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Research Article

GREEN PRODUCTS, CONSUMER PREFERENCES, FUTURE DISASTERS AND MEDIATING ROLE OF PUBLIC POLICY

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Abstract

The objective of this study is to examine the impact of green product and consumer preferences on purchase intention through the lens of public policy using primary data collected from 400 employees of public and private organizations in D.G. Khan division of Pakistan through questionnaire surveys. Green product and consumer preferences were independent variable while public policy served as a mediating variable and Purchase intention, which is proxied for natural disasters, acted as dependent variable. Reliability of questionnaire items were tested through Cronbach Alpha while the relationship between independent, mediating and dependent variables were estimated through regression analysis. The findings reveal that the impact of green products and consumer preferences was positive and significant on purchase intention. Similarly, the impact of public policy was also pronounced on the relationships of green products, consumer preferences and purchase intention. The study suggests that firms and policymakers should frame eco-friendly policies to promote green products through policy intervention and fiscal incentives to achieve sustainability and to mitigate the effects of climate change.

key words: Green products; Consumer preferences; public policy; purchase intention

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1. Introduction

Environmental concerns have become one of the most pressing global challenges in the modern era. Industrialization, which initially prioritized consumer satisfaction and profit generation, resulted in large-scale production without considering ecological consequences. This unchecked industrial growth contributed to ozone depletion, global warming, air pollution, and solid waste, all of which are key drivers of environmental degradation (Eltayeb & Zailani, 2010; Kumar, Singh & Dwivedi, (2023) Recognizing the urgency of this issue, global organizations such as the United Nations introduced Sustainable Development Goals (SDGs) in 2015, with Goal 13 specifically addressing climate change. The Paris Agreement, also adopted in 2015, reinforced the global commitment to limit temperature rises below 2°C and mitigate the socio-economic risks associated with rising emissions (Kumar, 2016; Zhuang, Luo & Riaz, (2021)

The exploitation of natural resources and use of polluted products by consumers have further aggravated environmental degradation. For instance, catastrophic bushfires in Australia led to widespread destruction of biodiversity, cultural heritage, and infrastructure, alongside mental health stress among communities (Sharples et al., 2021; Hayward et al., 2023). Similarly, Amazonian rainforest has suffered from droughts, limiting photosynthetic capacity and increasing fire incidents (Aragão et al., 2009). The moon-soon heavy rains and floods in Pakistan in 2022 and 2025 have caused billions of dollars economic loss, thousands of human deaths and a large infrastructure destruction. This forces almost all countries and corporations such as Toyota, Honda, General Motors, and Tesla to change their production

model and produce eco-friendly green products (Oliver & Lee; Alfred & Adam, 2013).

Consumer intentions have also shifted, with rising awareness of "green brands." Green brands not only demonstrate ecological advantages over competitors but also attract customers willing to pay more for eco-friendly products (Chughtai & Awan, (2021); Grant, 2018; Hartmann & Ibanez, 2021). Purchasing behavior is influenced by factors such as a company's social responsibility, product functionality, and consumers' environmental concerns (Soyez; Joshi & Rahman, 2015; Ghodeswar, 2014). Consequently, green buying behavior has become a growing global trend. However, the pace of adoption varies significantly across countries. Developed nations such as the United Kingdom have embraced pro-environmental lifestyles, while developing economies face challenges in aligning consumer preferences with sustainable practices. Scholars note that although consumers in developing nations recognize environmental concerns, gaps remain between their intentions to purchase green products and their actual behaviors (Fariza et al., (2016); Ali, 2015; Fazal, 2019). This discrepancy suggests the need for research into mediating factors, such as the role of public policy, to better align attitudes and actions.

Historically, awareness of ecological issues evolved in phases. In the 1960s, social and political pressure brought attention to energy conservation and recycling. By the 1990s, industrialization had accelerated environmental harm, prompting organizations to adopt green marketing strategies, including environmentally friendly design, packaging, and promotion (Chemat, 2012;

Ali, 2015). The widespread use of media has further intensified awareness of issues like global warming, air pollution, and ozone depletion, motivating consumers to prioritize safe, eco-friendly products (Ansar, 2013).

Green products offer several key benefits. Environmentally, they reduce soil pollution, deforestation, waste generation, and greenhouse gas emissions, while consuming natural resources (Farrel & Shapiro, 2017). Economically, green products can reduce operational costs and stimulate innovation in sustainable industries, while consumer demand drives further market development (Farrel & Shapiro, 2017). However, consumption of polluting products causes climate disasters, environmental degradation and ecological downfall (Liang & Hou, (2023).

Pakistan presents a unique case where environmental degradation poses immediate threats. Natural disasters such as urban flooding, heavy rainfall, and river erosion are directly linked to ineffective public policies and industrial practices. Yet, this context also creates opportunities for green markets. With a growing population and increasing exposure to global environmental debates, Pakistan holds potential for both local and international firms to promote green products. Nevertheless, consumer attitudes toward green versus traditional products remain under-explored, particularly in relation to their role in disaster prevention and the influence of public policy (Wang, et al. (2019); (Kumar, Singh & Dwivedi, 2023.

The study highlights that, while literature exists on environmental awareness, consumer preferences, and green product adoption in Pakistan, research remains fragmented. No comprehensive study has integrated these dimensions with public policy as a mediating factor. This gap underscores the

need to investigate how policy interventions can shape consumer behavior, promote green markets, and reduce the risk of future environmental crises.

To address these challenges, the research sets three main objectives: first, to explore the importance of green products and consumer preferences in reducing climate disasters; second, to analyze the relationship between consumer preferences and sustainable outcomes; and third, to examine how public policy mediates this relationship to foster pro-environmental behavior and support disaster resilience. Correspondingly, the research questions focus on the role of green products in preventing environmental disasters, the interaction between consumer preferences and ecological challenges, and the effectiveness of policy interventions in shaping sustainable markets.

The study contributes to existing theoretical and empirical literature in three significant ways. First, it strengthens theoretical understanding by highlighting the mediating role of public policy in linking consumer preferences with green product purchases. Second, it advances empirical knowledge by generating evidence that goes beyond attitudinal surveys, emphasizing the interaction between institutional trust and consumer decision-making. Finally, it offers practical contributions by suggesting how governments and firms can align policies, certification schemes, and educational campaigns to reduce barriers, thereby accelerating the mainstreaming of green products. Together, these contributions enrich the sustainability and consumer behavior literature and provide actionable pathways for policymakers and businesses.

2.Theoretical and empirical framework

2.1 Theory of Planned Behavior

Psychologists emphasize that understanding human behavior is complex because individuals approach situations differently. Theory of Planned Behavior (TPB) developed by Ajzen (1991) provides a framework for explaining how attitudes, social influences, and personality traits shape behavioral intentions. At the intermediate level—highlighted by social and personality psychologists—people often analyze situations with incomplete information, sometimes responding prematurely because of their personality structures. Two key elements influencing this level are social attitude and personality trait, both of which are central to TPB. This theory also explains social attitude of individuals. This refers to how individuals observe, learn, and respond to others' behavior in daily activities such as purchasing and consumption. People develop environmental concerns as they consume goods and manage waste, and these concerns influence their green purchasing intentions (Zahra & Awan (2014) and Ruangkanjanases, et al (2020). Observation and social interaction thus create shared patterns of environmentally responsible behavior. This theory also discusses personality traits of consumers, and its role in purchase intentions. Personality traits, whether socially developed, significantly shape ethical decision-making. Upbringing, parental influence, peer interaction, and environmental exposure cultivate either positive or negative attitude among individuals. When applied to green purchase intentions, traits such as frugality and responsibility push consumers to select environmentally friendly products at affordable prices. While much literature examines attitudes toward green intentions, Ajzen

(1991) stresses that general dispositions are unreliable predictors of specific behaviors. Generalized attitudes, such as those toward institutions, fail to forecast specific environmentally conscious actions. This theory directly relates to this study and provides foundation for it.

2.2 Empirical analysis

The global transition toward sustainable consumption has placed green products—goods produced with minimal environmental impact—at the forefront of marketing and policy discussions. Recent research highlights that consumer preferences for green products are driven by ecological awareness, perceived quality, and personal health benefits. For example, Nguyen et al. (2022) demonstrated that eco-labels enhance trust in green products, directly influencing consumer willingness to pay. Similarly, Liang and Hou (2023); Saqib & Awan, (2024) found that climate consciousness and health considerations significantly boost adoption of green products. However, the gap between preferences and purchase intention persists. Jaiswal and Kant (2022) reported that social norms and peer influence strengthen green purchase intention, while Tan et al. (2023) observed that high prices and lack of product availability often discourage actual purchases. This suggests that favorable attitudes toward green products do not always translate into buying behavior (Sharma, 2023).

The role of public policy is critical in addressing this intention–behavior gap. Policies such as eco-certification, subsidies, and taxation influence market dynamics by reducing barriers to green product adoption. Wang et al. (2021) showed that government-backed certification schemes enhance

product credibility, while Awan & Qamar, (2018); Sharma and Foropon (2022) emphasized that subsidies and green taxation make sustainable goods more competitive. Furthermore, Downs et al. (2025) highlighted that policy-driven communication and behavioral nudges foster lasting consumer engagement with sustainable food choices, illustrating how policy extends beyond economics to shape cultural norms. Institutional trust also mediates the policy–consumer relationship. Kumar et al. (2023) demonstrated that consumers respond more positively to green marketing when policies are transparent and credible. Likewise, Yadav and Pathak (2022) stressed that regulatory interventions must be accompanied by educational initiatives to ensure consistent green purchasing. In short, academic literature underscores that green products are increasingly valued by consumers, but their uptake is constrained by cost and trust barriers. Public policy plays a central role in transforming consumer preferences into purchase intention, making it an indispensable link between sustainable production and consumption.

2.3 Hypothesis Development

Based on theoretical foundations and empirical evidence, the study proposes the following hypotheses:

H1: Green products positively correlated with purchase intention.

H2: Consumer preferences positively correlated with purchase intention.

H3: Public policy mediates the relationship between consumer preferences, green products, and purchase intention.

2.4 Research Gap and Novelty of study

Although an extensive body of work has explored consumer preferences and purchase intentions toward green products, existing studies often examine these constructs in isolation. Most research highlights the role of

environmental awareness, eco-labels, or price sensitivity in shaping consumer behavior (Nguyen et al., 2022; Tan et al., 2023). However, fewer studies focus on how public policy acts as an intervening or moderating factor between consumer preferences and actual purchase intention. This generates a gap in literature.

This study introduces novelty by integrating public policy, consumer preferences, and purchase intention into a single analytical framework. Unlike prior research that treats these factors separately, it positions policy not merely as a background condition but as an active mediator capable of reshaping consumer-market dynamics. The research also extends novelty through its focus on cross-contextual dynamics, examining how consumer trust, affordability, and awareness interact under varying policy regimes. By doing so, it moves beyond descriptive insights toward a systemic understanding of how sustainable consumption can be operationalized.

2.5 Conceptual Model

We constructed a conceptual model based on reviewed literature and objectives of study. In this model independent variables are Green products and Consumer preferences, mediating variable is public policy and dependent variable is green purchase intention.

The model is displayed in Figure 1.

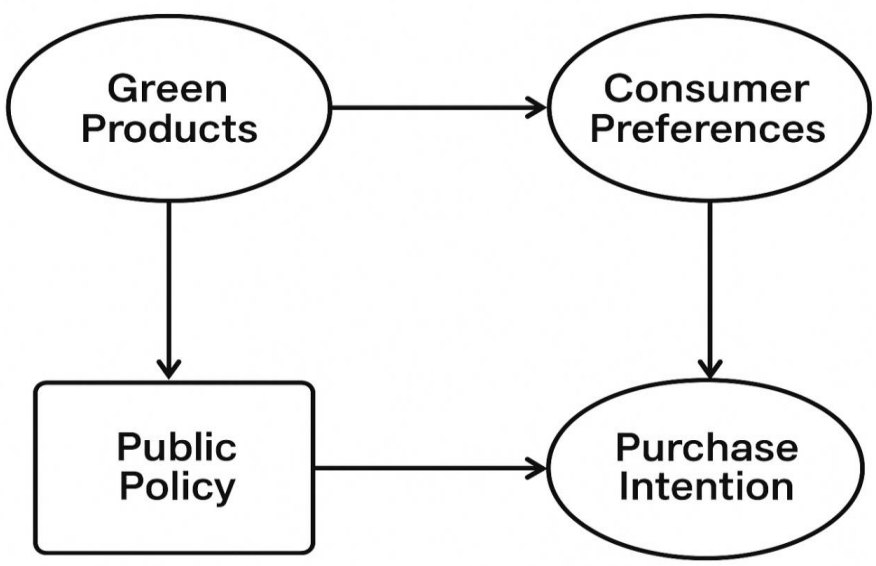

Fig.1: Research Model

3.Data and Methodology

3.1 Research Design

This study employed a quantitative, cross-sectional research design to investigate the influence of green products and consumer preferences on purchase intention, with public policy as a mediating variable. Cross-sectional surveys are widely used for behavioral and policy-related studies as they enable data collection at a single point in time and allow for efficient testing of relationships among variables (Creswell & Creswell, 2018).

3.2 Population and Sampling

The target population consisted of students, households, businesspersons, and employees from public and private organizations in the D.G. Khan Division, Pakistan. A purposive sampling strategy was adopted, resulting in 400 valid

responses. Data was collected using both online questionnaires (200 via Google Forms) and face-to-face administration (200 respondents). This hybrid strategy ensured geographical coverage and minimized non-response bias, yielding a 100% valid response rate.

3.3 Research Instrument

Data were collected through a structured questionnaire adapted from validated scales in previous empirical research (Ramayah et al., 2010; Dangelico et al., 2021; Zhuang et al., 2021). The instrument comprised 32 items divided into two sections: demographic information and study constructs. Specifically, 7 items measured green products, 7 measured green purchase intention, 6 items covered environmental concerns, 4 items assessed environmental knowledge, and 8 items related to organizational green image. Respondents rated items on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." To remove common method bias (CMB), respondents were assured of anonymity and confidentiality, items were randomized, and simple, clear wording was used to avoid ambiguity as suggested by Podsakoff et al., 2003). Statistically, Harman's single-factor test employed to ensure that no single construct explains the majority of variance. In addition, variance inflation factor (VIF) values were below the recommended threshold, ruling out multicollinearity (Kock, 2015).

3.5 Measures and Variables

The study examined four constructs: green products and consumer preferences (independent variables), purchase intention (dependent variable), and public policy (mediating variable). Table 1 provides the operational definitions and

sources for each construct, ensuring content validity by relying on prior literature (Nur et al., 2021; Yadav & Pathak, 2022).

Table: 1

Study Variables, Definitions, and Sources

Variable	Brief Definition	Sources
Green Purchase Intention	The willingness of consumers to buy products manufactured using environmentally friendly practices. It reflects responsible consumption aimed at reducing negative impacts on health, society, and the environment.	Nur et al. (2021); Hussain, Khokhar, & Asad (2014); Ali & Ahmad (2016); Zhuang, Luo & Riaz, (2021); Nguyen, Lobo, & Greenland (2022); Hayat (2021); Sharma (2023)
Green Products	Goods that have minimal adverse effects on human health and the environment compared to conventional alternatives. Examples include LED lights, solar water heaters, solar charging cases, green GPS units, and energy-saving outlets.	Ramayah, Lee, & Mohamad (2010); Yang (2017); Wijekoon & Sabri (2021); Zhuang, Luo & Riaz, (2021)
Consumer Preferences	The set of needs, tastes, and attitudes that influence individuals' purchasing choices. It reflects	Zhuang, Luo, & Riaz, (2021); Dangelico, Nonino, & Pompei

Variable	Brief Definition	Sources
	behavioral patterns and decision-making when consumers allocate scarce resources among products, services, or brands.	2021; Grant, 2018; Hartmann & Ibanez, 2021; Mainardes, Espanhol & Cruz, (2021)
Public Policy	A mediating factor referring to government actions, regulations, or inaction in addressing public concerns. It includes policy goals, legal frameworks, and practices by implementing agencies that shape market and consumer behavior.	Saifullah, Kari, & Ali (2017); Yadav & Pathak (2022)

Source: The Author.

3.6 Analytical Approach

Data analysis was performed using SPSS. Descriptive statistics were first applied to summarize demographic characteristics and variable distributions (Trochim, 2007). Reliability of the scales was assessed using Cronbach's alpha, with thresholds above 0.70 deemed acceptable (Tavakol & Dennick, 2011). Regression analysis using the ordinary least squares (OLS) method to test the hypothesized relationships. OLS regression is appropriate for estimating the strength and direction of effects while controlling for potential covariates (Wooldridge, 2016)

3.7 Econometric Model:

The econometric model for this study is as follows

$$\mathbf{Y= b_0 +b_1X_1+ b_2X_2+ b_3X_3+e_i}$$

Whereas,

Y= Purchase intension (DV)

X_1= Green products (IV)

X_2= Consumer Preferences (IV)

X_3= Public Policy (M)

b_0= Constant

b_1+ b_2+ b_3= Parameters

e_i= Error Term

4.Results

4.1 Demographic information

A total of 400 respondents participated in the survey with a full response rate. Male participants (56.8%) outnumbered females (43.3%), reflecting a male-dominated trend in both private and public organizations. Age distribution showed that the majority were young to middle-aged, with 34.3 percent each in the 21–30 and 31–40 categories, followed by 20.8 percent in the 41–50 group, 10.5 percent under 20, and only 0.3 percent above 50. Educationally, most respondents were well qualified, as 42.3 percent held bachelor's degrees and 41.5 percent had master's degrees, while smaller proportions had secondary education (12.5%), diplomas (1.5%), M.Phil. degrees (1.3%), or no formal qualification (1.0%). In terms of occupation, 36.5 percent were employed in the private sector, 26.8 percent were students, 24.0 percent

worked in public institutions, and 12.8 percent were professionals, indicating a diverse representation across academic and professional backgrounds.

4.2 Statistical Analysis:

4.2.1 Reliability Testing

Reliability was assessed using Cronbach's Alpha, and the results are presented in Table 2. The threshold for acceptable reliability is a minimum value of 0.70. All constructs in this study exceeded this threshold, confirming the internal consistency of the measurement scales.

Table 2

Reliability Testing Results

Variables	No. of Items	Cronbach's Alpha
Green Products (GP)	07	0.794
Purchase Intention (PI)	07	0.808
Consumer Preferences (CP)	06	0.777
Public Policy (PP)	04	0.783
Overall Reliability	24	**0.785**

Source: Author owns calculation by SPSS.

The results indicate strong reliability across all constructs. Specifically, Green Products ($\alpha = 0.794$) and Purchase Intention ($\alpha = 0.808$) demonstrated the highest internal consistency. Consumer Preferences ($\alpha = 0.777$) and Public Policy ($\alpha = 0.783$) also showed acceptable reliability. The overall Cronbach's Alpha value of 0.785 confirms that the dataset is sufficiently reliable for

further statistical analysis. The indices of all variables were generated using the simple average method.

4.2 Variance Inflation Factor (VIF)

The Variance Inflation Factor (VIF) is applied to examine the presence of multicollinearity among independent variables in regression analysis. Multicollinearity arises when predictors are strongly correlated with each other, which inflates the variance of estimated coefficients and reduces the precision of statistical inference. Although it does not bias the coefficients, it makes it difficult to determine the unique effect of each variable. VIF values provide a straightforward diagnostic, with higher values indicating problematic levels of multicollinearity. Identifying and addressing this issue through VIF helps improve the stability, reliability, and interpretability of regression models (Gujarati & Porter, 2009). The estimated results are presented in Table 3.

Table 3

Variance Inflation Factor (VIF) outcomes

Variable	VIF	Interpretation
Green Products	1.39	No multicollinearity detected
Consumer Preferences	1.19	No multicollinearity detected
Public Policy	1.58	No multi-collinearity detected

The results in table 3 show that a VIF value is below 5 and, therefore, the predictors do not exhibit serious multicollinearity problems.

4.2 Regression Analysis

The regression results for explanatory, mediating, and dependent variables are presented in Tables 4–7.

Table 4

Run Matrix Procedure for Mediating Variable (PP) with Independent Variables (CP & GP)

Models	Independent Variable	Mediating variable	Dependent variable	Sample Size
A	Consumer preferences (CP)	Public policy (PP)	Purchase intention (PI)	400
B	Green Product (GP)	Public Policy (PP)	Purchase intention (PI)	400

Table 4 presents the model specifications tested using PROCESS Macro for SPSS (Hayes, 2022). Both models examined the mediating role of Public Policy between the independent variables (Consumer Preferences and Green Products) and the dependent variable, Purchase Intention.

Table 5

Effect of Consumer preferences and green products on purchase intention

Model	R	R^2	F	p	Independ —ent Variable	Coefficie nt	t	p	LLCI	ULCI
A	0.672	0.452	328.03	0.000	Consumer Preferences	0.7685	18.11	0.000	0.685	0.852
B	0.518	0.269	146.09	0.000	Green Products	0.6546	12.09	0.000	0.548	0.761

* Dependent variable: Purchase intention

Source: Author owns calculation by SPSS

In Table 5 Model A shows that Consumer Preferences significantly predict Public Policy ($\beta = 0.7685$, $p < 0.001$) with an explained variance of 45.2%. Model B indicates that Green Products also significantly influences Public Policy ($\beta = 0.6546$, $p < 0.001$), though with a lower explained variance (26.9%).

Table 6

Mediating effect of public policy on green product, consumer preferences and purchase intention

Model	R	R^2	F	p	Independen t Variable	Coefficie nt	t	p	Media tor	Coeffici ent	t	p
A	0.63 9	0.40 8	137.0 0	0.000	Consumer Preference s	0.4451	7.9 5	0.000	PP	0.2647	5.41	0.000
B	0.69 2	0.47 8	181.8 0	0.000	Green Products	0.5618	11. 17	0.000	PP	0.2960	7.43	0.000

*Dependent variable-purchase intention

The results in Table 6 demonstrate that both models highlight significant direct and indirect effects. In Model A, a one-unit increase in Consumer Preferences leads to a 44.5% increase in Purchase Intention, with Public Policy contributing an additional 26.5%. In Model B, Green Products raised Purchase Intention by 56.2%, with Public Policy mediating an additional 29.6%.

Table 7

Total Effects of Consumer preferences and green products on Purchase intention

Model	R	R^2	F	p	Independent Variable	Coefficient	t	p
A	0.604	0.365	228.57	0.000	Consumer Preferences	0.6485	15.11	0.000
B	0.637	0.405	271.48	0.000	Green Products	0.7550	16.47	0.000

Source: Author owns calculation

The results indicate that Consumer Preferences (Model A) show 36.5% variance in Purchase Intention, while Green Products (Model B) account for 40.5%. Both predictors are highly significant.

Table 8

Decomposition of Effects (5,000 Bootstrap Samples)

Models	**Effect Type**	**Estimate**	**SE / Boot SE**	**95% Confidence Interval**
Model A – Consumer Preferences	Total Effect	0.649	0.043	[0.564, 0.733]

Models	Effect Type	Estimate	SE / Boot SE	95% Confidence Interval
	Direct Effect	0.445	0.056	[0.335, 0.555]
	Indirect Effect via PP	0.203	0.054	[0.105, 0.314]
Model B – Green Products	Total Effect	0.756	0.046	[0.665, 0.846]
	Direct Effect	0.562	0.050	[0.463, 0.661]
	Indirect Effect via PP	0.194	0.046	[0.112, 0.287]

The decomposition of effects was examined using 5,000 bootstrap samples in **Table 8.** For Model A (Consumer Preferences), the analysis indicated a significant total effect on the outcome variable (β = 0.649, SE = 0.043, 95% CI [0.564, 0.733]). The direct effect remained significant after accounting for the mediator (β = 0.445, SE = 0.056, 95% CI [0.335, 0.555]), suggesting that consumer preferences exert an independent influence on the outcome. In addition, the indirect effect through public policy was also significant (β = 0.203, Boot SE = 0.054, 95% CI [0.105, 0.314]). These findings indicate that purchase intention partially mediates the relationship between consumer preferences and the outcome. For Model B (Green Products), the results showed a stronger total effect than in Model A (β = 0.756, SE = 0.046, 95% CI [0.665, 0.846]). The direct effect was substantial and significant (β = 0.562, SE = 0.050, 95% CI [0.463, 0.661]), demonstrating that green products have

a robust independent influence on the outcome. The indirect effect via public policy was also significant (β = 0.194, Boot SE = 0.046, 95% CI [0.112, 0.287]), confirming partial mediation. Taken together, these findings demonstrate that both consumer preferences and green products significantly influence the outcome variable through direct and indirect pathways. However, the effect of green products was comparatively stronger, indicating that product-related attributes exert a greater influence than preferences alone. In both models, purchase intention emerged as a meaningful mediator, reinforcing its role in shaping consumer behavior.

4.3 Heteroskedasticity test

In regression analysis, the assumption of constant error variance is critical for obtaining reliable results. When this condition is violated, known as heteroskedasticity, the estimates of coefficients remain unbiased, but their standard errors become inconsistent. This inconsistency can lead to incorrect significance tests and weaken the reliability of the model. Conducting a heteroskedasticity test allows researchers to detect such problems and apply remedies, such as robust estimators, to maintain the validity of statistical inferences. Table 9 presents the estimated results of Heteroskedasticity test.

Table 9.

Breusch–Pagan Test for Heteroskedasticity

Test Statistic	p-value	f-value	f p-value	Interpretation
2.11	0.55	0.70	0.55	No evidence of heteroskedasticity

Note: A p-value above 0.05 suggests that the residuals are homoskedastic and, therefore, the results of the models are robust and valid.

5. Discussion

The objective of the current research was to analyze the impact of green products. Overall results found the positive impact of green products and Consumer preferences on purchase intention of consumer while the impact of mediating variable, public policy, was also noted positive and significant. Green purchase intention leads to reduction in environmental degradation, future disasters and improvement of environmental quality. Thus, first Hypotheses (H1) which states that green products positively correlated with purchase intention was confirmed by empirical findings. The second hypothesis (H2) which assumes that Consumer preferences positively correlated with purchase intention was also validated. Further, third hypothesis (H3), which states that public policy mediates the relationship between consumer preferences, green products, and purchase intention was also confirmed by hard evidence of this analysis. These findings corroborate the findings of Awan & Fatima, Arooj (2014);Al-Quran, et al,.2020; Dangelico, Nonino, & Pompei, (2021); Jaiswal & Kant, (2022); Yadav & Pathak, (2022); Ahmad, et al. (2023). The findings of hypothesis testing is shown in Figure 2.

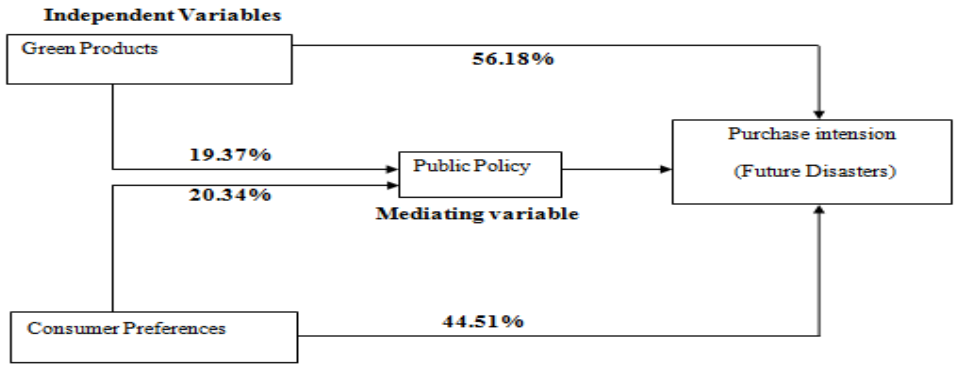

Fig 2: Hypothesis testing results

5.1 Analysis of direct effect:

Table 5 highlights that in model A the direct effect of green products and consumer preferences is 44.51% on purchase intention and public policy variable influence is 20.34%, while in model B the direct effect of green products and consumer preferences is 56.18% on purchase intention as is displayed in Figure 3.

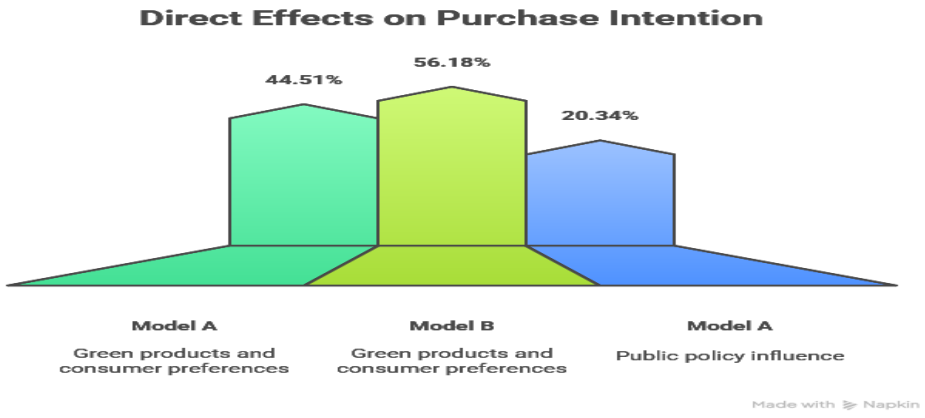

Fig.3: Direct effect of green products and consumer preferences on purchase intention.

5.2 Analysis of indirect effect:

Table 6 highlighting that in model a total effect of green products, consumer preferences and public policy as mediating variable on purchase intention is 64.85% with .000 p-values, while model b is highlighting that total effect of green products, consumer preferences and public policy as mediating variable on purchase intention is 75.55% with .000 p-values and public policy as mediating variable influence is 19.37%. The effect of mediation variable, public policy is shown in Figure 4.

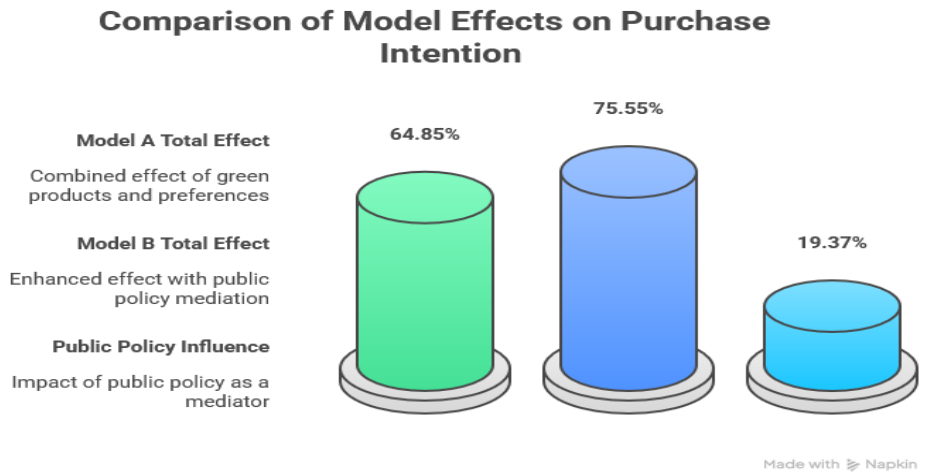

Fig. 4: Public policy impact on the relationship of green products, Consumer preferences and purchase intention.

These results underscore the dual importance of consumer preferences and green product attributes in shaping consumer behavior. While both factors significantly influenced the outcome variable, green products demonstrated a stronger total and direct effect compared to consumer preferences. This suggests that consumers may be more responsive to tangible product-related

features, such as eco-friendly materials, packaging, or certifications, than to abstract preferences alone. These findings are consistent with Ajzen's (1991) *theory of planned behavior,* which emphasizes the centrality of intentions in mediating the link between attitudes and behaviors. In this context, purchase intention emerged as a significant mediator, reinforcing its role as the mechanism through which consumer preferences and green products translate into actual behavior.

5.3 Practical implications

The practical implications of these findings are equally significant. Firms seeking to promote sustainable consumption should not only cultivate consumer preferences through awareness campaigns but also invest in developing and marketing credible green products that align with these preferences. Enhancing product visibility, ensuring authenticity through eco-labels, and integrating green attributes into brand identity may strengthen consumer trust and drive purchase decisions. Policymakers can also benefit from these insights by designing regulatory frameworks and incentives that encourage the production and promotion of environmentally friendly products. Together, these strategies can create a synergistic effect, where strong consumer preferences and credible green products reinforce one another to foster sustainable consumption patterns and improved environmental outcomes.

5.4 Limitations and Future Research avenues

Although the present study provides valuable insights into the influence of consumer preferences and green products on behavioral outcomes, certain

limitations should be acknowledged. First, the study relied on cross-sectional data, which restricts the ability to establish causal relationships between variables. Longitudinal or experimental designs could offer stronger evidence of causality and clarify how consumer attitudes and intentions evolve over time. Second, the data were collected from a specific market context, which may limit the generalizability of the findings to other cultural or geographic settings. Consumer responses to green products and preferences may vary across regions depending on environmental awareness, economic conditions, and regulatory frameworks. Third, the study examined purchase intention as the sole mediator. Future research could employ longitudinal approaches, include cross-cultural comparisons and incorporate additional mediators and moderators, such as environmental concern, brand credibility, or perceived behavioral control to enrich the theoretical framework and capture the complexity of consumer decision-making.

5.5 Conclusions:

We can conclude that the adoption of green products is increasingly essential for households due to their recyclable nature, cost-effectiveness, and role in waste reduction. This analysis confirms that green products have a substantial impact on consumer purchase intention. It underscores the vital, indirect role of public policy in motivating manufacturers to produce eco-friendly goods and in encouraging consumers to choose them. Therefore, it is imperative for the government of Pakistan to formulate and implement effective eco-friendly policies to actively promote the production and consumption of green products.

Data statement

Data that supports the findings of this study will be provided on strong requests.

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