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Trust Repair Strategies Following Greenwashing: An Experimental Study of Organizational Trustworthiness in Pakistan's Home Appliance Sector

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ABSTRACT
Greenwashing, deceptive or misleading environmental claims by organizations, has emerged as a critical threat to consumer trust, particularly in Pakistan's rapidly expanding home appliance sector. Despite considerable scholarly attention to trust violations, the mechanisms through which organizations can systematically restore consumer trust following greenwashing incidents remain underexplored, especially in developing-country contexts. This study employs a pretest–posttest control group experimental design (N = 300) to investigate whether affective, informational, and functional trust repair strategies significantly improve consumer perceptions of organizational integrity, benevolence, and competence. Participants drawn from three universities in Khyber Pakhtunkhwa, Pakistan, were randomly assigned to either a high-trust repair condition (multimodal comprehensive recovery stimuli) or a low-trust repair condition (minimal recovery stimuli),

following exposure to a standardized greenwashing violation scenario involving a fictitious home appliance firm. One-way ANOVA results reveal statistically significant differences across all three trustworthiness dimensions: organizational integrity ($F = 12.34$, $p < .001$), benevolence ($F = 14.56$, $p < .001$), and competence ($F = 13.29$, $p < .001$), with the high-trust repair group consistently recording higher mean scores. These findings, grounded in Social Exchange Theory, demonstrate that comprehensive, multi-dimensional trust repair strategies restore consumer perceptions of organizational trustworthiness more effectively than minimal repair efforts. Theoretical and managerial implications are discussed, along with directions for future research.

Keywords: *greenwashing, trust repair, affective strategies, informational strategies, functional strategies, organizational trustworthiness, consumer behavior, Pakistan, home appliances, experimental design*

1. Introduction

The rapid growth of green marketing in the recent past is phenomenal; however, it has been accompanied by an unwanted companion, which is called greenwashing. Greenwashing is the practice of exaggerated, misleading, and unsubstantiated environmental claims (Delmas & Burbano, 2011; Parguel et al., 2011). High-inducive energy-consuming industries like home appliances can greatly benefit from the practices of green marketing, as it will help them to differentiate their products in highly saturated and competitive markets. Nonetheless, the prevalence of greenwashing practices can hamper the consumer's overall confidence and trust in such industries (Butt et al., 2022). As a case in point, a study conducted in North American markets reveals that as many as 95% of products labeled as 'green' exhibit at least one dimension of greenwashing, ranging from concealed trade-offs to outright false labeling (TerraChoice, 2010). As a result, such practices of greenwashing reduce purchase intention, damage brand equity, and trigger word-of-mouth backlash (Chen & Chang, 2013; Leonidou & Skarmeas, 2017). This study was conducted in Pakistan. It is a developing economy that is undergoing exponential industrial growth lately, accompanied by increasing education and little environmental awareness, yet highly affected by climate change and global warming. The incidence of greenwashing in such countries may find its place due to a lack of people's knowledge about environmental deterioration and give free rein to companies to use greenwashing and sail under the false color of green marketing. Butt et al. (2022) confirmed that greenwashing in this sector harms perceived green value, brand image, and consumer trust—yet their study, and others in the Pakistani context (Murad et al., 2022), stopped short of proposing or testing mechanisms for trust recovery. Also, there is another study related to greenwashing and trust repair tactics that is conceptual in nature by Rashid et al. (2023) that proposed the overarching process-based consumer trust repair model following greenwashing; however, this study is not empirically validated. Keeping these considerations in mind, this study aims to fill this void, as it is not something trivial to be ignored; in fact, if organizations are to sustain long-term brand relationships, they must move beyond the question of how greenwashing harms trust and address how that trust can be repaired.

Scholarly work on trust repair has expanded considerably over the past two decades. Researchers have proposed a range of trust recovery strategies with varying degrees of

effectiveness. This includes strategies like apologies, denials, reimbursements, and public commitments, etc. (Bansal & Zahedi, 2015; Kim et al., 2004; Xie & Peng, 2009). As of now, the literature still has some notable blind spots, nonetheless. The sample of these studies heavily relies on developed economies, which tend to examine repair tactics in isolation, and it has been ineffective in broader theoretical integration (Rashid et al., 2023). On the contrary, a different stream of research, however, has suggested a process-based classification, which categorizes repair strategies into affective (emotional appeals and apologies), informational (transparent communication and corrective disclosure), and functional (tangible actions, such as compensation and product redesign) (Bozic, 2017; Bozic et al., 2019; Bolat et al., 2020; Rashid et al., 2023), which is not yet widely used and has not been empirically tested.

Moreover, the causal relationship of these three trust repair strategies (Affective, Informational, and Functional) with the trustworthiness dimension (integrity, benevolence, and competence) as theorized by Mayer et al. (1995) and Kim et al. (2004) may not be rigorously tested as of now using experimental methods in a greenwashing context. Experimental designs, in this regard, are beneficial in enabling controlled causal inference by exposing participants to varying levels of trust repair intensity, so that one can isolate the effect of repair strategy type from confounding consumer or brand characteristics.

In order to achieve the objective of this study, a pretest–posttest control group experimental design was employed. A sample of a total of 300 business students from three universities in Khyber Pakhtunkhwa, Pakistan, was selected. To ensure the rigor of the study, a fictional scenario of greenwashing practices was presented to the subjects of the study. Also, participants were randomly assigned to high or low-trust repair groups. Similarly, a one-way ANOVA was conducted to determine if the high trust repair content significantly increased perceptions of organizational integrity, benevolence, and competence relative to the low trust repair content.

This study renders three important contributions. Firstly, it offers a novel experimental test whereby trust repair strategies (affective, informational, and functional) are examined rigorously under a greenwashing context in Pakistan, filling a critical contextual gap in the literature. Secondly, it shows the distinct relevance of ANOVA-based experimental techniques in establishing causality, a methodological contribution to green marketing and trust repair literature. Finally, the results were interpreted using Social Exchange Theory (Blau, 1964; Cropanzano & Mitchell, 2005), which offers a theoretically consistent and overarching explanation of why having more comprehensive repair strategies results in more positive trustworthiness outcomes.

2. Literature Review and Hypothesis Development

2.1 Greenwashing and Its Effects on Consumer Trust

Greenwashing, the bête noire and often unwarranted and intrusive adversary of green marketing, is defined by Delmas and Burbano (2011) as a type of organizational behavior often characterized by juxtaposing the symbolic or appearance-oriented environmental claims (typically positive) with substantive, often highly polluting environmental performance (typically poor or neutral). According to TerraChoice (2010), there are seven 'sins' in the taxonomy of greenwashing. These include the sins of hidden trade-offs, no proof, vagueness, the lesser of two evils, fibbing, irrelevance, and false labels. All these greenwashing sins are designed carefully by

corporations teeming with chicanery to mislead consumers through different environmental claims. These tactics are often short-term and unsustainable, which ultimately results in reputational damage that is followed by loss of consumer trust.

In the same vein, findings of various studies consistently support that exposure to greenwashing reduces consumer trust in several aspects. As a case in point, the findings of Parguel et al.'s (2011) study confirm that deceptive environmental claims can negatively impact consumer trust and increase their skepticism towards the brand. Also, Edelman's (2010) research found that consumer trust in green products dropped precipitously from 30% to 13% over time due to the cumulative effect of exposure to greenwashing. In the context of Pakistan's home appliance sector, Butt et al. (2022) revealed that greenwashing had a negative impact on both perceived green value and green trust, and Murad et al. (2022) revealed that greenwashing had a negative impact on brand hate and negative word-of-mouth among environmentally aware customers.

These trust violations are particularly damaging because they strike at the core dimensions of trustworthiness. According to Mayer et al.'s (1995) foundational framework, trust is composed of three dimensions: ability (competence)—the trustee's relevant skills and capabilities; benevolence—the extent to which the trustee is perceived to care about the trustor's welfare; and integrity—the trustee's adherence to acceptable principles. Greenwashing, by its nature, represents a simultaneous violation across all three: it signals incompetence (inability to deliver promised environmental outcomes), malice or indifference (exploitation of consumers' environmental values), and dishonesty (deliberate misrepresentation). Trust repair strategies must therefore address all three dimensions to be effective.

2.2 Trust Repair: A Three-Strategy Taxonomy

There has been a shift in the trust repair literature from an apology/denial focus to a more extensive multi-dimensional taxonomy. Based on the crisis communication theory (Coombs & Holladay, 2008), the organizational trust research (Gillespie & Dietz, 2009), and consumer behavior literature (Kim et al., 2004), this study proposes three facets:

First, affective repair strategies include emotional appeals, apologies, expressions of remorse, and empathetic concern directly towards the relational damage resulting from the breach of trust (Coombs & Holladay, 2008; Tomlinson & Mayer, 2009). These strategies are hypothesized to re-establish the consumer's sense of benevolence by conveying that the company is truly concerned with the emotional health of the impacted consumer (Xie & Peng, 2009). The studies of Kim et al. (2004) and Finkel et al. (2002) validate the role of sincere apologies in minimizing the emotional distance between the organization and its customers and in promoting forgiveness.

Second. Informational repair strategies include offering clear communication, correcting disclosures, explanations, and supporting evidence that will help to restore perceptions of integrity by showing accountability and honesty (Kim et al., 2004; Schnackenberg & Tomlinson, 2016). Bansal and Zahedi (2015) proved that informational transparency has a greater positive effect on the restoration of perceived integrity because it reduces information asymmetry and conveys a message of openness. In addition, Rawlins (2008) concluded that transparent communication practices can contribute to an increase in organizational credibility as they show a true commitment to accountability.

Finally, functional repair strategies are action-oriented solutions (such as compensation, product replacement, operational change, and service change) that restore perceptions of competence by showing the organization's ability to detect and address the problem (Gillespie & Dietz, 2009; Smith et al., 1999). Guo's et al.'s (2024) study found that interventions for functional recovery directly influence competence perceptions as they indicate a desire to address the immediate harm and its root causes. Similarly, Boshoff (2005) observed that tangible compensation and service improvement are essential to regaining the trust of the consumer when trust has been violated.

2.3 Theoretical Foundation: Social Exchange Theory

The theoretical foundation for the hypothesized relationships in this research was provided by Social Exchange Theory (SET) (Blau, 1964; Homans, 1958; Cropanzano & Mitchell, 2005). Based on this, SET proposes that social behavior is a product of an exchange process where actors try to reap as many benefits as they can while keeping their expenses to a minimum in accordance with the reciprocity norms. When thinking about corporate reparative actions in the context of trust repair, they can be considered as 'social gifts' on which consumers make judgements based on reciprocity, cost-benefit logic, and equity norms.

Similarly, consumers are likely to respond with positive reinforcement about an organization's trustworthiness efforts if they feel firms advance genuine and positive reparations; this action is known as reciprocity, which includes sincere apologies, transparent disclosures, and tangible compensation (Cropanzano & Mitchell, 2005). Consumers feel socially and psychologically obligated to reciprocate with positive reassessments of the organization's trustworthiness (Cropanzano & Mitchell, 2005). In the same vein, cost-benefit analysis would suggest that the consumer would determine whether the relational benefits gained from restored trust are greater than the costs of the previous breach of trust (Kelley, 1959). Additionally, relational norms also suggest that consumers have expectations of proportionality, meaning that if there is a violation, the repair should be proportionate to that violation.

This framework characterized high-trust repair content as multi-modal (dealing with both speech and writing), comprehensive (covering affective, informational, and functional aspects of the trust), and a positive 'gift' given from the organization to its constituents that leads to a reciprocal positive reassessment of the organization across the trust dimensions. On the other hand, if the repair effort is minimal and if it does not meet the level of perceived proportionality, it will result in little or no positive change in trustworthiness perceptions.

2.4 Hypothesis Development

Based on the foregoing theoretical and empirical review, this study proposes the following hypothesis:

> **H1:** Following a consumer trust decline caused by deceptive green marketing (greenwashing), the trust repair variables (affective, informational, and functional recovery efforts) (a) significantly improve perceptions of organizational **benevolence**, (b) significantly improve perceptions of organizational **integrity**, and (c) significantly improve perceptions of organizational **competence**.

This overarching hypothesis is framed using the reciprocity principle that comprehensive repair efforts across all three strategy types should trigger proportional improvements in all three trustworthiness dimensions. This prediction is consistent with Kim et al.'s (2004) foundational

work demonstrating that different repair tactics align with different trustworthiness components, and with Xie and Peng's (2009) experimental evidence that emotional and functional responses jointly influence consumer trust restoration.

The conceptual framework synthesizing these theoretical relationships and the hypothesized pathways is presented in Figure 1.

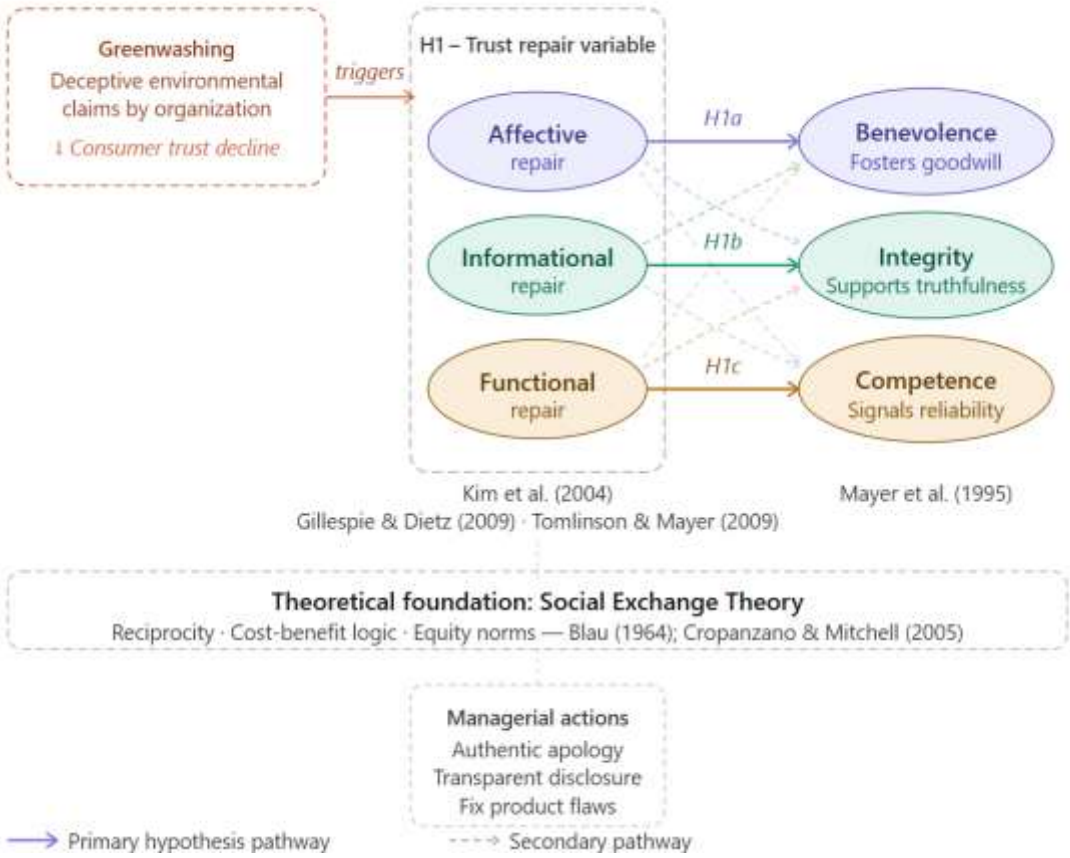

Figure 1: Conceptual Framework of Trust Repair Strategies

The framework depicts the hypothesized relationships between the different types of trust repair strategies (independent variable) and the three dimensions of organizational trustworthiness (dependent variables) following Social Exchange Theory (Blau, 1964; Cropanzano & Mitchell, 2005). Solid arrows indicate primary hypothesis pathways (H1a, H1b, H1c); dashed arrows indicate secondary cross-pathways that reflect that trust repair is multi-dimensional. The strategy types are reflected at the operational level of manager action in the lower panel. The greenwashing trigger on the left symbolizes the violation of trust setting in which repair strategies are used.

3. Methodology

3.1 Research Design

A pretest–posttest control group experimental design was adopted to achieve the purpose of this study. It is considered one of the true experimental designs (Campbell & Stanley, 1963). This

design is useful because it is distinguished by random assignment of the participants to the treatment and control conditions (Gribbins & Herman, 1996). It is also useful when assessing the dependent variable before and after the experimental manipulation, and when comparing the dependent variable for both groups at the same time (Gribbons & Herman, 1996; Huck & McLean, 1975). The reason for selecting this design was its ability to establish causal relationships between the independent variable (trust repair strategy intensity) and the dependent variable (trustworthiness perceptions) while controlling for pre-existing differences between groups (Shadish et al., 2002).

The experimental design is especially well-suited for testing H1 as it makes a causal claim about the impact of trust repair strategies on trustworthiness perceptions, which is one of the particular strengths of the experimental method. Experimental control eliminates other explanations that tend to contaminate cross-sectional survey data, such as reverse causality and omitted variable bias. The selection of the experimental methodology for this study for hypothesis testing is also justified by the positivist research paradigm (Bryman & Cramer, 2012) and the deductive research approach (Bell et al., 2022).

3.2 Stimuli Development

To reduce pre-existing brand biases, the stimuli development process involved the formulation of hypothetical scenarios around a fictional Pakistani home appliance company, 'Green Electric Corporation' (De Vries et al., 2015; Nyilasy et al., 2014). To start with, a high-trust repair (treatment) condition and a low-trust repair (control) condition were developed. Then, the greenwashing violation scenario, which was presented to all participants before the assignment of conditions, included two components: A high-resolution photograph of a child with a protest poster in her hands accusing Green Electric Corporation of engaging in greenwashing, and a mock news clipping in the form of a local investigative report on the greenwashing incident. This multi-modal manipulation is intended to assure baseline low levels of trust among all participants by inducing feelings of corporate dishonesty and environmental deception (Kim et al., 2004; Xie & Peng, 2009). In addition, participants in the two groups were given a standard briefing on greenwashing before the scenario to create conceptual uniformity.

Furthermore, different kinds of stimuli were designed and presented to make a difference between the experimental and the control group. For the high-trust repair condition, a detailed and multi-modal repair package involving all three types of repair strategies was provided to the participant. The affective component included a comprehensive mock advertisement from The Pakistan Business Chronicle, which featured a personal and penitent apology by the CEO, a description of emotional support programmes (listening sessions, customer care packages), and visual support (award certificates and photographs from the summit). The informational element involved the transcription of press conferences, updates of the company website, and making the announcement on the customer hotline. The functional component included product redesign projects, compensation packages (refunds and vouchers), new production processes on infographic panels, and sustainability certification endorsements.

Participants in the low-trust repair (control) condition, however, received a low-level repair package that consisted of a short, shallow, and general apology; a token "we're sorry" statement with none offered in terms of compensation; no explicit mention of substantive operational change; and no endorsement or informational channels visually and substantively. This strong

contrast was built into the design to provide a strong experimental differentiation for robust hypothesis testing.

The stimuli were validated by an expert review process involving three academic experts in marketing and consumer behavior and a pilot study with a convenience sample of 30 business students. Feedback from the pilot study was used to refine scenario clarity and ensure ecological validity.

3.3 Sample and Procedure

The population of the study consisted of all the students studying business at (1) Institute of Business Studies, Kohat University of Science and Technology (KUST); (2) Institute of Management Studies, University of Peshawar, and (3) Institute of Management Sciences (IMSciences), Peshawar. Business students were chosen as the research group due to their academic background in concepts such as corporate social responsibility, sustainability, and trust-based marketing, allowing them to engage with the research stimuli and questions (Stanley & Campbell, 1963). The use of student samples in experimental trust and consumer behavior research has established a precedent in the literature (Kim et al., 2004; Xie & Peng, 2009).

All participants were recruited through convenience sampling, with 150 participants assigned to the treatment (high trust repair condition) and 150 to the control (low trust repair condition). Random assignment was at the session level, and separate sessions were set up for each group to avoid contamination. Institutional representativeness was achieved by allocating an equal number of students to the three universities (n = 100 per university). A summary of the sample's demographic profile is given in Table 1.

Table 1. Demographic Characteristics of the Experimental Sample (N = 300)

Characteristic	Category	N	%
Gender	Male	202	67.3
	Female	98	32.7
Age Group	18–22 years	180	60.0
	23–27 years	90	30.0
	28–32 years	30	10.0
Education	Undergraduate	180	60.0
	Graduate	120	40.0
University	KUST	100	33.3
	University of Peshawar	100	33.3
	IMSciences	100	33.3

The experiment was conducted in four steps. Initially, all participants filled out a pre-test questionnaire. Their pre-existing level of trust (on a 7-point Likert scale) was recorded. Secondly,

all participants were exposed to the standardized greenwashing violation scenario. Thirdly, participants were exposed to either the high or low trust repair stimuli according to their randomly assigned condition. Finally, all participants completed a posttest questionnaire measuring perceptions of organizational integrity, benevolence, and competence, along with manipulation check items.

3.4 Measures

Organizational trustworthiness was operationalized using established multi-item scales. Integrity was measured using items adapted from Mayer et al. (1995) and Kim et al. (2004), assessing perceptions of honesty, consistency with stated values, and ethical behavior. Benevolence was measured with items assessing perceptions of genuine care, empathy for affected consumers, and prioritization of consumer welfare. Competence was measured with items assessing the organization's perceived capability to deliver on its environmental promises and to resolve the greenwashing crisis effectively. All items were rated on 7-point Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree).

A manipulation check was administered alongside the posttest to verify that the high trust repair condition was perceived as meaningfully more comprehensive than the low trust repair condition. Participants were asked to rate the comprehensiveness and sincerity of the company's response on a 5-point scale.

3.5 Analytical Strategy

Prior to ANOVA, the data were screened for compliance with three statistical assumptions: normality, homogeneity of variances, and independence of observations. Normality was assessed using the Shapiro–Wilk test (Razali & Wah, 2011); homogeneity of variances was assessed using Levene's test (Levene, 1960). Independence of observations was ensured through the experimental design and separate session administration. One-way ANOVA was then conducted to examine group differences in posttest scores on each trustworthiness dimension. Effect sizes were calculated using eta-squared (η^2) to complement p-values and provide a more complete picture of practical significance (Cohen, 1988).

4. Results

4.1 Assumption Testing

Table 2 reports the results of the Shapiro–Wilk test for normality. For both the control group and the experimental group, the p-values exceeded the conventional threshold of .05 (control: W = 0.982, p = .23; experimental: W = 0.974, p = .19), confirming that the normality assumption was not violated (Ghasemi & Zahediasl, 2012).

Table 2. Shapiro–Wilk Test for Normality

Group	W Statistic	p-value	Interpretation
Control Group (Low Trust Repair)	0.982	.23	Normality satisfied
Experimental Group (High Trust Repair)	0.974	.19	Normality satisfied

Levene's test for homogeneity of variances yielded F = 1.120 (p = .290), indicating that the variances were statistically equal across groups (Table 3). The independence assumption was satisfied by design through random assignment and separate experimental sessions.

Table 3. Levene's Test for Homogeneity of Variances

Comparison	F Statistic	p-value	Interpretation
Control vs. Experimental Group	1.120	.290	Equal variances confirmed

4.2 Manipulation Check

Table 4 presents the manipulation check results, confirming that the high trust repair condition was perceived as significantly more comprehensive and sincere than the low trust repair condition across all three strategy dimensions. Mean scores were consistently higher in the experimental group (affective: M = 3.61 vs. 2.61; functional: M = 3.68 vs. 2.68; informational: M = 3.58 vs. 2.58), validating the experimental manipulation and supporting the internal validity of the design.

Table 4. Manipulation Check: Mean Differences Between High and Low Trust Repair Groups

Repair Dimension	High Trust Repair (M)	Low Trust Repair (M)	Mean Difference
Affective Repair	3.61	2.61	+1.00
Functional Repair	3.68	2.68	+1.00
Informational Repair	3.58	2.58	+1.00
Trust Level (Pre-experiment)	3.45	3.50	−0.05 (n.s.)
Trust Level (Post-experiment)	4.84	3.45	+1.39

4.3 Descriptive Statistics

The posttest descriptive statistics for both groups across the three trustworthiness dimensions is presented in Table 5. Mean scores for organizational integrity (M = 4.85, SD = 1.20), benevolence (M = 4.90, SD = 1.22), and competence (M = 4.80, SD = 1.18) in the high trust repair group were consistently higher than in the low trust repair group (integrity: M = 3.90, SD = 1.05; benevolence: M = 3.70, SD = 1.00; competence: M = 3.75, SD = 1.10). Further, the skewness values were mildly negative across all conditions (range: −0.21 to −0.42), indicating slight left skew. Also, the kurtosis values were negative (range: −0.62 to −1.16), indicating somewhat platykurtic distributions. These deviations from normality are within acceptable bounds for ANOVA (Tabachnick & Fidell, 2007) and are consistent with the Shapiro–Wilk results.

Table 5. Descriptive Statistics by Group and Trustworthiness Dimension

Variable	Group	N	Mean	SD	Skewness	Kurtosis
Organizational Integrity	High Trust Repair	150	4.85	1.20	−0.27	−0.74
	Low Trust Repair	150	3.90	1.05	−0.38	−1.05
Organizational Benevolence	High Trust Repair	150	4.90	1.22	−0.29	−0.78
	Low Trust Repair	150	3.70	1.00	−0.34	−0.89
Organizational Competence	High Trust Repair	150	4.80	1.18	−0.26	−0.72
	Low Trust Repair	150	3.75	1.10	−0.36	−0.98

4.4 ANOVA Results: Hypothesis Testing

As depicted in Table 6, one-way ANOVA test was conducted to check and compare posttest trustworthiness perceptions between high trust repair and low trust repair groups. The group difference for all three outcome variables were found to be statistically significant,

Table 6. ANOVA Results: Effect of Trust Repair Condition on Trustworthiness Dimensions

Variable	Group	Mean	SD	F-Value	p-Value	η^2
Organizational Integrity	High Trust Repair	4.85	1.20	12.34	< .001	.040
	Low Trust Repair	3.90	1.05			
Organizational Benevolence	High Trust Repair	4.90	1.22	14.56	< .001	.047
	Low Trust Repair	3.70	1.00			
Organizational Competence	High Trust Repair	4.80	1.18	13.29	< .001	.043
	Low Trust Repair	3.75	1.10			

For organizational integrity, ANOVA yielded F (1, 298) = 12.34, $p < .001$, $\eta^2 = .040$, indicating a significant and small-to-medium effect of trust repair condition on integrity perceptions. The high trust repair group (M = 4.85, SD = 1.20) rated the organization significantly more favorably on integrity than the low trust repair group (M = 3.90, SD = 1.05), a mean difference of 0.95 points.

For organizational benevolence, ANOVA yielded F(1, 298) = 14.56, $p < .001$, $\eta^2 = .047$—the largest effect size of the three dimensions. Participants exposed to high trust repair content rated the organization as significantly more benevolent (M = 4.90, SD = 1.22) than those exposed to minimal repair content (M = 3.70, SD = 1.00), a mean difference of 1.20 points. This finding is consistent with theory suggesting that affective strategies—prominent in the high trust repair condition—are most directly targeted at restoring benevolence perceptions (Xie & Peng, 2009).

For organizational competence, ANOVA yielded F(1, 298) = 13.29, $p < .001$, $\eta^2 = .043$. Participants in the high trust repair condition rated organizational competence significantly higher (M = 4.80, SD = 1.18) than those in the control condition (M = 3.75, SD = 1.10), a mean difference of 1.05 points. This finding aligns with theoretical predictions that functional repair strategies—also prominent in the high-trust repair condition—are particularly effective in restoring competence perceptions (Guo et al., 2024; Smith et al., 1999).

Collectively, these results provide strong support for H1 across all three sub-hypotheses (H1a: integrity; H1b: benevolence; H1c: competence). Table 7 summarizes the hypothesis outcomes.

Table 7. Summary of Hypothesis Testing Results

Hypothesis	Dependent Variable	F-Value	p-Value	Result
H1a	Organizational Integrity	12.34	< .001	Supported
H1b	Organizational Benevolence	14.56	< .001	Supported
H1c	Organizational Competence	13.29	< .001	Supported

5. Discussion

5.1 Interpretation of Findings

This experiment offers empirical evidence in support of the proposition that multidimensional and comprehensive strategies that include affective, informational, and functional aspects of trust-repair are more effective in restoring trustworthiness in the greenwashing case than are minimal recovery efforts. Overall, the high F values and consistent mean differences for the three dimensions of trustworthiness provided support for H1 as suggested. The results of the study are in line with the previously conducted studies (Kim et al., 2004; Xie & Peng, 2009; Bansal & Zahedi, 2015) on context-specific greenwashing incidents in a developing country.

The largest effect size was for organizational benevolence ($\eta^2 = .047$), which was closely followed by both competence ($\eta^2 = .043$) and integrity ($\eta^2 = .040$). Benevolence is found to be the most dominant among all three trustworthiness dimensions. As predicted by SET theory, affective

strategies, including emotional support from the company and feelings of care and repentance by the CEO of their wrongdoings, were found to be the strongest predictors of reciprocal improvement in benevolence perceptions (Xie & Peng, 2009). This discovery reinforces the insight that in crisis recovery situations, when there is a problem of emotional damage (as is the case with greenwashing, which is a violation of the values and identity of consumers), affective repair is the most powerful starting point for the restoration of relational trust.

The significant improvements in organizational competence are in line with the results of Guo et al. (2024), who showed that the functional recovery elements of the high-trust repair condition (product redesign commitments, operational reforms, compensation offers) directly affect competence perceptions. This indicates that consumers in Pakistan's home appliance industry, just like those in developed nations, respond to organizational demonstrations of capability and a commitment to the root cause of the problem.

The result for integrity perceptions attributed to informational repair (press conference transcripts, website transparency, hotline announcement) is in line with the findings of Bansal and Zahedi (2015) and Schnackenberg and Tomlinson (2016), who reported that corrective disclosures and transparency can significantly improve perceptions of organizational integrity.

5.2 Theoretical Contributions

Theoretically, this study contributes to the existing literature on trust repair and green marketing in several ways. First, it offers experimental causal evidence (not correlational survey evidence) of the differential effects of trust repair strategies on dimensions of trustworthiness in a greenwashing context. Using random assignments and controlled manipulation, it eliminates other possible explanations and thus establishes a stronger causal claim than previous survey-based studies.

Secondly, the study brings Social Exchange Theory into the realm of Greenwashing trust repair. The findings corroborate with SET predictions that a large organizational 'gift' in all three social exchange types (emotional, informational, and material) leads to proportional increases in all three dimensions of trustworthiness. This gives a theoretically validated mechanism, based on empirical evidence, between specific repair inputs and specific trust outputs.

Finally, it situates the study within the context of the home appliance industry, which is not commonly studied in the trust repair literature, rendering the study more relevant to the Pakistani context. Results indicate a shared basic psychology (comprehensive repair is more effective than minimal repair), but the differential salience of strategy types may be culturally specific and warrant further study.

5.3 Managerial Implications

This study has some important and actionable implications for brand managers and crisis communication practitioners in Pakistan and comparable emerging markets. Firstly, the findings indicate that piecemeal actions by the organization are not enough in the restoration of trust; instead, all three trust repair strategies (affective, informational, functional) are required to effectively restore the trust of consumers. Organizations that respond to greenwashing incidents in a way that only communicates an apology (affective) or a compensation offer (functional) are unlikely to gain much in terms of trust repair, as they do not address the multi-dimensionality of the trust violation.

Secondly, as benevolence is the variable with the larger effect size, affective strategies (especially visible and emotionally resonant CEO communication) should be emphasized during the initial response to a crisis because of the greatest gains in the relational dimension of trust. This is consistent with the crisis communication best practices that suggest leadership visibility and empathetic communication should be followed by procedural and functional response (Coombs & Holladay, 2008).

Lastly, the positive reactions to informational repair elements (transparency, corrective disclosure, and accessible information channels) underscore the need for proactive multi-channel communication strategies. The ability to offer consumers third-party verified, credible information about actual and proven environmental improvement is a very valuable investment of trust that can be especially helpful to home appliance brands in Pakistan, where consumer trust in environmental claims is already high (Butt et al., 2022).

5.4 Limitations and Future Research Directions

Some limitations of this study should be noted along with its benefits. The use of a student sample was consistent with previous experimental trust repair studies (Kim et al., 2004; Xie & Peng, 2009) and ensured the internal validity of the study but may restrict the generalizability of the findings to the larger consumer population. A study that aims to confirm the external validity of the findings should be conducted using a community or nationally representative sample of the participants in a similar experimental design.

Second, the experimental setting was a fictional company, meaning that it eliminated any pre-existing brand bias, but it also made it impossible to analyze whether the effectiveness of the trust repair differed depending on the quality of the company's prior brand relationship or the authenticity of the brand. Further research is needed on trust repair in the well-known brands where consumers have prior experience with the brand.

Third, the study measured trustworthiness perceptions immediately following the experimental manipulation, without any longitudinal follow-up. Repairing trust is a time-consuming process (Bozic, 2017), and the long-term sustainability of trustworthiness gains and their downstream impacts on behavioural intentions is an important question that is left open. Longitudinal experimental or quasi-experimental designs in the future would greatly contribute to the understanding of sustained trust repair.

Fourth, the three types of trust repair strategies were not independently manipulated in the study. Future studies should use a factorial experimental design to isolate the effects of each strategy type, as well as examine how each type of strategy interacts with the other on each of the dimensions of trustworthiness.

Finally, given the cultural specificity of trust norms in Pakistan (collectivist culture, high power distance, Islamic values of honesty and accountability), future research should conduct cross-cultural comparisons to identify which aspects of the trust repair effectiveness demonstrated here are universal and which are culturally contingent.

6. Conclusion

This study presents experimental evidence that comprehensive, multi-dimensional trust repair strategies—encompassing affective, informational, and functional elements—significantly improve consumer perceptions of organizational integrity, benevolence, and competence following a greenwashing incident in Pakistan's home appliance sector. Using a pretest–posttest

control group design with 300 participants drawn from three KPK universities, ANOVA revealed significant group differences for all three trustworthiness dimensions (integrity: $F = 12.34$, $p < .001$; benevolence: $F = 14.56$, $p < .001$; competence: $F = 13.29$, $p < .001$), with consistently higher posttest scores in the high trust repair condition.

The findings of this study are guided by Social Exchange Theory. It has unearthed the important yet under-validated empirical principle of trust repair efforts. As suggested, consumers can respond to organizational repair efforts the way they can respond to any meaningful social gesture with proportional reciprocity if they believe it to be true, genuine, and transparent. Consumers' perception can shift dramatically in favor of organizations given the firm's genuine and comprehensive trust repair efforts. When firms do the minimum, on the other hand, consumers' perception would remain the same. This study is unique in its way as it offers experimental evidence from an emerging market where most of the literature is largely dominated by survey-based methods in a developed- country setting. It offers both theoretically grounded and practically actionable implications for managers facing reputational damage.

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