Enterprise Social Responsibility, Customer Concern and Green Consumption Behavior: An Empirical Study on Electric Vehicle Industry in Pakistan

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Abstract. This study investigates the effects of Green Awareness (GA), Brand Heritage (BH), and Corporate Social Responsibility (CSR) on Green Consumption Behavior (GCB) in Pakistan's electric vehicle industry, with Customer Concern (CC) as a mediator. The findings reveal that CSR and BH significantly impact GCB, while GA does not. CSR's influence on GCB is robust and positively mediated by CC, indicating that CSR initiatives are more effective when addressing consumer concerns. In contrast, GA alone does not drive significant changes in GCB. The study highlights the importance of actionable CSR and brand heritage in fostering sustainable consumer behavior.

Keywords: Environmental Awareness, Green Marketing, Mediator Analysis, Sustainable Consumer Behaviour.

1 Introduction

The global shift towards environmental sustainability has intensified research into how businesses, especially those within high-impact industries like transportation, can adapt to mounting environmental challenges. As governments and international bodies continue to set ambitious environmental goals, businesses are under increasing pressure to reduce their carbon footprints. One sector at the center of this transformation is the electric vehicle (EV) industry, which is positioned as a solution to the environmental degradation caused by traditional, fossil fuel-powered vehicles. [1] Electric vehicles represent a key technological advancement in mitigating greenhouse gas emissions and decreasing air pollution, both of which are critical for addressing the global climate crisis. [2] In Pakistan, air pollution has reached alarming levels, and its capital city, Islamabad, has recorded pollutant concentrations significantly exceeding safe limits.[3] The increasing health risks associated with poor air quality, such as respiratory diseases and cardiovascular disorders, have placed additional strain on public health systems. Despite this, efforts to address pollution through cleaner technologies, particularly in the transportation sector, have been slow. Pakistan is ranked as the sixth most

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vulnerable country to climate change, and the average temperature is projected to rise by 3°C if no concrete actions are taken.[4] This underscores the urgent need for sustainable transportation alternatives, such as electric vehicles, which can significantly reduce emissions and improve air quality.

Practically, this study helps companies operating in the EV sector to adopt effective approaches to customer engagement and promote the green consumption behaviors of their clients. With the expansion of consumers' concerns with social aspects, organizations should pay special attention to consumers' social responsibility toward the purchase decision. This research enables the marketer to understand: GA, BH, or CSR, which are more related to customers' attention and will drive them toward green consumption. The implication of these findings provides organizations with the necessary tools to devise strategies for the implementation of Social Responsibility Theory that are in sync with environmental requirements and the customers' values leading to strength in customer relationship and increasing their loyalty towards green products.

2 Methodology and Research Approach

The research has employed a mixed-methods approach, combining literature review, surveys, and SEM analysis. Different scholars and theories have used to determine the outcome of the research. PLS-SEM was chosen over AMOS due to its robustness with non-normal data, suitability for smaller sampler sizes, and ability to handle complex models.

Data were collected through offline and online surveys, Respondents were contacted through WeChat, Facebook, WhatsApp, and Email. The targeted respondents of this research were customers who buy luxury products because most customers who buy costly products need proper information about the brand. The respondents were also from Pakistan and the data was collected from 600 respondents from which 301 respondents responded.

The structural equation modeling technique has been used in this research which is more suitable for testing this kind of relationship. Structural Equation Modelling (SEM) has been considered one of the most important statistical developments in social sciences in recent years and has grown in a large number of academic disciplines including marketing, management, tourism, [5] health care [6], and social sciences [7] is generally utilized for this estimation suggested that the partial posterior method is also a part of SEM [2]. Thus, for the indirect approach and mediation estimation, structural equation modeling is employed in this investigation.

3 Data Analysis and Results

3.1 Internal Consistency Reliability

In Table 1 results indicate robust internal consistency reliability and convergent validity across all constructs, with no apparent issues concerning reliability. However, given the high internal consistency, it may be beneficial to examine multicollinearity among the

constructs, as there could be intercorrelations that warrant further investigation. According to George and Mallery (2018) [8], a Cronbach's alpha value exceeding 0.9 is considered excellent, while values above 0.8 are regarded as good. Scores above 0.7 are deemed acceptable. If the alpha value falls below 0.7, it may indicate inconsistency in how the items relate to the sample and could suggest the need for revision of the measurement tool. Another method for assessing internal consistency is by calculating composite reliability, with values over 0.7 being recommended [9] .

Table 1. CONSTRUCT RELIABILITY AND VALIDITY

Construct	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
Brand Heritage	0.703	0.810	0.519
Corporate Social Response	0.752	0.841	0.571
Customer Concerns	0.879	0.911	0.673
Green Awareness	0.801	0.868	0.624
Green Consumption Behaviour	0.735	0.849	0.651

3.2 Discriminant Validity

In table 2 the hetrotratrait-monotrait ratio (HTMT) is calculated by dividing the average of heterotrait-heteromethod correlations by the average of monotrait-heteromethod correlations. In practice, common threshold values for HTMT are 0.85 and 0.90. If the HTMT value falls below these thresholds, it suggests that sufficient discriminant validity exists, meaning that the constructs can be considered distinguishable from one another. All these values are within the acceptable range, confirming that the constructs are distinguishable from each other.

In summary, the HTMT values provide strong evidence of discriminant validity for all constructs in this model, justifying the robustness of the measurement model and ensuring the reliability of the research findings.

Table 2. HETEROTRAIT-MONOTRAIT RATIO (HTMT) - MATRIX

Construct	Brand Heritage	Corporate Social Response	Customer Concerns	Green Awareness	Green Consumption Behaviour
Brand Heritage					
Corporate Social Response	0.681				
Customer Concerns	0.277	0.452			
Green Awareness	0.732	0.648	0.192		

Green Consumption Behavior	0.531	0.701	0.608	0.381	

Table 3. FORNELL-LARCKER CRITERION

Construct	Brand Heritage	Corporate Social Response	Customer Concerns	Green Awareness	Green Consumption Behaviour
Brand Heritage	0.720				
Corporate Social Response	0.510	0.755			
Customer Concerns	0.238	0.393	0.821		
Green Awareness	0.552	0.492	0.171	0.790	
Green Consumption Behavior	0.415	0.538	0.505	0.306	0.807

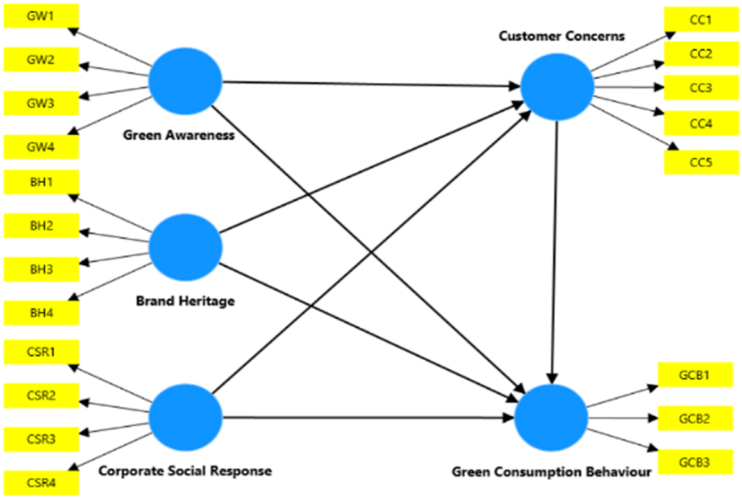

Fig. 1. Results of Measurement Model.

Table 3 discusses the discriminant validity of five constructs—Brand Heritage, Corporate Social Response (CSR), Customer Concerns, Green Awareness, and Green Consumption Behaviour—using the Fornell-Larcker criterion. The square root of the average variance extracted (AVE) for each construct is compared with its correlations with other constructs. The results show that each construct has a higher square root of AVE than its correlations with other constructs, indicating that they share more variance with their own items than with others. This confirms the discriminant validity for all constructs, suggesting that they are distinct and represent separate components of the

theoretical framework, which supports the validity and reliability of the research findings. In the measuring model result the variables of each items are organized into several categories which are Green Awareness (GW). This construct has four items (GW1,GW2,GW3,GW4). Where customer concern (CC) has five items (CC1,CC2,CC3,CC4,CC5). Brand heritage has four items (BH1,BH2,BH3,BH4). Corporate Social Response (CSR) this construct has four items too (CSR1,CSR2,CSR3,CSR4) where Green consumption Behavior has three items (GCB1,GCB2,GCB3). Each construct is represented by sets of variables that are used to measure different aspects of construct in this study as show in fig 1.

3.3 Assessment of Significance of the Structural Model

The first indication of successfully testing the structural model's predictive capability came from the coefficient of determination or R^2 value of the endogenous constructs. [10] R^2 can then be defined as the proportion of the total variance that is explained in the scores of the dependent variable by the independent variables. R^2 equal to more than 0.10 is considered acceptable. [11]

For Customer Concerns, the R^2 value is 0.158, indicating that 15.8% of the variance in the dependent variable is explained by this factor. The R^2 adjusted value for this variable is 0.150, which is slightly lower but still above the acceptable threshold, suggesting that while the model includes some relevant predictors, its explanatory power is limited.

In contrast, Green Consumption Behavior shows a significantly higher R^2 value of 0.413, meaning that 41.3% of the variance in the dependent variable is explained by this factor. This is well above the acceptable threshold of 0.10, indicating a strong explanatory power and a better model fit. The R^2 adjusted value is 0.406, which, while slightly lower, still reflects a robust model performance. This suggests that the model effectively captures a substantial portion of the variance, even after adjusting for the number of predictors (Table 4).

Table 4. R Square

	R-square	R-square adjusted
Customer Concerns	0.158	0.150
Green Consumption Behaviour	0.413	0.406

4 Conclusion

The study reveals that Corporate Social Responsibility (CSR) and Brand Heritage (BH) significantly influence Green Consumption Behavior (GCB) within the electric vehicle industry in Pakistan, while Green Awareness (GA) does not. CSR demonstrates a strong positive impact on GCB, indicating that actionable environmental initiatives are crucial in driving sustainable consumer behavior. Brand Heritage also positively affects GCB,

though to a lesser extent, suggesting that a legacy of environmental responsibility enhances consumer trust and influence.

In contrast, Green Awareness alone does not substantially impact GCB, highlighting that mere awareness is insufficient without practical support. Customer Concern (CC) plays a significant mediating role between CSR and GCB, emphasizing that CSR efforts are more effective when they align with consumer concerns. The results suggest that businesses should focus on meaningful CSR initiatives and leverage their brand heritage while addressing practical barriers to drive green consumption.

Policymakers should encourage and support CSR initiatives that focus on environmental sustainability. Such support can enhance the effectiveness of CSR efforts and drive consumer behavior toward greener choices.

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