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Factors Affecting Consumer Green Buying Behavior of Renewable Energy Generation Products for Agricultural Use

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ABSTRACT

This study inspected the influence of contextual (government regulations, green product, green price, green place, and green promotion) and attitudinal (attitude towards green purchase) factors on green purchase behavior. The research framework has been developed based on the attitude-behavior-context (ABC) theory. This study is quantitative, using random sampling and the survey method for data collection. The data has been collected from the farmers who bought renewable energy production products (like solar panels) for agricultural use in Pakistan. A total of 500 questionnaires were distributed of which 387 were used. This study used SPSS for data screening and demographics analyses, whereas it used the ADANCO software package for PLS-SEM to analyze the hypothesized paths. The analysis results revealed that government regulations, green product, and green price have a direct significant relationship green purchase behavior. In line with this, these factors have indirect significant relationship with green purchase behavior through the mediation od attitude towards green purchase. Whereas the green promotion has not directly affected green purchase behavior but indirectly through the mediation path. On the other hand, the green place has no direct and indirect effect on green purchase behavior. The study assists governments, organizations, and practitioners to understand the underlying factors shaping green purchase behavior.

Keywords: 5Gs' of Green Marketing; Green Marketing Mix; Attitude towards Green Purchase; Green Purchase Behavior; Attitude-Behavior-Context (ABC) Theory

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1. Introduction

The experts anticipate a decline in annual global economic output by 11% to 14% by 2050, which amounts to around US$ 23 trillion caused by climate change and global warming[1]. The Global Climate Risk Index 2019 stated that from 1998 to 2017, extreme weather was responsible for 526,000 deaths, costing USD 3.47 trillion[2]. Global climate change is not only a future warning but also happening now as it has started flashing its destructive outcomes over the globe. According to National Disaster Management Authority (NDMA), the 2023 flood in Pakistan affected 387,000 people to leave their homes for safer places and caused significant damage[3]. The extreme environmental disasters are hurting humans and animals. Experts believe that climate change is a major culprit. Since it was one of the worst wildlife disasters in modern history that wiped out 1.5 billion animals and burned 24 million hectares land in a gigantic Australian forest in late 2019 and early 2020[4].

Governments, organizations, and people's ignorance caused this environmental crisis. Toxic waste from production, transportation smoke, unethical marketing, inefficient electric appliances, and overuse of natural resources have generated serious environmental challenges[5]. These challenges caused pollution, global warming, and future resource shortages[6]. Energy-producing enterprises are the prime single source of climate change, contributing 31.8% of greenhouse gas emissions[7]. According to a report in 2022, 81% of worldwide electricity was generated by burning fuels such as natural gas, oil and its derivatives, biofuels like solid biomass and animal products, coal, manufacturing and urban wastes[8].

Subsequently, the environment has been a priority for governments, businesses, scholars, and society in modern times[9, 10]. Factors affecting consumer green buying behavior of renewable energy generation products for agricultural use can also be considered in relation to energy-harvesting technology[11], energy-efficient green 6G networks[12], and trust management in organic agriculture in terms of sustainable consumption behavior, environmentally conscious purchase intention, and healthy food choices[13]. Due to prior situation, the UN's Decade of Action (2021–2030) to achieve SDG 2030 requires all sectors of society to mobilize an unstoppable movement. Furthermore, the urgency of SDG implementation demands a multi-stakeholder engagement between governments, organizations, business sectors, and the public[14]. Governments are currently under pressure to create environmental safety policies and support companies that build and sell green products to the increasing global market[15]. Besides, this severe environmental scenario drove all businesses to consider environmental concerns into their corporate strategies and business operations[15], especially in R&D, production, and marketing[16]. However, without understanding and changing individuals' behavior and shaping variables, government and organization policies, strategies, and technologies to change green consumer behavior are insufficient[17].

Likewise, our behaviors determine our future. Additionally, a sustainable society requires changing consumer energy-related behaviors[10]. Around 30% of the energy consumed by agricultural farming, largely generated through fossil fuel. Thus, consumers/farmers must consider renewable energy production products for energy usage to reduce power-generating firms' carbon emissions and to protect the environment[18]. Green purchase behavior has a stronger impact on environmental safety compared to other environmentally significant behavior[19]. Therefore, studying consumer purchasing behavior related to renewable energy production products (like solar panels) for benefiting environment is vital[20].

On the lookout for a fix, Ansari et al.[21] presented the 5Gs' of green marketing (government regulations, green product, green price, green place, and green promotion) to integrate government regulations with the organization's fundamental marketing mix to influence green purchase behavior. In addition, various theories have explored green purchase behavior, including the theory of reasoned action (TRA) presented by Fishbein et al.[22], the theory of planned behavior (TPB) presented by Ajzen[23], and values-beliefs-norms (VBN) theory presented by Stern et al.[24]. However, fewer studies have been looked into Attitude-Behavior-Context (ABC) theory presented by Guagnano et al.[25]. There-

fore, usinga the hypothetical grounds of ABC theory, this study investigates the new green marketing mix as a contextual factor, attitude towards green purchase as an attitudinal factor, and green purchase behavior as a behavioral factor. In a nutshell, green purchase behavior (GPB) understanding can be beneficial for governments and businesses to explore insights into sustainable marketing models and make sustainable marketing strategies for the companies[26].

2. Literature Review and Hypotheses Development

2.1. Attitude-Behavior-Context (ABC) Theory

Stern[27] explained human pro-environmental behavior using the attitude-behavior-context (ABC) theory which states that cognitive and contextual factors collectively influence consumers' green behavior[27]. Beneficial contextual factors boost, while non-beneficial contextual factors weaken the attitude-behavior correlation. In other words, behavior (B) is a result of the shared influence of attitude (A) and context (C). In encouraging circumstances, even individuals with weak eco-friendly attitudes act eco-friendly, yet in restrictive situations, even those with highly optimistic ecological attitudes possibly will be dissuaded[28]. In line with this, attitude-behavior correlations are strongest when contextual factors are not present. When contextual factors are strongly favorable or unfavorable, this connection is zero. This theory calculates A and C values to determine B's effect value. Thus, the magnitude of the total value of the sum of A and C (mathematically: |A + C| = B) will determine the successful strategy to induce or constrain any behavior[25].

Attitudinal factors might hold beliefs, values, norms, intentions, and general "pre-dispositions" to act in specific ways[29]. Guagnano et al.[25] state that highly unfavorable attitudes are associated with coerced behavior. Additionally, extreme positive points are linked to actions a person would typically do unless coerced. Likewise, contextual aspects may comprise economic incentives and expenditure, bodily abilities, and limits, both legal and institutional aspects, community policy

and cooperation, advertising, product availability, regulations, cost, and interpersonal impacts. Moreover, social competency, institutional environment, physical infrastructure, and economic structure are also important contextual factors[29]. According to Guagnano et al.[25] external factors include all physical, legal, financial, and social influences on behavior. These factors can be positive or detrimental (pleasant or supportive).

ABC theory uniquely integrates contextual/external and internal/attitudinal factors to show how environment and person interact and provides a comprehensive view of environmentally significant behavior's antecedents[30]. Contextual variables affect behavior directly and indirectly by interacting with attitudinal variables[31]. Likewise, Yadav et al.[32] worked an integrated approach to study green hotels in India and recommended that future studies include more contextual factors. Further study is needed to improve understanding of green marketing and consumer green product purchases.

2.2. Green Purchase Behavior (GPB)

Green purchase behavior (GPB) is the buying patterns that consider the environmental influence of product and its manufacturing procedures[27]. Similarly, Steg and Vlek and Robert[32] define green purchase behavior that reduces the damage to the nature and benefits the nature. Rendering to Khoiruman and Haryanto[33] and Tan[34], green purchasing is buying and using things with minor environmental damage. Such considerations include purchasing and using solar and wind power electricity generation, energy-efficient appliances, hybrid cars, recycled products, and locally developed organic products. Consumers are pretty mindful about global warming, environmental hazards, and population expansion[35]. Thus, green purchasing behavior is a crucial research issue in developing countries related to green product and marketing studies[36].

2.3. The 5Gs' of Green Marketing or New Green Marketing Mix

Green marketing, like traditional marketing, focuses on marketing mix and strategy[37]. Green, en-

vironmental, ecological, sustainable, and ethical entail benefiting the environment[26]. American Marketing Association (AMA) defines the green marketing which involves product improvements, upgradation to manufacture procedures, packaging and advertising techniques, and improved knowledge of compliance marketing among industries[36]. Hameed and Waris[38] stated that green marketing is an integral part of CSR to create and continue a sustainable relationship with nature, communities, and buyers. Also to understand consumer behavior, satisfy green product demand, and enlighten consumers about planetary sustainability[39]. For a successful green marketing strategy, marketers must use elements of a green marketing mix to develop a green marketing strategy[26, 40]. However, creatively using the green marketing mix is now challenging for marketers due to high level of consumer environmental awareness[41].

For a sustainable future, the government also makes green policies. Environmental laws encourage eco-friendly behavior among businesses and consumers. To reduce carbon emissions by high-carbon-emitting countries and to support impoverished countries, United Nations Framework Convention on Climate Change (UNFCCC) has developed a USD 100 billion Green Climate Fund in the 17th Conference of the Parties (COP17) in Durban, South Africa[42]. This initiative will help the government collaborate with companies to create a green economy and consumption, which may change consumer behavior from conventional to green. Government-supported green innovation technologies help enterprises enhance green products and production methods, creating a "win-win" situation for the environment and businesses[43].

To determine GPB, Ansari et al.[21] presented the 5Gs' of green marketing combining government regulations and green marketing mix. However, this study formalized an ABC theory-based research framework employing the 5G's of green marketing as a contextual element affecting energy-efficient electric appliance consumers' green purchase behavior.

2.3.1. Government Regulations (GTRG)

The government responsibility is to make every attempt to provide its citizens with excellent services[44]

including environmental safety. Environmental challenges are subject to government regulations[45]. In a similar vein, Testa et al. (2016) reported that the government must initiate and disseminate information regarding energy saving and environmental policies that affect ecological safety. Likewise, consumers trust green products if the government verifies the company's data and products through a green-label program[46]. Over the years, the government has focused on understanding behavior to create and enforce successful policies and regulations[47]. Governments must establish environmental sustainability programs, educate the public, and raise environmental awareness[48, 49].

Sinnappan and Rahman[50] testified that the responsibility of government for making environmental regulations is determinant of GPB. The environmental project of government is the highest potent influencer of green buying[48]. Also,Sang and Bekhet[49] suggest that the government policies must indorse the promotion of electric automobile sales in Malaysia to cut carbon emissions.

H₁. *A significant positive relationship exists between government regulations and green purchase behavior.*

2.3.2. Green Product (GPDT)

The green product is the fundamental element of 5G's of green marketing. A product manufactured with poisonous-free components and eco-friendly techniques, and authorized by an established authority is considered green[51]. Green products are the ones that do less harm to the ecosystem all over its life cycle and fulfil the same goals as the traditional product. Besides, the green product's ingredients, formulation, and packaging are also eco-friendly[41]. A design-for-environment process must describe environmental product qualities like low-energy or low-emission performance, recyclability, or reduced ecologically sensitive components[52]. Besides, Hossain & Khan[53] got that Bangladeshi consumers' green buying is strongly affected by green products. Similarly, green products are crucial to green purchasing[54].

H₂. *A significant positive relationship exists between*

green product and green purchase behavior.

2.3.3. Green Price (GPRC)

The pricing of a product or service is the essential component of the marketing mix. Consumers usually pay for a product or service's true worth if it matches their perceived value. Similarly, many people will pay more if a product or service adds value[53]. Product performance, function, design, aesthetic appeal, or taste can be upgraded to add value[55]. Environmental benefits is generally an added-value to a product are, but they will often be the determining feature when choosing among traditional products of the equal value and quality[56]. Additionally, consumers will view environmentally friendly products as inexpensive if they consider their life-cycle cost and environmental advantages[57]. Few researchers have claimed a positive association between green price and consumers' green purchasing[54, 58].

H₃. *A significant positive relationship exists between green price and green purchase behavior.*

2.3.4. Green Place (GPLC)

Distribution channels for physical goods or service sites have traditionally been linked to "place" in marketing mix elements. In terms of 'place', tangible consumer products' environmental impact is related mainly to the energy and resources used in distribution channels and consumers' travel to and from trade places[59]. A distinguished level of conformance is needed to distribute green products, and consumers should be verified with the product's environmental aspect[38]. Scholars found a positive and significant influence of green place on consumers' green purchasing[54].

H₄. *A significant positive relationship exists between green place and green purchase behavior.*

2.3.5. Green Promotion (GPRM)

Even though every marketing effort conveys corporate philosophy to consumers and other stakeholders, companies use specific approaches (usually integrated) to build stakeholder engagement and influence consumers. Green promotion also involves providing accurate product information without harming consumers' material and moral concerns[60]. The goal is to encourage users to buy green products. It also guides consumers to consider the beneficial effects of their purchases on them and the nature[6]. In contrast, a lack of clear information regarding a product's environmental friendliness can hinder green product purchases[61].

Scholars discovered a significant association among green marketing and consumer green buying in Bangladesh, suggesting that marketers may boost consumer knowledge of green products and green buying through an innovative promotional effort[53]. Other studies showed a positive association between green promotion and consumer green purchase[54, 58].

H₅. *A significant positive relationship exists between green promotion and green purchase behavior.*

2.3.6. Attitude towards Green Purchase (ATGP)

Attitude is a psychological pre-disposition to view the environment positively or negatively[62]. The connection between attitude–behavior was more robust after the attitude was identified as a dedicated ecological behavior instead a generic attitude[63]. Karunarathna et al.[64] stated that some consumers care about the environment and buy green, but others don't, even when they're aware of environmental challenges. This study considered attitude a behavior-specific belief; therefore, customers will prioritize green purchases.

ABC theory claims that attitude directly affects behavior[30, 31, 65], unlike theories as the theory of reasoned action (TRA) and theory of planned behavior (TPB), which say attitude influences intention, which then affects behavior[23]. According to ABC theory, time-consuming, expensive, or challenging environmentally significant behaviors considerably depend on attitudinal factors[25, 27, 30, 66] It suggests that contextual and attitudinal elements may help marketing managers understand customer purchasing preferences[32] However, Ashraf et al.[67] argued that attitude mediates the link amongst the GPB and its determining factors. Similar ev-

idence has been found in the research of Riskos et al. [68] that shows the mediating relationship of attitude in green purchasing behavior and its determinants. Moreover, green consumer attitude mediates among green marketing mix and green purchase intention [69].

H_6. *A significant positive relationship exists between attitude towards green purchase and green purchase behavior.*

H_7. *ATGP mediates the relationship between GTRG and GPB.*

H_8. *ATGP mediates the relationship between GPDT and GPB.*

H_9. *ATGP mediates the relationship between GPRC and GPB.*

H_{10}. *ATGP mediates the relationship between GPLC and GPB.*

H_{11}. *ATGP mediates the relationship between GPRM and GPB.*

2.4. Research Framework

In this study, the concepts and evaluation of the literature have been essential in laying the foundation for the research. **Figure 1** illustrates the hypothesized framework for current research, which illustrates the independent variables (5Gs' of green marketing, which are government regulations, green product, green price, green place, green promotion), dependent variable (green purchase behavior), and the mediator (attitude towards green purchase).
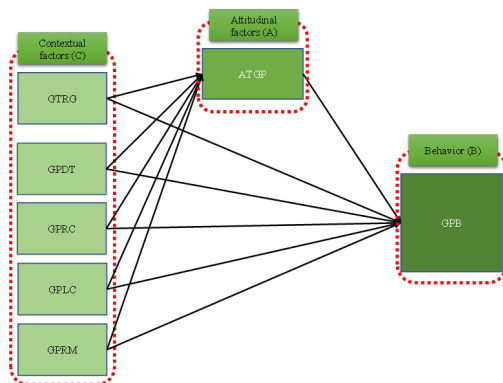

Figure 1. Research framework.

The hypothesized framework is based on the attitude-behavior-context (ABC) theory [25]. It supports the hypothetical framework of the existing study from independent variables (IV) to the dependent variable (DV) through a mediator. Moreover, it supports the direct links of IV's to DV.

3. Materials and Methods

3.1. Research Design

Using the questionnaire and survey method, quantitative research approach was employed for this research. To measure the construct, items have been adapted from literature. Eight items to measure GPB adapted from Abid [70] and Latif, four items adapted to ATGP evaluation from T. N. Nguyen, Lobo, and Nguyen [71], and six items adapted to assess GTPL from Masi [72] and Karatu. While to measure GPDT, GPRC, and GPLC respectively, four, five, and four items altered from Hossain [53] and Khan. Finally, GPRM was assessed using five items from Mahmoud et al. [73] Questions were responded using a five-point Likert scale, ranged from "1" for "strongly disagree" and "5" for "strongly agree".

3.2. Sample

The current research persistent to Pakistani farmers as consumers who bought renewable energy generation products (like solar panels) in the past year. Applying the convenience sampling method, the data has collected from different rural areas of Pakistan. Krejcie and Morgan [74] recommended 384 for a population over one million; thus, used this number. In this regard, 500 surveys were completed, but 113 did not match data analysis criteria and were discarded before analysis. Thus, the studies included 387 surveys with a 77.4% response rate.

3.3. Demographics

The study's demographics shows in **Table 1** which elaborate that 57.4% were food-growing farmers and 42.6% were livestock farmers among the total respondents. All respondents were male (100%). Most re-

spondents (34.1%) were 46–60 years old. Majority of respondents (50.6%) have matriculation level of education while 33.6% got secondary education and 15.7% were graduates and post-graduates. Most respondents (40.8%) earned PKR 50001–100000 monthly, 7.8% have earning above PKR 200000, 39.0% have earning between PKR 100001-200000, and rest 12.4% have earning below PKR 50000 monthly.

Table 1. Descriptive analysis of demographics.

Variable Name	Items	Frequency	Percentage
Farm type	Food-growing	222	57.4
	Livestock	165	42.6
Farm size	Less than 15	93	24.0
(no. of employees)	16–25	194	50.1
	26 and more	100	25.8
Farmer's age	Less than 20	21	5.4
	21–30	97	25.1
	31–45	124	32.0
	46–60	132	34.1
	More than 60	13	3.4
Qualification	Matriculation	196	50.6
	Secondary education	130	33.6
	Graduation	44	11.4
	Post-graduate	17	4.4
Monthly Income level	Less than 50,000	48	12.4
(PKR)	50,001–100,000	158	40.8
	100,001–200,000	151	39.0
	More than 200,000	30	7.8

4. Data Analysis and Findings

Partial least square structural equation modeling (PLS-SEM) with ADANCO 2.2.1 software was operated to inspect the data[75]. Assessing the outer model and the inner model are the two components of the PLS-SEM analysis. PLS-SEM is a sophisticated statistical procedure for multivariate construct analysis that may simultaneously access measurement and structural models[76].

4.1. Multivariate Skewness and Kurtosis

Along with Hair et al.[77] and Cain et al.[78], multivariate skewness and kurtosis were evaluated in this study using the web power online program found at https://webpower.psychstat.org/models/kurtosis. Analysis of the data confirmed that it does not follow the multivariate normal distribution; Mardia's multivariate skewness and kurtosis resulted ($\beta = 10.54$, $p < 0.01$) and ($\beta = 79.59$, $p < 0.01$), correspondingly (**Figure 2**). The lack of multivariate normality prompted us to use the non-parametric PLS-SEM technique.
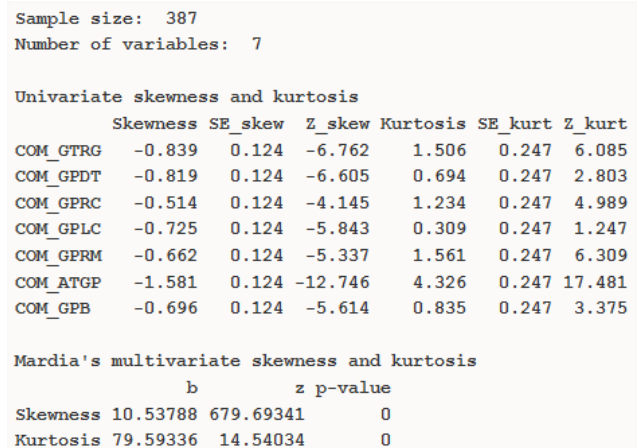
```
Sample size:  387
Number of variables:  7

Univariate skewness and kurtosis
         Skewness SE_skew  Z_skew Kurtosis SE_kurt Z_kurt
COM_GTRG  -0.839   0.124   -6.762   1.506    0.247  6.085
COM_GPDT  -0.819   0.124   -6.605   0.694    0.247  2.803
COM_GPRC  -0.514   0.124   -4.145   1.234    0.247  4.989
COM_GPLC  -0.725   0.124   -5.843   0.309    0.247  1.247
COM_GPRM  -0.662   0.124   -5.337   1.561    0.247  6.309
COM_ATGP  -1.581   0.124  -12.746   4.326    0.247 17.481
COM_GPB   -0.696   0.124   -5.614   0.835    0.247  3.375


Mardia's multivariate skewness and kurtosis
              b         z p-value
Skewness 10.53788 679.69341       0
Kurtosis 79.59336  14.54034       0
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Figure 2. Mardia's multivariate skewness and kurtosis.
Note: COM_GTRG = Government regulations; COM_GPDT = Green product; COM_GPRC = Green price; COM_GPLC = Green place; COM_GPRM = Green promotion; COM_ATGP = Attitude towards green purchase; COM_GPB = Green purchase behavior.

4.2. Common Method Bias (CMB)

As the gathering of data for all the variables of current study were self-reported, there was a chance of com-

mon method bias (CMB). For that purpose, Herman's single factor test has been applied to analyze the maximum variance among all the constructs. The result showed that maximum 39.05% variance was accounted for a single factor that is under 50% standard limit value. Thus, there is no concern of common method bias in current research.

4.3. Assessment of Measurement Model

The current investigation examined the reliability and validity by examining internal consistency, convergent, and discriminant validity of the measurement/outer model[79].

4.3.1. Internal Consistency Reliability and Convergent Validity

The internal consistency reliability was figured out through the composite reliability (CR or ρ_c), Rho_A (ρ_A), and McDonald's Omega (ω) of the model. The CR and Rho_A values were measured through ADANCO software, whereas McDonald's Omega values were assessed through a macro available at http://afhayes.com/spss-sas-and-r-macros-and-code.html and run in SPSS. Dijkstra and Henseler[80] claimed that alpha underestimates, and CR overestimates the reliability, hence, are conventional and inconsistent reliability measures[81] To overcome this, Rho_A, suggested by Dijkstra and Henseler[80], and McDonald's Omega, presented by Hayes and Coutts[82], were also used as these measures are better reliability measuring techniques.

Providently, **Table 2** shows the reliability values above 0.70 that fulfilled the criteria for internal consistency reliability[83]. Likewise, convergent validity is revealed by Hair, Sarstedt, et al.[84] as "*the degree to which a latent construct explains the variance of its indicators*". Providently, **Table 2** shows that 50% of each variance is attained by each construct (i.e., AVE ≥ 0.50), which is exceeding the maximum value given by Hair, Sarstedt, et al.[84].

4.3.2. Discriminant Validity

Likewise, discriminant validity was determined through Heterotrait-Monotrait (HTMT) ratio provided by[85], containing the two generally used considerations with the cutoff points HTMT.85 and HTMT.90[85, 86], re-

spectively. Whereas Voorhees et al.[87] argued that values below 0.85 performed well. **Table 3** shows that each value is less than 0.85, meaning the construct has achieved discriminant validity.

4.3.3. Assessment of Structural Model

Figure 3, **Tables 4** and **5** exhibit the construct's direct and indirect hypotheses. The structural model uses bootstrapping with 5000 resamples to demonstrate the significance of the hypotheses with beta (β), t-value, p-value, and R2 value[77].
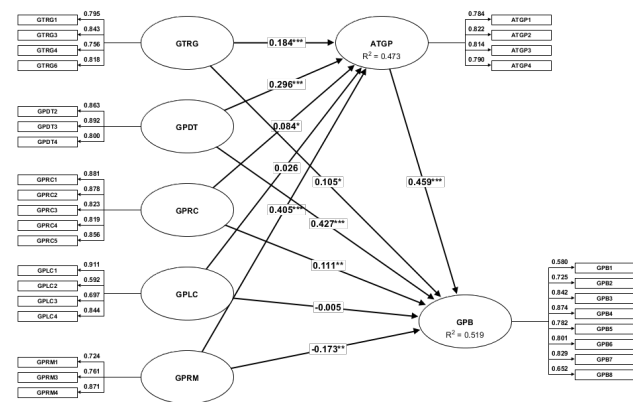

Figure 3. Measurement and structural model (bootstrapping method with 5000 resamples).
Note: GTRG = Government regulations; GPDT = Green product; GPRC = Green price; GPLC = Green place; GPRM = Green promotion; ATGP = Attitude towards green purchase; GPB = Green purchase behavior. *** = p-value < 0.001; ** = p-value < 0.01; * = p-value < 0.05.

5. Results and Findings

In H_1, GTRL significantly affects GPB (β = 0.086, t-value = 1.984, and p-value < 0.05). H_2 also shows that GPDT positively affects GPB (β = 0.324, t-value = 5.389, and p-value < 0.05). Similarly, H_3 is accepted empirically (β = 0.080, t-value = 2.104, p-value < 0.05). H_4 showed that GPLC does not positively influence GPB (β = -0.018, t-value = 0.449, and p-value > 0.05), contrary to the preceding hypotheses. H_5 showed that GPRM does not positively affect GPB (β = -0.146, t-value = 2.981, and p-value < 0.05).

Additionally, H_6 got that the ATGP positively impacts GPB (β = 0.542, t-value = 8.312, and p-value < 0.05). H_7, which hypothesizes that ATGP mediates the association connecting GTRL and GPB, was accepted (β = 0.096, t-value = 3.771, and p-value < 0.05). Government pro-environmental regulations can aid and raise awareness

Table 2. Internal consistency reliability and convergent validity results.

Constructs	Indicators	Loadings	CR (ρc)	Rho_A (ρA)	Omega (ω)	AVE
Government Regulations	GTRG1	0.795	0.879	0.831	0.783	0.645
	GTRG3	0.843				
	GTRG4	0.756				
	GTRG6	0.818				
Green Product	GPDT2	0.863	0.889	0.837	0.827	0.727
	GPDT3	0.893				
	GPDT4	0.800				
Green Price	GPRC1	0.881	0.930	0.925	0.912	0.726
	GPRC2	0.878				
	GPRC3	0.823				
	GPRC4	0.819				
	GPRC5	0.856				
Green Place	GPLC1	0.911	0.851	0.842	0.815	0.595
	GPLC2	0.592				
	GPLC3	0.697				
	GPLC4	0.844				
Green Promotion	GPRM1	0.724	0.830	0.709	0.709	0.620
	GPRM3	0.761				
	GPRM4	0.871				
Attitude Towards Green Purchase	ATGP1	0.784	0.879	0.819	0.798	0.644
	ATGP2	0.822				
	ATGP3	0.814				
	ATGP4	0.790				
Green Purchase Behavior	GPB1	0.580	0.918	0.904	0.901	0.588
	GPB2	0.725				
	GPB4	0.842				
	GPB5	0.874				
	GPB7	0.782				
	GPB8	0.802				
	GPB10	0.829				
	GPB11	0.652				

of green buying. The government can also help organizations promote green buying by changing consumer attitudes. The H_8 relationship is significant (β = 0.207, t-value = 4.713, and p-value < 0.05). H_9 shows that ATGP mediates the relationship among GPRC and GPB (β = 0.050, t-value = 2.513, p-value < 0.05). Unlike other significant mediating hypotheses, this study found no significant mediation of ATGP between GPLC and GPB (β = 0.023, t-value = 0.726, and p-value > 0.05). Hypothesis H_{10} was rejected. The hypothesis is accepted since the path in H_{11} is significant (β = 0.179, t-value = 4.682, and p-value < 0.05).

6. Discussion

Currently, the role of government for legislating the environmental regulations for organizations and customers is essential. Scholars have argued that the incentives provided by government have a vital role in the societies for promoting the culture of buying green products[88] . Similar finding to this study have found the significant relationship of government regulations with consumers' green buying[89]. Moreover, the elements of green marketing mix (green product, green price, green place, and green promotion) showing the similar relationships in the literature as in the current study[90–92]. In line with this, ATGP is significant as in the past studies[93], also the mediating role of ATGP among the 5'Gs of green marketing has been supported by the literature.

7. Limitations and Future Recommendations

The current study illuminated several new aspects of consumers' GPB, but these limitations should be addressed when taking interpretation of the results. Self-

Table 3. Heterotrait-Monotrait (HTMT) ratio of correlations.

Construct	GPB	GTRG	GPDT	GPRC	GPLC	ATGP	GPRM
GPB							
GTRG	0.325						
GPDT	0.665	0.164					
GPRC	0.140	0.040	0.063				
GPLC	0.090	0.054	0.186	0.080			
ATGP	0.743	0.351	0.667	0.106	0.045		
GPRM	0.480	0.196	0.788	0.060	0.104	0.789	

Note: GTRG = Government regulations; GPDT = Green product; GPRC = Green price; GPLC = Green place; GPRM = Green promotion; ATGP = Attitude towards green purchase; GPB = Green purchase behavior.

Table 4. Direct effects.

Hypotheses	Effect	β- Coefficient	Mean Value	Standard Error	t-Value	p-Value (1-Tailed)	Effect Size (f^2)	Coefficient of Determination (R^2)	Status
H1	GTRG → GPB	0.105	0.110	0.043	2.435	0.007	0.021	GPB = 0.520	Accept
H2	GPDT → GPB	0.427	0.420	0.050	8.529	0.000	0.212		Accept
H3	GPRC → GPB	0.111	0.113	0.041	2.700	0.004	0.025		Accept
H4	GPLC → GPB	−0.005	−0.011	0.040	−0.117	0.453	0.000		Reject
H5	GPRM → GPB	−0.173	−0.176	0.049	−3.510	0.000	0.033		Reject
H6	ATGP → GPB	0.459	0.463	0.061	7.588	0.000	0.231		Accept

Note: GTRG = Government regulations; GPDT = Green product; GPRC = Green price; GPLC = Green place; GPRM = Green promotion; ATGP = Attitude towards green purchase; GPB = Green purchase behavior.

reported behaviors in the present study may cause social desirability bias. The current study solely collected data from Pakistani farmers as consumers of renewable energy generating products (solar panels) buyers. Electric automobiles, organic food, energy-efficient appliances, green hotels, hospitality management, etc., have been neglected. Green purchasing behavior, an essential sustainability behavior, was the focus of this study. Other sustainability behaviors like waste management and green consumption behaviors were not examined. Similarly, this study uses individuals' data instead of social groups or corporate green behavior data.

This research also examined contextual and attitudinal elements that contribute to GPB, based on ABC theory. The contextual factors are further split into government (government regulations) and organizational (green product, green price, green place, green promotion) elements. In addition, this research has not investigated several contextual (government, business, and societal) factors. In addition, only ATGP has been investigated as an attitudinal factor affecting sustainable behavior. Still, cognitive factors like green knowledge and green awareness, which are significant drivers of green behavior, have been disregarded in this study. Therefore, this research's generalizability is an issue.

Most studies projected the construct's internal consistency reliability with Cronbach's alpha or composite reliability approaches. Though extensively employed, Cronbach's alpha underestimates, and composite reliability overestimates the construct, making them ineffective reliability measures [82]. This study also estimated reliability using McDonald's Omega, as Hayes & Coutts [82] suggested. A macro available at http://afhayes.com/spss-sas-and-r-macros-and-code.html was installed and run in SPSS for reliability assessment. Thus, the authors recommend also confirming the construct using McDonald's Omega for reliability assessment.

8. Conclusions

Over 215 million people live in Pakistan, making it the world's fifth-most populous country, and it is highly affected by the adversities of environmental damage. Pakistan's latest flood confirms the consequences of climate change on the land. However, it is also a big market with great potential for green products. Nevertheless, sustainable companies face difficulties persuading and promoting their green products in Pakistan due to little information about their GPB patterns. The current study examines governmental and organizational marketing factors influencing Pakistan's renewable energy

Table 5. Indirect/mediating effects.

Hypotheses	Effect	β- Coefficient	Mean Value	Standard Error	t-Value	p-Value (2-Tailed)	Status
H7	GTRG → ATGP → GPB	0.085	0.085	0.023	3.652	0.000	Accept
H8	GPDT → ATGP → GPB	0.136	0.137	0.036	3.751	0.000	Accept
H9	GPRC → ATGP → GPB	0.039	0.038	0.019	2.022	0.043	Accept
H10	GPLC → ATGP → GPB	0.012	0.008	0.023	0.506	0.613	Reject
H11	GPRM → ATGP → GPB	0.186	0.187	0.035	5.363	0.000	Accept

production products purchasing behavior.

Saving nature for future generations is dependent on our current environmental practices. Understanding green consumer behavior is critical not only for enterprises but also for the government. To carry out the SDGs, the government is under intense pressure to cut carbon emissions, reduce carbon footprints, protect the nature on this planet, and reduce and rescue natural resources. All of this necessitates rapid improvements in their environmental policies for organizations and consumers. The government's role in developing ecological policies for enterprise production operations and environmental consumption is not trivial. To promote green consumerism, the government authorities should work with companies to better understand their requirements and those of their customers. It also causes government financial action to stimulate and facilitate green production and consumption. Green consumption will be promoted by government support for green organizational tactics (for instance green labeling programs, tax exemptions, and R&D sponsoring). The UN also works to aid governments in promoting a green economy through multi-stakeholder partnerships. Furthermore, the government must focus on consumer purchase patterns and shift traditional consumer behavior toward green consumer behavior.

PLS-SEM also shows that contextual factors influence customers' GPB. The strong direct influence of contextual factors (GTRL, GPDT, and GPRC) demonstrated that customers prefer green products for reasons other than their eco-friendliness. The government's strict environmental policies, non-green advantages, and price incentives may be explanations. In addition, contextual factors indirectly influence via attitudinal factors, which can improve green purchasing among Pakistani farmers to buy renewable energy generating products. Green policies would receive help from green marketing's 5Gs. Thus, considering environmental conservation and boosting green consumption, government sup-

port for green marketing strategies for businesses in manufacturing, pricing, placement, and promotion will benefit all ecological stakeholders.

Author Contributions

Conceptualization, H.W.A.A. and Fauzi, W.I.M.F.; methodology; software; validation; formal analysis, H.W.A.A.; writing—original draft preparation, H.W.A.A. and H.I.; writing—review and editing, H.W.A.A. and W.I.M.F.; supervision, W.I.M.F. All authors have read and agreed to the published version of the manuscript.

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The authors declare no conflict of interest.

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