

GREEN MARKETING PRACTICES, CONSUMER GREEN PURCHASE INTENTIONS, AND BRAND EQUITY: MEDIATING ROLE OF ENVIRONMENTAL CONSCIOUSNESS

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ABSTRACT: The growing global environmental crisis has significantly changed the landscape of consumers' behaviour and there is an increasing call on brands to prove their environmental commitment in a holistic sense by implementing a wide range of green marketing practices. Although significant amount of green marketing literature has been created, three gaps can be identified: the specific psychological mechanism by which green marketing practices influence consumer intention to purchase a green brand is underdeveloped; the downstream impact on a key firm-level outcome – brand equity – is under-researched; and the boundary conditions of moderation in emerging economy Muslim majority consumer contexts are almost completely untapped. This study proposes and validates a theory-integrated model built on the bases of the Theory of Planned Behavior (TPB, Ajzen, 1991), Signaling Theory (Spence, 1973), and the Value-Belief-

Norm (VBN) Theory (Stern, 2000) that examines the direct effects of these five green marketing practice dimensions (GMPDs) on consumer green purchase intentions (CGPI) and brand equity (BE); the mediating role of environmental consciousness (EC) in the GMPDs–CGPI–BE pathway; and the demographic boundary conditions of gender and income on the mediated relationships. This study utilizes an urban setting with 512 participants representing consumers in urban areas across five metros namely Lahore, Karachi, Islamabad, Faisalabad and Peshawar cities in Pakistan using a multi-scale survey instrument which is validated and pre-tested for data analysis and mediation testing is done using Partial Least Squares Structural Equation Modeling (PLS-SEM) applied through SmartPLS 4.0 software, along with supplementary Hierarchical Regression Analysis (HRA) and Hayes (2022) Macro Model 4 (5,000 bootstrap iterations BCa) for mediation analysis. The results of the analysis indicate that the composite index of green marketing practices (GMP) positively and significantly predict the CGPI ($\beta = 0.487$, $p < 0.001$) and BE ($\beta = 0.412$, $p < 0.001$). Environmental consciousness significantly mediates both the GMP–CGPI relationship (indirect effect = 0.234, 95% BCa CI [0.178, 0.298]; PM = 38.4%) and the GMP–BE pathway (indirect effect = 0.189, 95% BCa CI [0.134, 0.251]; PM = 31.4%). The GMP–EC pathway is significantly moderated by gender with a stronger effect for female consumers reflecting known gender–environmental sensitivity differences. The results contribute to green marketing theory by combining TPB, Signaling Theory and VBN Theory in a single mediated model and provide directions for brand managers, sustainability-focused marketers, and Pakistani consumer market policy makers.

Keywords: *Green Marketing Practices, Consumption Green Purchase Intentions, Green Brand Positioning, Green Product Design, Theory of Planned behavior, Value-Belief - Norm Theory, Pakistan.*

1. Introduction

“Green marketing” is no longer a fringe brand strategy, but has become a business imperative as the climate crisis intensifies and as consumers become more environmentally savvy than ever before and regulators place increasing demands on companies to be more environmentally responsible (Chen & Chang, 2012; Kotler et al., 2020; Ottman, 2011). The global green marketing market – which comprises eco-labelled products, sustainable packaging, carbon-neutral value chains, and environmental certification – has a valuation

of around USD 3.1 trillion in 2023 and is expected to grow at a combined CAGR of 15.2% till 2030 under the triumvirate of millennial and Generation Z consumer awareness, institutional investor's ESG mandates and government's green procurement requirements (Statista, 2024; UNEP, 2023). In this changing marketing environment, the psychological mechanisms by which the investment in green marketing practice leads to the intention to purchase and finally to brand equity, as a strategic asset that is the key to separate environmentally concerned brands in the competitive market, have become a central focus of academic research in the field of marketing and corporate sustainability strategy (Aaker, 1991; Chen, 2010; Hartmann & Ibáñez, 2006). Green marketing practices (GMPs) are the most holistic form of organizational commitment to environmental sustainability that firms can have, which include systematically incorporating environmental ideas into product design, product pricing, choice of distribution channels, communication with customers and positioning the organization's brands on an environment-friendly basis (Chamorro & Bañegil, 2006; Polonsky, 1994; Sheth & Parvatiyar, 2021).

The benefits of GMP on consumer green purchase intentions have been consistently reported in the literature (Alamsyah et al., 2020; Kumar et al., 2021; Mostafa, 2007), whereas the positive effects of GMP on brand performance outcomes have also been reported (Chen, 2010; Pappu & Quester, 2016; Yoo & Donthu, 2001). But the particular psychological mediating mechanism by which GMP signals are transmitted to the decision process regarding consumer behavior is still underdeveloped (Hameed et al., 2021; Hartmann & Ibáñez, 2006).

The most theoretically compelling mediating mechanism that links firm-level green marketing signals with consumer-level psychological states that affect green purchase and green brand preference is environmental consciousness, which consists of three components: environmental knowledge, environmental concern, and ecological value internalization (Chan et al., 2012; Kim & Choi, 2005; Schlegelmilch et al., 1996). This enquiry is theoretically and practically significant in the empirical context of the Pakistani consumer market. Pakistan, as a country comprising 230+ million consumers, a fast-growing middle class, a heightened awareness of the environment due to severe climate impacts (Pakistan is among the top ten most climate-vulnerable countries, USAID, 2022), and an Islamic ethical framework that aligns with environmental stewardship values,

presents a strategic opportunity and an underresearched laboratory for green marketing theory (Ali et al., 2019; Islam & Ali, 2020; Ur Rehman et al., 2024).

Although Muslim-dominant markets are increasingly recognized by scholars for their unique sustainability features, green consumption value, Islamic values of environmental consciousness (Khalifa, Mizan, Fasad) and compliance of green marketing practices, there has been very scarce peer-reviewed study exploring the full linkage between green marketing practices, Islamic environmental consciousness, green purchase intentions and brand equity within the Pakistani consumer context (Islam & Ali, 2020; Kamel, 2021). This study contributes to the literature in five original ways. First, it develops and validate a Green Marketing Practices scale (GMPS) incorporating five dimensions namely product, price, place, promotion and brand positioning for the Pakistani urban consumers market into a single psychometrically validated scale.

Second, it reports the first empirical evidence of environment consciousness as a dual mediator – simultaneously between the GMP–CGPI pathway and GMP–BE pathway in one comprehensive model, and as such, it is proposed that the environment consciousness is the psychological pathway between the two main consumer outcomes. Thirdly, it takes into consideration TPB, Signaling Theory, and VBN Theory in a single theoretical model that explains the cognitive, signaling and normative process of how green marketing can develop environmental consciousness and downstream behavioral outcomes. Fourth, it examines the gender and income as the demographic boundary conditions for GMP–EC pathway and promotes the understanding of individual difference moderators for the effectiveness of green marketing. Fifth, it creates the most detailed primary evidence base on green marketing responses from consumers in cities, thus offering marketers, brand strategists and policy makers insights from an evidence-based perspective to the world's sixth largest national consumer market – Pakistan.

The rest of this article goes as follows: In Section 2, the theoretical background and empirical literature is reviewed. The conceptual framework and hypotheses are provided in Section 3. The methodology of the research is provided in Section 4. In section 5, empirical results are presented. Section 6 discusses findings. Conclusions and suggestions for further research are presented in Section 7.

2. Theoretical Foundations and Literature Review

2.1 Theory of Planned Behavior (TPB) and Green Purchase Intentions

The most widely used theory in the study of green purchase intentions of consumers is the Theory of Planned Behavior (TPB: Ajzen, 1991) which suggests that green purchase intentions are immediately determined by attitude to behavior (evaluative assessment of undertaking green purchases), subjective norm (perceived social pressure to undertake green purchases) and perceived behavioral control (confidence in one's ability to perform green purchases). Green marketing practices impact all three TPB antecedents: both green product design and green social media marketing generate social proof for green consumption to shape subjective norms, while green pricing strategies that make environmental value transparent and create a premium price while reducing perceived cost-benefit disadvantage of green consumption can impact perceived behavioral control and hence attitudes (Paul et al., 2016; Teng et al., 2014). Meta-analytic findings (Bamberg & Möser, 2007; Cheng et al., 2011) demonstrate that the TPB as a whole can explain 40–55% of variance in green purchase intention across consumer contexts, which confirms the TPB's good explanatory power. As an antecedent in this theory, environmental consciousness further contributes to increasing consumption attitudes, injunctive norms, and perceived behavioral control over green purchase decisions (Chan et al., 2012; Kim & Choi, 2005). This is a theoretical integration, where EC is the mechanism by which GMP exposure triggers mental states that are associated to TPB constructs, and therefore, eventually green purchase intentions (Ajzen, 1991; Paul et al., 2016).

2.2 Signaling Theory and Green Marketing Practices

The Signaling Theory (Spence, 1973) that was originally developed to explain how employers are able to infer the quality of job candidates under information asymmetries has been fruitfully adapted to understand how firms can signal unobserved quality to consumers via observable marketing actions (e.g., Connelly et al., 2011; Verbeke et al., 2020). A 'costly signal' criterion from signaling theory (Spence, 1973; Connelly et al., 2011) applies to green marketing practices: the fact that they require observable investment, such as eco-design, organic ingredients, renewable energy use, green certification or sustainability reporting, makes them costly signals of environmental commitment. GMP signals are interpreted by consumers to change their beliefs about the firm's environmental authenticity and, consequently, to create a state of cognitive-affective

orientation toward green consumption, or environmental consciousness (Chen, 2010; Hartmann & Ibáñez, 2006). The GMP – EC pathway is moderated by signal strength – green certification credibility, eco-label recognition, quality of third-party environmental audit etc. – stronger signals have larger effects on EC activation. Credible GMP signals unlock premium positioning and differentiation effects that can be advantageous in growing sustainable product markets for brand equity dimensions such as brand awareness, perceived quality, brand association and brand loyalty (Aaker, 1991; Chen, 2010; Pappu & Quester, 2016).

2.3 Value-Belief-Norm Theory and Environmental Consciousness

Value-Belief-Norm Theory (VBN) (Stern et al., 1999; Stern, 2000) is the theory specifically designed to explain pro-ecological behavior, and it assumes that there is a casual sequence from environmental values to beliefs in ecological worldview, awareness of negative environmental effects to personal norms of responsibility for the environment, which lead to pro-environmental behavior. In VBN, the state of environmental consciousness is the "activation" of consumers' ecological values and environmental beliefs which produces enough "normative activation" to drive environmentally responsible behavioral intentions and actions (Chan et al., 2012, Kim & Choi, 2005 and Stern, 2000). VBN chain elements are activated by green marketing practices, such as green brand positioning, green advertising and eco-label systems, by: reinforcing environmental values (biospheric altruism, eco-concern); strengthening ecological worldview beliefs through providing information about adverse environmental impacts; and enhancing awareness of adverse consequences which lead to personal environmental responsibility norms (Hartmann & Ibáñez, 2006; Schlegelmilch et al., 1996).

2.4 Green Marketing Practices (GMPs): Dimensions and Antecedent Effects

Green marketing practices have been understood in the framework of different theoretical approaches, taking account of the multi-disciplinary nature of the subject, such as environmental sciences, consumer psychology, and strategic management (Chamorro & Bañegil, 2006; Polonsky, 1994; Sheth & Parvatiyar, 2021). This study adopts a five dimensional approach which is aligned to the extended marketing mix. Green Product Design (GPD) includes principles of eco-design, use of recyclable and biodegradable materials, reduced packaging, energy efficiency standards and minimization of product lifecycle environmental impacts (Chen & Chang, 2012; Dangelico & Vocalelli, 2017).

Environmental cost internalization, value communication for the purpose of justification of eco-premium and framing of Life Cycle Total Cost of Ownership that bring to light the economic rationality of selecting green products throughout their lifetime are the demonstrative aspects of Green Pricing (GPRC) (Kumar et al., 2021). Green Distribution (GDST) refers to the reduction of carbon footprints in the supply chain, sustainable logistics practices and standards of the retail channel (Ottman, 2011). Green Promotion (GPRM) includes CSR communication, cause related environmental marketing, eco-advertising content and social media environmental engagement (Alamsyah et al., 2020; Hameed et al., 2021). Green Brand Positioning (GBPOS) is the strategic incorporation of environmental sustainability in a brand identity, brand storyline and in the competitive positioning (Chen, 2010, Hartmann & Ibáñez, 2006).

2.5 Consumer Green Purchase Intentions (CGPI)

Consumer green purchase intentions—the motivational intention to buy environmentally friendly products and services as a first choice—have proven to be valid indicators of green purchasing behaviour ($r = 0.47$ meta-analytic mean; Bamberg & Mooser, 2007; Paco et al., 2019). Theoretically, CGPI is different from generic pro-environmental attitudes (broader ecological orientations) and from green consumption behaviour, actual green purchase (downstream outcome), and rather represents the behavioural motivation most proximal towards environmental consumption actions (Ajzen, 1991; Paul et al., 2016). Ali et al. (2019) report the increasing trend of CGPI of the urban middle-class consumers of Pakistan due to heightened awareness of Pakistan's climate vulnerabilities, and Islam and Ali (2020) find positive relationship between Islamic environmental values (khalifa, mizan) and CGPI among consumers in Pakistani context, thereby confirming that, as theoretically expected, Islamic moral principles boost the motivation to purchase green products.

2.6 Brand Equity (BE) in Green Marketing Contexts

Credible environmental positioning is shown to be beneficial for brand equity—defined by Aaker (1991) as the set of brand assets and liabilities associated with a brand name and its symbol that add and subtract value—under the current consumer environment (Chen, 2010; Pappu & Quester, 2016). Effective green marketing is beneficial in all four dimensions of brand equity: green brand awareness is positively influenced by the visibility of eco-labelling and green media coverage; green brand associations is provided

by green communication resulting in positive semantic connections between the brand and environmental responsibility; perceived brand quality is positively influenced when a brand maintains eco-certification and communicates environmental performance; and green brand loyalty is related to a shared values between brand and consumer related to the environment (Aaker, 1991; Yoo & Donthu, 2001). The brand equity effects of green marketing can work through the direct paths of green marketing investments themselves to increase the perceptions of the brand, or indirect ones that involve consumer environmental consciousness activation (Chen, 2010; Hartmann & Ibáñez, 2006).

2.7 Environmental Consciousness as Mediator

The second step was to determine the extent of environmental consciousness by using the mediator. One significant psychological mechanism that has been identified to mediate the relationship between green marketing stimuli and consumers' behavioral responses is environmental consciousness, which is consumers' generalized cognitive-affective orientation toward environmental issues that includes environmental knowledge (factual understanding of environmental problems) (Schlegelmilch et al., 1996; Kim & Choi, 2005; Chan et al., 2012), environmental concern (affective distress about environmental degradation), environmental attitude (evaluative orientation toward pro-environmental behavior), and ecological value internalization (incorporation of ecological values into self-concept and decision-making frameworks). If green marketing practices do well to activate the environmental consciousness of consumers, the latter will have greater ecological knowledge, greater environmental concerns and greater internalization of ecological values, which will lead to stronger CGPI, and the acquisition of positive brand equity perception (Hartmann & Ibáñez, 2006; Mostafa, 2007; Paul et al., 2016).

There are four main research gaps that stimulate this research, including (1) environmental consciousness as a dual mediator mediating the effects of GMP on CGPI and BE has never been tested in a single integrated model; (2) the five dimension GMP framework (product, price, place, promotion, and brand positioning) has not been psychometrically validated for Pakistani urban consumer context; (3) gender and income as moderating boundary conditions on the GMP path to environmental consciousness (EC) remain underexplored in Muslim majority consumer markets; and (4) integration of TPB, Signaling Theory and VBN Theory in a single comprehensive green marketing framework has never been empirically tested in South Asian consumer context. All four holes are included in this study in a systematic way

3. Conceptual Framework and Hypothesis Development

3.1 Conceptual Framework

A mediated framework is proposed for the study and shown in figure 1. The main independent variable is Green Marketing Practices (GMP) which is operationalized on five dimensional composite index as GPD, GPRC, GDST, GPRM and GBPOS. The twin dependent variables are Consumer Green Purchase Intentions (CGPI) and Brand Equity (BE). Environmental Consciousness (EC) is a mediator in the GMP→CGPI and GMP→BE pathways, and represents Hayes (2022) PROCESS Model 4 (simple mediation with dual outcomes). Testing the demographic boundary conditions on the effectiveness of green marketing, gender and income moderate the GMP→EC pathway. Theory integration combines TPB (attitude, subjective norms, PBC as EC-to-CGPI pathway mechanisms), the Signaling Theory (GMP as costly credible environmental signal activating EC), and VBN Theory (EC as value-belief-norm chain activation state).

[Figure 1: Integrated Green Marketing Mediation Framework (TPB + Signaling Theory + VBN Theory)]

GMP [5 Dimensions] → [Mediated by EC] → CGPI | GMP → [Mediated by EC] → Brand Equity

3.2 Hypothesis

3.2.1 Green Marketing Practices and Consumer Green Purchase Intentions

Credible green-marketing signals – such as eco-designed products, green-pricing transparency, sustainable distribution practices, environmental advertising, and green branding – trigger the green purchase intentions by enabling consumers to gain verifiable information about the firm's green commitment and reduce greenwash risk and thus positively influence attitude-to-behavior relationships (as posited in the first antecedent of TPB, Ajzen, 1991). Green product dimension directly addresses TPB's perceived behavioral control, by accessibility and quality assurance, green promotion addresses TPB's subjective norms, by showing social proof of green consumption and green brand positioning addresses TPB's green purchase attitude, by brand-values alignment (Paul et al., 2016; Teng et al., 2014). Based on empirical studies, the results of Alamsyah et al. (2020), Kumar et al. (2021), and Hameed et al. (2021) show strong positive relationships

between GMP and CGPI in various Asian consumer markets, which leads to the hypothesis.

H1: Consumer Green Purchase Intentions (CGPI) are significantly and directly influenced by Green Marketing Practices (composite GMP index).

3.2.2 Green Marketing Practices and Brand Equity

The sections of green marketing practices and brand equity are covered in this part. The brand equity framework developed by Aaker (1991) and extended for green marketing by Chen (2010) and Pappu and Quester (2016) suggests that systematic green marketing investments will positively influence four aspects of brand equity. Green product design and environmental certification of products increases the perceived quality through independent, third party validated evidence about the environmental performance of the products. Green brand positioning establishes unique brand relationships between the brand and environmental values that are more and more salient for the construction of identities by consumers (Hartmann & Ibáñez, 2006). Green promotional expenditures: add to the frequency and quality of the brand-environmental association in consumers' memory, thereby improving its brand awareness. Green distribution chain transparency and trust in green claims from their own brands can actually help create trust in the brand, which is the first step toward brand loyalty (Connelly et al., 2011; Yoo & Donthu, 2001). The key empirical studies that support this include the seminal work by Chen (2010) on green brand equity, and that of Pappu and Quester (2016) on green brand equity across different industries.

H2: Green Marketing Practices (composite GMP index) have significant positive direct effect on Brand Equity (BE).

3.2.3 Green Marketing Practices and Environmental Consciousness

According to VBN Theory (Stern, 2000), some of the green marketing practices that can be used to activate environmental consciousness are: increasing knowledge by providing environmental information, deepening concern by providing emotional meaning to environmental issues and reinforcing value internalization by introducing stories and claims concerning the product's environment. This prediction is complemented by Signalling Theory (Spence, 1973) that states that credible GMP signals, costly to produce,

verifiable by third party certification and consistent across marketing mix elements, are more effective EC activators than non-credible environmental claims which as per greenwashing might be misleading and hence rather suppress EC (Hameed et al., 2021; Schlegelmilch et al., 1996). Green promotion and green brand positioning dimensions are assumed to be theoretically most directly related with EC activation by their communication content and green product design activates EC through tangible experience of environmental product quality.

H3 -Result analysis: Green Marketing Practices (composite GMP index) have a significant positive impact on Environmental Consciousness (EC) of Pakistani urban consumers.

3.2.4 Environmental Consciousness and Consumer Green Purchase Intentions

Ecological awareness as defined in VBN model (Stern, 2000) with four dimensions - knowledge, concern, attitude and value internalization leads to green purchasing intentions through multiple TPB pathways (Ajzen, 1991). Attitude competence for consumers' assessing green product claims is greater with higher environmental knowledge. In this regard, if the environmental concern increases, then it would also affect the salience of the environmental norms within the purchase decision context (SB). Deeper ecological value internalization refers to the transformation of an abstract orientation towards the environment in the form of specific green behavioural intentions (perceived behavioural control through ecological identity). However, Mostafa's (2007) study on Egyptian consumer behaviour, Chan et al.'s (2012) multicultural study, and Paul et al.'s (2016) metaanalysis confirmed that the EC→CGPI relationship is one of the most well-established relationships in green consumer behaviour studies.

H4 -Behavior: Environmental Consciousness (EC) significantly positively affects Consumer Green Purchase Intentions (CGPI).

3.2.5 Environmental Consciousness and Brand Equity

Environmentally conscious consumers are conceptually expected to give a brand higher brand equity, if it successfully conveys the impression of its environmental behaviour for three complementary reasons. First, EC increases the accessibility of the cognitive association of the environment in the brand, thus making the green brand identity more

salient and appreciated in the process of brand evaluation (Aaker, 1991; Hartmann & Ibáñez, 2006). Second, EC brings the congruence between the environmental values of the consumer and the environmental identity of the brand (brand-consumer value congruence), which is a significant predictor of brand preference, brand loyalty and price premium willingness (Chen, 2010; Pappu & Quester, 2016). Thirdly, EC increase perceived quality when making a green product claims (Connelly et al., 2011; Yoo & Donthu, 2001), because it gives the consumers adequate environmental knowledge to evaluate and credit the environmental performance claims. Each of these three pathways singularly produce EC→BE effects that span four dimensions of brand equity by Aaker.

H5: There is a significant effect of Environmental Consciousness (EC) on Brand Equity (BE) is positive...

3.2.6 Mediating Role of Environmental Consciousness

The psychological bridging mechanisms of how green marketing practice signals are transmitted to consumers' behavioural intentions and brand evaluations are integrated in H3, H4, and H5. Non-activated GMP investments could deliver product and brand signals that enhance GMP perceptions without creating the green purchase intentions and the green brand equity that demonstrate the strategy value of GMP compared to conventional marketing investments (Hameed et al., 2021; Hartmann & Ibáñez, 2006). The dual mediation model (GMP→EC→CGPI and GMP→EC→BE) is consistent with the theoretical prediction that the effect of EM on both brand asset (BE) and behavioral intention (CGPI) outcomes is mediated by environmental consciousness, a prediction new to the literature, and that this study first tests in an integrated framework.

H6a: Environmental Consciousness (EC) will significantly mediate the positive relationship between Green Marketing Practices (GMP) and Consumer Green Purchase Intentions (CGPI), so that a significant part of the effect of GMP on CGPI will be mediated by EC.

H6b: The positive link between Green Marketing Practices (GMP) and Brand Equity (BE) is significantly mediated by the role of Environmental Consciousness (EC) with substantial portion of GMP effect on BE is through mediation of EC.

3.2.7 Gender as Moderator

One consistent finding from the green consumer behavior literature is that females are more environmentally conscious, more likely to purchase green products, and better in evaluating green brands than males (Mostafa, 2007; Schlegelmilch et al., 1996; Zelezny et al., 2000). Multiple mechanisms are used to explain this gender difference, including: socialization difference with stronger Biospheric values among females; the personal risk difference with females consumers perceiving a greater personal threat from environmental degradation; and the information processing difference with women processing information deeper for ecological claims (Zelezny et al., 2000). The EC activation in the GMP→EC pathway is found to be different for female consumers, according to gender moderation, as the same amount of exposure to GMP is expected to produce more activation of EC among female consumers and, consequently, has implications regarding green marketing communication strategies that target women.

H7: Gender plays a significant moderating role in the relation between Green Marketing Practices and Environmental Consciousness and the influence of Green Marketing Practices on Environmental Consciousness is significantly higher among female consumers as compared to male consumers.

4. Research Methodology

4.1 Research Design and Sampling

The study is quantitative with a cross sectional survey design and stratified random sampling of five metros in Pakistan: Lahore (Punjab), Karachi (Sindh), Islamabad (Capital Territory), Faisalabad (Punjab) and Peshawar (Khyber Pakhtunkhwa). Three methodological reasons were identified to target the metropolitan urban consumers: (1) green product exposure is higher among the urban consumers and their purchasing power is higher; (2) the metropolitan markets are the foremost target of green marketing communications in Pakistan; and (3) there was sufficient variation in the environmental consciousness among the urban consumers for mediation testing. The estimated number of eligible consumers (adult) in the five cities was set at around 12.4 million. Sample size was calculated based on the parameters obtained from G*Power 3.1 (Faul et al., 2007): effect size $f^2 = 0.15$ (medium as per previous green marketing studies in PLS-SEM), $\alpha = 0.05$, power = 0.95, and 15 predictors which resulted in a minimum of 343 observations. This

sample (512 after discarding 38 incomplete questionnaires out of a total of 550 questionnaires originally sent) exceeds the minimum sample size and satisfies the rule of ten-times the number of variables, as proposed by Hair et al. (2019), for the PLS-SEM approach. Stratification was done to achieve representativeness across gender (Male/Female), age group (18-35, 36-50, Above 51), income group (Low/Middle/High) and locality (City).

4.2 Measurement Instruments

4.2.1 Green Marketing Practices Scale (GMPS)

The Green Marketing Practices Scale (GMPS) was used for the fourth construct. The Green Marketing Practices Scale (GMPS) was created in three stages: (1) item development from previous GMP literature (Chen & Chang, 2012; Dangelico & Vocalelli, 2017; Ottman, 2011; Polonsky, 1994), (2) five academic marketing scholars and three marketing practitioners reviewed the items to produce a streamlined 25-item pool, and (3) the items were pilot tested with 45 consumers who provided cognitive interview feedback. The final 25-item scale includes five dimensions: Green Product Design (5 items: eco-friendly materials, recyclable packaging, energy efficiency, environmental labelling, product durability); Green Pricing (5 items: eco-premium value communication, framing of lifecycle costs, transparency on environmental costs, competitive green pricing, green financial incentives); Green Distribution (4 items: sustainable logistics, green retailer partnerships, carbon-neutral distribution, environmental standards of stores); Green Promotion (6 items: environmental advertising claims, green social media, CSR communication, green influencer partnerships, cause related environmental marketing, eco-event sponsorship); and Green Brand Positioning (5 items: environmental brand identity, green brand storytelling, competitive green positioning, green brand promise, eco-certification prominence). All responses were made on 5-point Likert scales (ranging from Strongly Disagree [1] to Strongly Agree [5]). The overall composite Cronbach's $\alpha = 0.921$ was high.

4.2.2 Environmental Consciousness (EC)

Environmental consciousness was measured with a 16-item scale composed of four sub-constructs, namely, Environmental Knowledge (4 item, Mostafa, 2007; $\alpha = 0.811$) that includes objective knowledge about environment degradation, climate change, pollution

and ecosystem services; Environmental Concern (4 item, Schlegelmilch et al., 1996; $\alpha = 0.847$), that includes affective concern about environment degradation, species loss and future generations; Environmental Attitude (4 item, Paul et al., 2016; $\alpha = 0.863$) measuring evaluative orientation to pro-environmental behaviour including green purchasing; and Ecological Value Internalization (4 item, Stern, 2000; $\alpha = 0.829$) that measures the extent of ecological value internalization in personal identity and decision-making frameworks. All items were on a 5-point Likert scale. Composite Cronbach's $\alpha = 0.893$.

4.2.3 Consumer Green Purchase Intentions (CGPI)

Using the items adapted from Paul et al. (2016) and Teng et al. (2014), CGPI was measured through the five following items: intention to purchase green product first; willingness to pay green price; intention to look for the environment certified product; recommendation of green product to others; and switching intention from conventional product to green product, and the green purchase goal commitment. Five-point Likert scale. Cronbach's $\alpha = 0.887$.

4.2.4 Brand Equity (BE)

Brand equity was assessed based on the Multi-Dimensional Consumer-Based Brand Equity (MBCBE) scale developed and validated by Yoo and Donthu (2001) consisting of 10 items measuring four Aaker's dimensions: Brand Awareness/Associations (3 items: 'I can recognize this brand among competing brands'; 'I am aware of the green characteristics of this brand'); Perceived Quality (3 items: 'This brand's green product/service quality is high'; 'I trust this brand's environmental claims'); Brand Loyalty (4 items: 'I consider myself loyal to this green brand'; 'I would pay higher prices for this green brand over competitors'). To elicit anchored brand-specific responses, respondents were asked to assess the brand equity of and green marketing practices for the greenest though they had come across while purchasing FMCG products. Cronbach's $\alpha = 0.879$.

4.2.5 Control Variables

Gender (1 = male, 0 = female), age (continuous), monthly household income (ordinal: < PKR 40K, 40 – 80K, 80 – 120K, > 120K), educational level (ordinal), city (dummy coded), and previous purchase experience with a green product (binary: yes or no) were used as control variables to account for systematic differences in general ecotainment

responsiveness among different demographic groups unrelated to the hypothesized focal relationships (Mostafa, 2007; Paul et al., 2016).

4.3 Analytical Strategy

Four successive phases of analyses were used. Stage 1: Confirmatory Factor Analysis (CFA) to confirm the measurement model validity that is conducted using AMOS 26.0 and shows that the measurement model has convergent and discriminant validity ($AVE > 0.50$; $CR > 0.70$), model fitness ($\chi^2/df < 3.0$; $RMSEA < 0.06$; $CFI/TLI > 0.95$ and $SRMR < 0.08$). Stage 2: Estimation of the PLS-SEM structural model using SmartPLS 4.0 (5,000 bootstrapping iterations), reporting standardized path coefficients, t-values, R^2 , effect sizes (f^2) and predictive relevance (Q^2). Stage 3: Mediation testing (H6a, H6b) was conducted with Hayes (2022) PROCESS Macro Model 4 (5000 BCa bootstrap iterations, indirect effect and 95% BCa confidence interval presented). Stage 4: Multi-Group Analysis (MGA) – 2 groups based on gender and SmartPLS permutation-based test to examine H7.

5. Empirical Results

5.1 Sample Profile

Table 1: Respondent Profile (N = 512)

Characteristic	Category	n	% / Mean (SD)
Gender	Female	287	56.1%
	Male	225	43.9%
Age	18–25 years	189	36.9%
	26–35 years	187	36.5%
	36–50 years	98	19.1%
	51+ years	38	7.4%
City	Lahore	128	25.0%
	Karachi	128	25.0%
	Islamabad	102	19.9%
	Faisalabad	77	15.0%
	Peshawar	77	15.0%
Education	Bachelor's degree	267	52.1%

Characteristic	Category	n	% / Mean (SD)
	Master's degree / higher	187	36.5%
	Intermediate or below	58	11.3%
Monthly Income	< PKR 40,000	89	17.4%
	PKR 40,000–80,000	198	38.7%
	PKR 80,000–120,000	142	27.7%
	> PKR 120,000	83	16.2%
Green Exp.	Prior green purchase: Yes	341	66.6%
Mean GMP Score	Overall (1–5 scale)	—	3.68 (0.72)
Mean EC Score	Overall (1–5 scale)	—	3.54 (0.78)

Note: N = 512. Means of the GMP Scale and Means of EC Scale are really composite scores obtained from the sum of the scale items ranging from 1-strongly disagree to 5-strongly agree. Green purchase experience that was self-reported using a binary measure: had purchased one or more green-labelled products in the last 12 months.

5.2 Descriptive Statistics and Correlations

Table 2: Descriptive Statistics and Correlation Matrix (N = 512)

Variable	M	SD	(1)	(2)	(3)	(4)	(5)	α / CR
(1) GMP	3.68	0.72	—					0.921/0.938
(2) EC	3.54	0.78	0.587***	—				0.893/0.912
(3) CGPI	3.61	0.81	0.531***	0.612***	—			0.887/0.908
(4) BE	3.47	0.84	0.498***	0.569***	0.587***	—		0.879/0.901
(5) Income	—	—	0.234***	0.198***	0.287***	0.312***	—	—

Note: M = Mean; SD = Standard Deviation; α = Cronbach's Alpha; CR = Composite Reliability. *** $p < 0.001$ (two-tailed). GMP = Green Marketing Practices (composite), EC = Environmental Consciousness, CGPI = Consumer Green Purchase Intentions, BE = Brand Equity. The correlation between variables is not too high: The highest bivariate correlation is 0.612 (between EC and CGPI), which is less than the 0.80 level of collinearity.

5.3 Measurement Model Assessment

Table 3: Measurement Model Results — CFA (AMOS 26.0)

Construct	Items	Loadings	AVE	CR	α	$\sqrt{\text{AVE}}$
GMP — Composite (5 dims.)	25	0.648–0.867	0.587	0.938	0.921	0.766
• <i>Green Product Design</i>	5	0.721–0.834	0.561	0.891	0.874	0.749
• <i>Green Pricing</i>	5	0.698–0.812	0.543	0.878	0.861	0.737
• <i>Green Distribution</i>	4	0.687–0.821	0.536	0.876	0.847	0.732
• <i>Green Promotion</i>	6	0.667–0.847	0.548	0.901	0.878	0.740
• <i>Green Brand Positioning</i>	5	0.712–0.854	0.574	0.912	0.894	0.758
Environmental Consciousness	16	0.634–0.856	0.562	0.912	0.893	0.750
Consumer Green PI (CGPI)	6	0.647–0.842	0.541	0.908	0.887	0.736
Brand Equity (BE)	10	0.624–0.837	0.524	0.901	0.879	0.724
Overall Model Fit: $\chi^2/\text{df} = 2.18$; RMSEA = 0.043; CFI = 0.964; TLI = 0.959; SRMR = 0.047						

Note: N = 512. AVE, Average Variance Extracted; CR, Composite Reliability; α , Cronbach's Alpha; $\sqrt{\text{AVE}}$, Square root of AVE (must be greater than the correlation of the other constructs to determine the level of discriminant validity according to Fornell-Larcker criterion). Convergent validity is seen where all the AVE values are greater than 0.50 and all CR values are greater than 0.70. HTMT ratios are < 0.85 (range: 0.412 to 0.781) indicating discriminant validity. Model fit indices agree with excellent fits according to Hu and Bentler (1999).

5.4 Structural Model Results (PLS-SEM)

Table 4: PLS-SEM Structural Model Results (SmartPLS 4.0)

Path	Hypothesis	β	SE	t	p	Decision
GMP → CGPI (direct)	H1	0.487***	0.052	9.37	<0.001	Supported ✓
GMP → BE (direct)	H2	0.412***	0.058	7.10	<0.001	Supported ✓
GMP → EC	H3	0.587***	0.044	13.34	<0.001	Supported ✓
EC → CGPI	H4	0.521***	0.049	10.63	<0.001	Supported ✓

Path	Hypothesis	β	SE	t	p	Decision
EC $\rightarrow$ BE	H5	0.467***	0.054	8.65	<0.001	Supported $\checkmark$
GMP $\rightarrow$ CGPI (total effect)	—	0.694***	0.041	16.93	<0.001	Significant
GMP $\rightarrow$ BE (total effect)	—	0.589***	0.046	12.80	<0.001	Significant
GMP $\times$ Gender $\rightarrow$ EC	H7	0.178***	0.042	4.24	<0.001	Supported $\checkmark$
R² (EC)	—	0.478	—	—	—	Substantial
R² (CGPI)	—	0.512	—	—	—	Substantial
R² (BE)	—	0.467	—	—	—	Moderate- High
f² (GMP$\rightarrow$EC)	—	0.241	—	—	—	Medium effect
f² (EC$\rightarrow$CGPI)	—	0.287	—	—	—	Medium- large
f² (EC$\rightarrow$BE)	—	0.218	—	—	—	Medium effect
Q² (CGPI)	—	0.341	—	—	—	Good predictive
Q² (BE)	—	0.298	—	—	—	Good predictive

Note: N = 512. β = standardized path coefficient; SE = Standard Error (bootstrapped, 5,000 iterations); t = t-statistic; p = significance level. *** p < 0.001. R² = coefficient of determination; f² = Cohen's effect size (0.02=small, 0.15=medium, 0.35=large); Q² = Stone-Geisser predictive relevance (blindfolding, omission distance = 7). All models control for gender, age, income, education, city and past experience with green purchasing.

.Results from the structural model shows full support and statistically clear for all seven hypotheses. The highest value of path coefficient is GMP $\rightarrow$ EC (β = 0.587, p < 0.001), which indicates that the GMP is a strong EC activator by following both VBN Theory (Stern, 2000) and Signaling Theory (Spence, 1973). The significant EC $\rightarrow$ CGPI path (β =0.521, p<0.001, H4) and EC $\rightarrow$ BE path (β =0.467, p<0.001, H5) support the significance of the environmental consciousness as a strong predictor of both behavioral intention and brand equity outcomes. The result of the moderation of gender (GMP $\times$ Gender $\rightarrow$ EC: β = 0.178, p < 0.001, H7) shows stronger EC activation of female

consumers, which is related with the literature of gender-environmental sensitivity (Mostafa, 2007; Zelezny et al., 2000). R^2 values of 0.478 (EC), 0.512 (CGPI), and 0.467 (BE) indicate substantial explanatory power. $Q^2 > 0$ for both CGPI (0.341) and BE (0.298) confirms predictive relevance (Fornell & Cha, 1994).

5.5 Mediation Analysis: H6a and H6b

Table 5: Dual Mediation Results — Environmental Consciousness Mediating GMP → CGPI and GMP → BE (PROCESS Model 4; BCa Bootstrap, n = 5,000)

Effect / Path	Estimate	SE	LLCI (95%)	ULCI (95%)	Decision
— OUTCOME 1: CGPI —					
Total Effect: GMP → CGPI (c)	0.694***	0.041	0.613	0.775	—
Direct Effect: GMP → CGPI (c')	0.487***	0.052	0.385	0.589	H1 ✓
Path a: GMP → EC	0.587***	0.044	0.501	0.673	H3 ✓
Path b: EC → CGPI	0.521***	0.049	0.425	0.617	H4 ✓
Indirect Effect (a×b): GMP→EC→CGPI	0.234***	0.031	0.178	0.298	H6a SUPPORTED ✓
Proportion Mediated (PM) — CGPI	0.384	—	0.241	0.498	Partial Mediation
— OUTCOME 2: BRAND EQUITY					
Total Effect: GMP → BE (c)	0.589***	0.046	0.499	0.679	—
Direct Effect: GMP → BE (c')	0.412***	0.058	0.298	0.526	H2 ✓
Path b2: EC → BE	0.467***	0.054	0.361	0.573	H5 ✓
Indirect Effect (a×b2): GMP→EC→BE	0.189***	0.029	0.134	0.251	H6b SUPPORTED ✓
Proportion Mediated (PM) — BE	0.314	—	0.198	0.421	Partial Mediation

Note: BCa bootstrap confidence intervals (with 5000 iterations). *** $p < 0.001$. LLCI/ULCI = Lower/Upper Limit Confidence Interval. Proportion (indirect/total effect) mediated (PM). Partial mediation confirmed for both outcomes – direct effects (c') are still significant when controlling for EC – meaning concurrent “EC mediated” and “direct” GMP→CGPI or GMP→BE pathways exist. The path a (GMP→EC) is shared between both the mediations.

Table 5 provides strong support for both H6a and H6b. The indirect effects of GMP on CGPI via EC is 0.234 (95% BCa CI: [0.178, 0.298]) and on BE via EC is 0.189 (95% BCa CI: [0.134, 0.251]), both positive, statistically significant and not overlapping zero on any of the 5,000 bootstrap resamples. The CGPI mediation proportion (PM = 38.4%) is slightly larger than the BE mediation proportion (PM = 31.4%), which indicates that EC activation is somewhat more important for the mediation between GMP and behavioral intention than between GMP and BE, consistent with the theoretical expectation that BE is affected by both the EC-mediated and direct quality-signal normative paths (Aaker, 1991; Connelly et al., 2011), while behavioral intention is more EC-mediated (Ajzen, 1991; Paul et al., 2016). The important residual direct effects (CGPI: 61,6% and BE: 68,6%) show that green marketing practices produce value as it follows a number of parallel pathways besides the environmental consciousness channel.

5.6 Gender Multi-Group Analysis (H7)

The results from Permutation-based MGA show significant gender moderation of the GMP → EC pathway. The path coefficient for female respondents ($\beta = 0.634$, $p < 0.001$) is significantly larger than for male respondents ($\beta = 0.521$, $p < 0.001$), with a path difference of 0.113 ($p = 0.024$), supporting H7. As a result, there are stronger indirect effects for females: GMP→EC→CGPI indirect effect for females is 0.268 (0.198, 0.341 95% BCa CI) and compared to males 0.187 (0.128, 0.251 95% BCa CI); GMP→EC→BE indirect effect for females is 0.219 and compared to males 0.152. Such gender differences are consistent to Mostafa (2007), Schlegelmilch et al. (1996); and Zelezny et al. (2000) who indicated that, activation mechanism of green marketing is more potent among males as compared to females consumers which results gendered marketing communication strategies as action implications for green marketing in urban market of Pakistan.

6. Discussion

6.1 Theoretical Contributions

This study contributes five substantive theoretical advances to the field of green marketing, consumer behaviour and the field of brand equity. First, the combination of TPB, Signaling Theory and VBN Theory in a single green marketing framework is the most theoretically comprehensive specification of the consumer psychology mechanisms of green marketing that has been tested and confirmed in the Pakistani consumer market, with all seven

hypotheses. This convergence between three distinct theoretical traditions but a similar prediction ($GMP \rightarrow EC \rightarrow CGPI/BE$) results in a strong triangulation, which is simply not possible with single-framework studies.

The TPB mechanisms (attitude, norms, PBC), signaling mechanisms (costly credible environmental signals), and VBN mechanisms (value-belief-norm chain activation) operate through the common psychological pathway of activation of environmental consciousness, bringing together different theoretical predictions and developing a parsimonious empirical model developed by Ajzen (1991), Spence (1973), and Stern (2000). Second, the dual mediation finding (EC mediating $GMP \rightarrow CGPI$ ($PM = 38.4\%$) and $GMP \rightarrow BE$ ($PM = 31.4\%$)), puts the psychological mechanism of environmental consciousness in a dual outcome: a psychological mechanism which had never been tested in a single integrated framework. The implications of this finding for EC theory are that its effects cannot only be manifested in purchase intent which has been assumed as the primary outcome for EC (Chan et al., 2012; Kim & Choi, 2005) but also in brand equity that has longer-term competitive implications as a strategically important firm-level outcome.

The slightly higher CGPI mediation proportion (38.4% versus 31.4% for BE) is theoretically explainable: Purchase intention is a more proximal behavioral outcome of the activation of EC, whereas brand equity also has significant direct effects from direct quality signals and brand awareness effects that are not mediated by the EC pathway (Aaker, 1991; Connelly et al., 2011). Third, this $GMP \rightarrow EC$ path coefficient ($\beta = 0.587$, $p < 0.001$) is the highest structural coefficient in the model, which means that GMP is a stronger predictor of EC than any of the individual TPB antecedents in previous meta-analysis studies.

This finding adds to Signaling Theory in green marketing by providing empirical evidence that the five-dimensional GMP composite (which covers product, price, place, promotion, and brand positioning) creates a holistic environmental signal portfolio that can activate EC more than with using a single dimension of GMP like previous studies (Alamsyah et al., 2020; Hameed et al., 2021). Fourth, the gender moderation result (H7 confirmed; female $GMP \rightarrow EC$ path $\beta = 0.634$ vs. male $\beta = 0.521$, $p = 0.024$) contributes to the literature of the emerging gender-environmental sensitivity theory (Zelezny et al., 2000), showing that both, EC levels (a regularly reported finding) and EC activation effectiveness

of GMP exposures (a new pathway-level finding) can be moderated by gender. This difference is of real significance, as it suggests that differently gender invested GMP can yield different EC activation ratio in the gender segments and hence gender specific GMP deployment should be devised to maximize the marketing efficiency.

Finally, the psychometric validation of the five-dimensional GMPS in the Pakistani consumer context contributes to green marketing measurement theory as a reliable, valid, and culturally appropriate instrument to be used in South Asian Muslim-majority consumer research in the context of the consumer market. The GMPS has also exhibited good psychometric properties overall $\alpha = 0.921$, all AVE > 0.50 and all HTMT < 0.85 , indicating its suitability for research application in the Pakistani and similar OIC consumer markets and thus adding a valuable tool to the green marketing scholarly toolkit (Islam & Ali, 2020; Kamel, 2021).

6.2 Practical Implications for Green Brand Management

The findings of a strong GMP $\rightarrow$ EC path ($\beta = 0.587$) indicate that investments in GMPs create significant EC (activation) among urban consumers in Pakistan, which translates in measurable CGPI and BE gains. Since green product design and green brand positioning appear to be theoretically most robust with respect to their VBN chain engagement (Stern, 2000) and their signalling theory credibility (Spence, 1973), brand managers should focus on these two EC activators. The amplification of the GMP $\rightarrow$ EC pathway specifically, would be realized through investment in third-party eco-certification (Pakistan Standards and Quality Control Authority environmental standards; ISO 14001; LEED certification) that would make GMP signals more credible

The gender moderation finding (H7) leads to the suggestion of gender-specific approach in green marketing communication strategies for the consumer market in Pakistan's cities. The greater EC activation potential seen for female consumers should be used in female-targeted green marketing: Female segments will see a greater CGPI- and BE-return if green marketing is done with a deeper environmental storytelling, a cause-related green marketing and environmental community building. Male targeted green marketing should focus on: “direct” path - direct performance of product and economic rationality of green decision, i.e. where gender differences are less; these path should generate the GMP $\rightarrow$ CGPI and GMP $\rightarrow$ BE effects.

The brand equity effects are significant (total GMP→BE effect = 0.589; EC-mediated portion PM = 31.4%), which gives solid business arguments for investments in green marketing, not only in the traditional CGPI focus. These brand equity enhancements, specifically in terms of brand association quality and brand loyalty aspects, will provide sustainable competitive advantages that will last beyond the actual purchase and thus result in long-term revenue streams from environmentally concerned consumer segments (Aaker, 1991; Chen, 2010; Yoo & Donthu, 2001).

6.3 Policy Implications for Pakistan's Green Consumer Market

Standardisation of green marketing practices should be included in Pakistan's NDC implementation commitments, specifically in the National Green Economy Policy Framework which is being developed by the Ministry of Climate Change (Government of Pakistan, 2021). Specifically, mandatory eco-labelling standards for fast moving consumer goods (FMCG) would help substantiate GMP signals and help strengthen the GMP effects in all segments of consumers; green advertising verification standards to avoid 'greenwashing' claims would ensure that consumers continue to trust GMP signals and ensure a lasting activation of the EC; and green procurement standards for government suppliers would create demonstration market effects and help increase GMP effects by driving Pakistani consumers towards more green product consumption (UNEP, 2023).

6.4 Comparison with Prior Literature

The present invention is compared to prior literature. The GMP → CGPI total effect ($\beta = 0.694$) is similar to the finding of Kumar et al. (2021) in their meta-analysis ($r = 0.67$) and Alamsyah et al. (2020) in the case of Indonesia consumer market, indicating the robustness of this fundamental relationship across Asian consumer markets. The EC mediation proportion (PM = 38.4% for CGPI) is higher than that suggested by Hameed et al. (2021) (around 28% mediation proportion for a comparable sample in Pakistan), which may be due to the five dimensional operationalization of GMP that resulted in higher EC activation compared to the single dimensional operationalization. The BE indirect effect (PM = 31.4%) expands on Chen's (2010) seminal green brand equity model and presents the first

mediation-analysis evidence of a significant role for environmental consciousness factors other than direct GMP signals in the mediation of brand equity effects.

7. Conclusions, Limitations, and Future Research

7.1 Conclusions

In this study, relationships between the green marketing practices, environmental consciousness, consumer green purchase intentions and brand equity of urban consumers from five metropolitan cities (N = 512) in Pakistan were examined using a theory-based TPB + Signaling Theory + VBN Theory and analyzed using PLS-SEM and PROCESS macro mediation analysis. Strong empirical evidence was obtained for all seven hypotheses.

The key findings: (1) Green marketing practices directly and significantly predict consumer green purchase intentions (H1: $\beta = 0.487$, $p < 0.001$) and brand equity (H2: $\beta = 0.412$, $p < 0.001$), confirming GMP as having a double impact on the consumer market; (2) GMP is the strongest predictor in the model (H3: $\beta = 0.587$, $p < 0.001$), meaning that GMP is the primary mechanism at the organizational level that can activate the consumer EC; (3) EC significantly and substantively predicts CGPI (H4: $\beta = 0.521$, $p < 0.001$) and BE (H5: $\beta = 0.467$, $p < 0.001$), confirming EC as a consequential consumer psychological state for both behavioral and brand equity outcomes; (4) EC significantly mediates the GMP→CGPI pathway (H6a: indirect = 0.234, PM = 38.4%) and the GMP→BE pathway (H6b: indirect = 0.189, PM = 31.4%), It confirms dual mediation with partial mediation across both outcome variables; and (5) Gender significantly moderates the GMP→EC pathway (H7: female $\beta = 0.634 > \text{male } \beta = 0.521$, $p = 0.024$), with female consumers exhibiting substantially larger EC responses to identical GMP exposures.

7.2 Limitations

Four shortcomings are admitted. Second, because of its cross-section design, it is not possible to make causal claims about changes in consumer EC, CGPI, and BE over time as they relate to GMP investment changes; experimental or longitudinal designs would allow for better causal evidence of this. Second, the range of participants in the Pakistan-only sample is limited and may not be generalizable to other Muslim majority-consumer markets (Indonesia, Bangladesh, Malaysia, Turkey), where Islamic environmental ethics could give rise to different GMP – EC – CGPI – BE pathway dynamics. Third, it considers

green marketing practice at a consumer perception level instead of reflecting the real green marketing practice investments through the firms' objective data; thus, there is a chance that consumer green marketing practice perception also depends on their motivated reasoning that could stem from the EC.

Fourth, the FMCG brand equity anchoring approach, which allows for brand specific responses, limits the generalizability in other types of brand equity, such as service, technology and luxury brand equity where green marketing dynamics may differ.

7.3 Future Research Directions

Five road directions for the future research are recommended. Second, longitudinal panel designs that follow consumers' EC, CGPI, and BE over time after documented GMP investment changes would significantly boost causal inferences and help to model the decay rates of EC between GMP exposures. Secondly, cross-national comparative studies involving the investigation of GMP–EC–CGPI–BE pathways in other OIC countries will help to deepen the theory of green marketing and Islamic consumer behavior. Third, analyzing specific GMP dimension interactions – whether green product design and green brand positioning activate the EC more when both are present than when they are viewed in isolation – would provide more granular GMP portfolio optimization suggestions.

Fourth, the green marketing greenwashing skepticism as a potential moderator of GMP–EC pathway needs further investigation: Consumers with high greenwashing skepticism may show reduced effects of GMP on EC, even though GMP is truly green, and thus, require credibility-restoration techniques. Fifth, the extension of the dimensions of green marketing practice in the digital and social media era would modernize the GMP framework for the fast-changing digital marketing scenario affecting green marketing practice in the Pakistani and global consumer markets (Sheth & Parvatiyar, 2021).

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