prove the mediation of BC between EC and GWP, three conditions are required to be fulfilled in this mediation test, i.e. EC-BC relationship (IV-MV) should be significant; BC-GWP relationship (MV-DV) should also be significant; EC-GWP relationship (IV-DV) should not be significant in the presence of mediator. The figure and table show that two conditions are met whereas one condition is not met. Here IV-MV is significant with P-value 0.000. MV-DV is also significant with P-value 0.000. Whereas IV-DV is again significant with P-value 0.000 in this mediation test which should not be significant in the presence of MV. Hence **H9** is rejected.

To test **H10**, the acceptance of **H3**, **H6** and **H7** is prerequisite which has not been fulfilled. The relationship of GTY-GWP (IV-DV: **H3**) was not proved. Hence rejection of **H6** has rejected **H10**.

5.3.5 Moderating Effect of Supposed Moderating Variable (PEB) on Relationships between Independent Variables (GIQ, EC, GTY) and Dependent Variable (GWP):

The pre-requisites for testing **H11, H12** and **H13** are the acceptance of **H1, H2 and H3** respectively. Since **H3** was not proved, hence we will test only **H11** and **H12** only. **H11** pertains to testing moderation of PEB on the relationship between the independent variable GIQ and dependent variable GWP. Let we see how moderator (PEB) impacts the relationship between GIQ and GWP. To run moderation test, the variables GIQ and PEB were centred and an interaction variable InterGIQxPEB was created using SPSS.
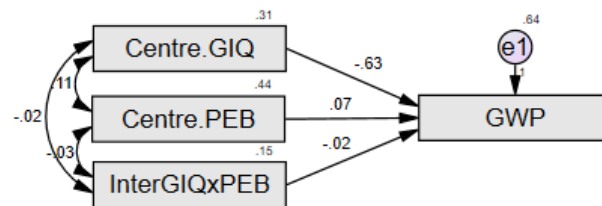

Figure 7. SEM Showing Moderation of PEB on the Relationship between GIQ and GWP

Table 12. Regression Weights for SEM Showing Moderation of PEB on the Relationship between GIQ and GWP

			Estimate	P
GWP	<---	Centre.GIQ	-.626	***
GWP	<---	Centre.PEB	.075	.295
GWP	<---	InterGIQxPEB	-.024	.835

The results show that GIQ significantly influences GWP, but PEB does not have a significant effect on GWP whereas the interaction (IntrGIQ×PEB) is also not significant. Hence, we may say that PEB does not moderate the relationship between GIQ and GWP.

H12 pertains to testing moderation of PEB on the relationship between the independent variable EC and dependent variable GWP. Let us see how moderator (PEB) impacts the relationship between EC and GWP. To run moderation test, the variables EC and PEB were centered and an interaction variable InterECxPEB was created using SPSS.
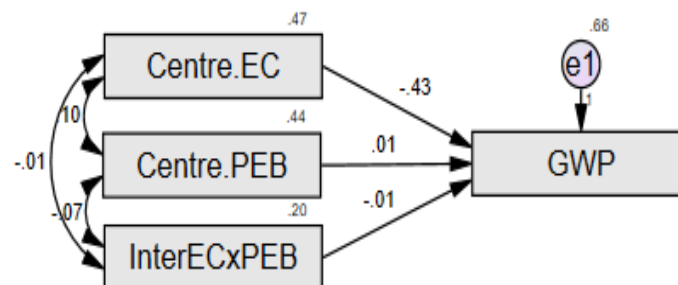

Figure 8. SEM Showing Moderation of PEB on the Relationship between EC and GWP

Table 13. Regression Weights for SEM Showing Moderation of PEB on the Relationship between EC and GWP

			Estimate	P
GWP	<--	Centre.EC	-.429	***
GWP	<--	Centre.PEB	.006	.933
GWP	<--	InterECxPEB	-.007	.949

The results show that EC significantly influences GWP, but PEB does not have a significant effect on GWP whereas the interaction (IntrEC×PEB) is also not significant. Hence, we may say that PEB does not moderate the relationship between EC and GWP.

6.   CONCLUSION AND DISCUSSION

The purpose of this research was to collect and analyse the appropriate data for studying the mediated and moderated mechanism of the determinants of greenwashing perception to propose the actions to the firms how they can decrease perceived greenwashing among their customers. Thirteen hypotheses were framed and eleven have been tested empirically to explore the links between the independent variables, perceived mediating variable and perceived moderator. Green Information Quality (GIQ), Environmental / Green Communication (EC) and Green Transparency (GTY) were assumed as the major predictors of Greenwashing Perception (GWP).

The empirical testing through rigorously collected data evidenced GIQ and EC as the antecedents of GWP whereas GTY was evidenced as the predictor of GWP through correlation but could not be verified through regression analysis. On the other hand, Brand Credibility (BC) was perceived as mediator between said IVs and DV, but this mediation could not be empirically evidenced for GTY-GWP relationship and could only was witnessed for GIQ-GWP and EC-GWP relationships. However, correlation evidenced that BC and GWP have a significant relationship hence BC may also be a predictor of GWP. Similarly, the moderation of PEB was perceived heuristically but this moderation has not been proved through this data analysis.

6.1 Theoretical Implications

The study has added in the body of existing knowledge from the point of view of the population studied. The link between BC and GWP seems heuristically obvious, but this was not explored in this direction. This study has empirically established the link between BC and GWP first time. The study has filled this gap in existing literature. The results advocate that the brands who are not practicing greenwashing but facing this dilemma among their customers may plan to engage in green communication keeping in view the green information quality. The study also hints about increasing their credibility through any means. This would also decrease greenwashing perception among their perspective customers. The link between green transparency and greenwashing perception has not been proved as significant but green transparency has significant positive impact over brand credibility which may not be ignored.

6.2 Practical Implications

Our results suggest that green information quality, environmental communication and brand credibility are crucial in minimizing perceptions of greenwashing and green transparency has a subtle role. Few suggestions for marketing managers in the light of this empirical study are as follows:

I) Double up on High Quality Green Information (GIQ → GWP) through actionable strategies like investing in third-party certifications, using trusted labels to validate claims as consumers rely on objective standards, creating green fact sheets for each product, publish detailed, evidence-backed green information on website, debunk misinformation proactively, address common greenwashing myths in FAQs or social media.

II) Refine Environmental Communication (EC → GWP) by ensuring messaging is clear, align claims across channels. Green communication should be consistent, concrete, consumer-centric and credible. Leverage environmental communication by storytelling. Feature real employee/ community voices to humanize efforts.

III) Leverage Green Transparency (GT→ BC) strategically through actionable strategies like using Blockchain for proof of sustainability, launching open-book sustainability reports, disclosing both successes and shortcomings, hosting live Q&A sessions, addressing consumer skepticism in real time via social media platforms, leveraging digital platforms for real-time ESG transparency.

IV) Strengthen Brand Credibility (BC → GWP) through actionable strategies like aligning with trusted advocates, partnering with environmental NGOs or scientists to co-brand campaigns, highlighting long-term commitments, showing multi-year progress, responding to criticism transparently. If accused of greenwashing, publish corrective action plans. Use blockchain disclosure as proof of sustainability because it addresses the demand of Generation-Z for verifiable proof enhancing brand credibility's impact on greenwashing perception.

6.3 Limitation and Future Directions:
Although mediation and moderation of brand credibility and pro environmental behaviour have not been proved in this research study which may be due to certain other reasons. The researchers recommend that it may be tested in a different geographical and industrial sectoral perspective. The results from different contextual settings in future may arise differently to enlighten new avenues. Another point to be disclosed here is that during the data collection, the respondents were shown a video just before filling in the questionnaire. The video has certain contents about environmental / green communication by a certain business firm about which the subjects were required to give their response. The impact of EC may therefore be enhanced and dominated upon the impact of other variables. Hence,

different data collection processes may result in different results. Another limitation of this study is that this records responses from generation-Z only whereas generation-X and generation-Y may response differently.

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