



DOI: <https://doi.org/10.71317/kjard.2.7.2026.268>

The Kashmir Journal of Academic Research and Development

Journal homepage: <https://rjsaonline.org/index.php/KJARD>



Explaining Actual Green Purchase Behavior through the Theory of Planned Behavior: Evidence of Mediating and Moderating Effects

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ARTICLE INFO	ABSTRACT
Received: May 30, 2026 Revised: June 14, 2026 Accepted: June 28, 2026 Available Online: July 13, 2026 Keywords: Green Marketing, Consumer Buying Behavior, Actual Purchase Behavior, Perceived Behavior control, Pakistan. Corresponding Author: Raheelf82@gmail.com	<i>The behavioral intents to get hold of green purchases and the actual act of acquiring green purchases are far apart. The research will be conducted with the view of enlarging the Theory of Planned Behavior (TPB) to a wider magnitude, that is to say, their effect in influencing the green consumerism behavior with reference to the ethical obligation, environmental concern and government regulations. The hypothesized research is a cross-sectional research study that will look into how the brand characteristics can affect compulsive buying behavior with the help of brand addiction. In the hypothesis testing, Smart-PLS is used. A five point Likert type scale questionnaire that was administered in a real time face to face and the online survey was adopted in the research. The outcome demonstrates that there are favorable and Statistically meaningful Att, Sn, pbc and Ec that affect the green purchase intent, but ethics obligations do not play a Statistically meaningful role. Purchasing of a green purchase or not is also consequential by the green purchase intent in the purchasing decision. The study is going to add to the existing literature, enlarging the scope of TPB with the proposal of an ethical and policy-level variables. The findings can be easily employed by policymakers and marketers in an effort to make sure that sustainable consumption will be promoted through the creation of the relevant regulations and special green marketing strategies.</i>

Introduction

Today, environmental dilemmas have already gained an immense significance, as climate change along with increasing global warming and pollution are looking up to statesmen and civilians. As people these days have become more aware and cautious about the environmental impact of industrial production and mass consumption, public opinion and consumer behavior has been favoring sustainability. Green consumerism has become one of the most Statistically meaningful developments in this sector. Nonetheless, even with this increasing tendency to embrace products which are good for environment, a Statistically meaningful and major gap between the intent shown by users or consumers and their real behavior persists as known as the intent and behavior gap (Peattie, 2010; Carrington, Neville, & Whitwell, 2014). In order to better know and predict consumer behavior, scholars have often used the Theory of Planned Behavior (TPB), which hypothesizes that behavioral intent is predicted by three main constructs: attitude toward behavior, subjective norms and perceived behavioral control (Ajzen, 1991). Although this model has been successful in many applications, it does not always capture policy-level, external determinants that can have an important influence on behavior (Armitage & Conner, 2001). According to a recent report of the Pakistan Environmental Protection Agency, in urban areas only 14% users or consumers are believed to act upon eco-friendly products, leaving a great gap between intents and behaviors this is what this study will attempt to research and answer (Pakistan Environmental Protection Agency, 2022). The present study attempts to address this gap in theoretical and empirical studies by expanding the conceptualization of the Theory of Planned Behavior. It also brings in the concept of government regulation as a moderating variable of intent to purchase greens and actual buying behaviors, examining the impacts of regulatory policies such as environmental laws and financial incentives and effectiveness of the regulations on actualization of sustainable consumerism through the integration of regulatory environment into TPB, which makes this research develop broader and deeper insight of the mechanisms that fundamentally guides eco-friendly buyer behaviors (Thogesier et al., 2018). The Theory of Planned Behavior (TPB), invented by Icek Ajzen in 1991 is one of the most relevant psychological theories to describe the behavior of humans and highly quoted (Ajzen, 1991). The TPB was useful in the given case study in terms of sustainable consumption because the consumer attitudes, perceived social pressure (subjective norms), and the belief in the ability to undertake a specific behavior and, therefore, intent to purchase eco-friendly items were identified as Statistically meaningful (Ajzen, 1991; Paul, Modi, and Patel, 2016). TPP framework has played a crucial role in the development of theoretical essence of the study concerning green consumer behavior (Yadav and Pathak, 2017). The interests of the theory in its simple expression, however, do not predict the instances of the external, institutional or policy-based hindrances/enablers, which can possibly influence the real-life performance (Armitage & Conner, 2001).

In my interpretation; the ongoing research initiative is intended to align the picture of government interventions into TPB frame at the stage where the previous researches have identified their results (Testa et al., 2018). The majority of these operations such as mandatory eco-labeling, provision of green-product subsidies, charging polluting businesses, and initiation of awareness campaign, in addition to altering the motivation of users or consumers, can also impact their ability and readiness to change behavior and, as a result, transform intent into actual purchase (Thoetersen, 2005; Gkargkavouzi, Halkos, and Matsiori, 2019). The change allows the government to recognize that individual decisions are not performed in the vacuum and are connected to the socio-political space where the action of authorities can either facilitate or place obstacles (Steg, Perlaviciute, and van der Werff, 2015).

There is a huge difference between what users or consumers intend to do and actually do even after the proliferation of products which are good for environment and the increasing environmental consciousness. The existence of this intent and behavior gap has become a major problem for marketers, environmentalists, and policymakers. Users or consumers may indicate their strong desire or intent to buy eco-friendly products because their attitudes and social norms require so, but the actual behavior is often not realized due to some real-world obstacles. These barriers consist of the high prices, the limited availability, the doubt of product authenticity, and the worst of all, improper government policies and weak enforcement mechanisms. Taking the example of places with poorly enforced environmental regulations, or where there are few incentives for green purchasing, users or consumers will be less likely to carry out their environmentally friendly intents. In such cases, the favourable attitudes and social pressures may not be enough to drive the actual behavior if there is no external support.

1. How do attitude along with SN, and PBC influence anyone's green purchase intent?
2. What role do ethical obligation and environmental concern play in shaping green purchase intent?
3. Does green purchase intent Statistically meaningfully influence actual Environmentally preferred purchasing (EPP)?
4. Do government regulations moderate Interrelationship or link between the green purchase intent and the actual green purchase behavior?

Theoretical Background and Hypotheses Development

In this section, the theoretical background determines the primary concepts and hypotheses to be used in the current research. First, a review of the literature regarding Environmentally preferred purchasing (EPP), particularly Theory of Planned Behavior, is being undertaken. Subsequently, this section demystifies the researches that are critical as regards to attitude, subjective norms and perceived behavioral control, ethical obligation and environmental concern in the determination of green purchase intent. Third, it puts into consideration Interrelationship between green purchase intent and the actual Environmentally preferred purchasing (EPP) and the so-called intent and behavior gap. Moreover, this section also reports on the role of government regulation as a moderating variable in augmentation of Interrelationship amid purchase intent and actual purchase behavior. Finally, the hypothesis of the research and the study constructs are outlined as being built on the further development of the lengthened Theory of Planned Behavior.

Literature Review

Attitude and Green Purchase Intent

Attitude is a general judgement of a behavior; either good or bad and is a key determinant of behaviour intents (Ajzen, 1991). With the element of green consumption, the attitude forms a notion on the part of users or consumers on the goodness of acquiring products that are environmentally friendly like minimizing environmental degradation, saving natural resources and ensuring sustainable growth. The users or consumers will be more prone to develop favorable attitudes towards the products which are good for environment when they had this believe that they are not only useful to themselves but also to the society and environment. Past research has always established the Statistically meaningful connection between attitude and green purchase intent. They indicated that favourable attitude to organic and environmentally friendly products has a Statistically meaningful and beneficial impact on the intent to purchase them (Tarkiainen and Sundqvist 2005). On the same note, (Arvola et al. 2008) also discovered that favourable judgments of ethical and products which are good for environment affect consumer intents to buy such products. These results indicate or share that attitude is an important motivational aspect that can influence customers to adopt environmentally-friendly purchasing behavior.

H1: ATT has a Statistically meaningful impact on green purchase intent.

Subjective Norms and Green Purchase Intent

Subjective norms (SN) are the perceptions of external forces of the society, family members, friends, colleagues, and society on an individual to act or not to act in a specific or a certain way (Ajzen, 1991). Subjective norms are Statistically meaningful or beneficial in green consumption where users or consumers perceive that those who are Statistically meaningful to them require them to behave in ways that are environmentally friendly. Individuals are usually driven by social approval and acceptance to follow behaviors that are seen to be socially acceptable. According to the empirical studies, subjective norms have a Statistically meaningful impact on green purchase intent. The study by (Arvola et al. 2008) revealed that peer and family member social influence motivates one to purchase green and ethical products. In the same case, (Ramayah et al. 2010) discovered that subjective norms have productive influence in influencing the intent of users or consumers to buy products which are good for environment especially in the collectivist cultures where social expectations play a Statistically meaningful role in defining the behavior of individuals. The findings indicate the role of social influence in facilitating green consumption.

H2: SN have a Statistically meaningful impact on green purchase intent.

Perceived Behavioral Control and Green Purchase Intent

The concept of perceived behavioral control (PBC) is a person in relation to his or her evaluation of the ease or difficulty of the performance of a behavior. This is in the context of green consumption in terms of the ability of users or consumers to access, afford, and judge products which are good for environment. (Ajzen, 1991). The more people perceive that they know, have, and can afford environment-friendly products, the higher the chances that they will develop the intent to consume them. PBC is tightly related to the external factors, including the accessibility of products which are good for environment, the possibility to receive the correct product information, and the money.

A consumer that resides in a city with a high number of retail outlets that are eco-oriented and that has government subsidies on green purchases is most likely or its highly to have a high perceived behavioral control (Ramayah et al. 2010). Conversely, some

cases will be that in case the products that are green are either unavailable or costly then PBC can be low, even when the attitude and subjective norms of the consumer are favourable. Scholars have discovered that our green purchase intent can be dramatically augmented by increasing PBC by means of specific measures such as green product promotions, government subsidies, and consumer education. Thus, better infrastructure and accessibility would enhance the behavioral intents in green consumption.

H3: PBC has a Statistically meaningful impact on green purchase intent.

Ethical Obligation and Green Purchase Intent

Ethical obligation is described as the internalized moral duty of any person to do whatever they can to reduce or minimize the negative impacts to environment and any other moral duty that can benefit the society. Ethical obligation in green consumption is used to encourage the consumer to evaluate the ethical implications of their buying behavior, instead of concentrating on personal gain (Chang, 2011). The more ethically responsible users or consumers are to the security of the environment, the more they are to support the products and practices that are sustainable. A number of studies have emphasized the need to have ethical obligation in the formation of green purchase intent. The study by (D'Souza et al. 2006) established that the users or consumers who had high ethical scores would be more ready to use products which are good for environment, Regardless the fact that such products may be expensive or inconvenient. The (Testa et al. 2015) article also highlighted the fact that moral considerations could enhance the level of commitment of users or consumers to environmentally sustainable actions. These results indicate that ethical obligation is a strong internal stimulus of green purchase intent.

H4: Ethical obligation has a favourable or productive impact on green purchase intent.

Environmental Concern and Green Purchase Intent

EC is understood as the level of environment and its awareness and the level of concern among the individuals regarding the adverse effects of environmental degradation. Highly environmentally aware and concerned users or consumers are more vulnerable to ecological issues and have the propensity to favor environmentally friendly products and practices that are sustainable (Akehurst et al., 2012). Past researches have solid evidence of productive relationship between green purchase intent and environmental concern. Much more users or consumers are worried and concerned about environmental issues, and they have more incentive to find information about products which are good for environment and choose alternatives that have a favourable impact and effect on the environment (Testa et al., 2015). Environmental concern also increases users or consumers' willingness to make personal compromise like paying high prices to conserve the environment.

H5: Environmental concern has a Statistically meaningful impact on green purchase intent.

Green Purchase Intent and Actual Green Purchase Behavior

Green purchase intent is the ability or willingness and the readiness of any consumer to purchase the products which are good for environment. Though intent is regarded as one of the main predictors of behavior, a number of studies note a discrepancy between the intents which customers express and their actual buying behavior with regard to green consumption (Carrington et al., 2014). It is commonly explained by situational constraints such as the lack of availability, price sensitivity, and distrust in green claims as the cause of this intent and behavior gap. Nevertheless, it is not all bad as previous studies have established that the GPI continues to be a considerable predictor of the actual green purchase behaviour. According to (Ramayah et al. 2010), users or consumers whose purchase intents are strong towards green purchase tend to make conscious green purchase more when the external restrictions are minimized. Intent is therefore very important in transforming pro-environmental attitudes and values into action.

H6: GP intent has a favourable, Statistically meaningful impact on actual green purchase behavior.

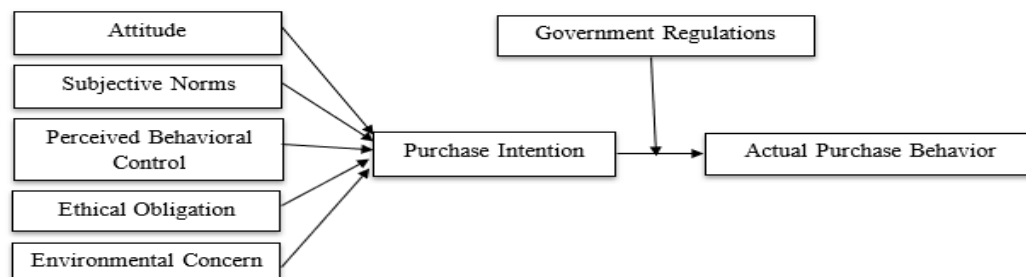
Government Regulations and Green Purchase Behavior

Government regulations mean law, policies, and standards which aim to facilitate environment protection and sustainable consumption. These rules encompass the eco-labeling regulations, environmental certification, and a compliance mechanism which makes the credibility of green claims. Government intervention leads to a decrease in information asymmetry as well as consumer confidence in products which are good for environment (Oliver, 1980). The existing literature indicates that efficient government policies enhance the connection between the green purchase intent and the actual Environmentally preferred purchasing (EPP). Edited by (Anderson and Srinivasan 2003) said that regulatory frameworks boost consumer confidence and promotes adherence to sustainable practices. Developing countries have been found to greatly benefit in terms of the impact of the strong enforcement

of regulations on the lowering levels of skepticism when it comes to the products which are good for environment and the translation of intent into behavior.

H7: Government regulations moderate Interrelationship between green purchase intent and actual green purchase behavior.

Figure 1: Conceptual Framework



Methods

The study is a quantitative, explanatory, and applied study since it is devoted to test a broad Theory of Planned Behavior (TPB) and the impact of government regulations on moderating the green purchase intent and the behavior (Ajzen, 1991; Bryman and Bell, 2015). It examines the cause and effect linkage between the internal constructs, attitude and perceived behavioral control as well as the ethical obligation and the external constructs, including government regulations by taking a deductive approach, through which structured surveys and statistical modelings, i. e. SEM are employed (Hair et al., 2017; Zikmund et al., 2013). It adopted a cross-sectional study that is effective in replicating a picture of the Pakistani users or consumers of the urban segment concerning environmental attitudes and behaviour (Saunders et al., 2019). It will cover their urban, highly educated, and non-probability convenience-sampled users or consumers in Karachi, Lahore, and Islamabad (Yadav and Pathak, 2017; Sekaran and Bougie, 2016). In order to get a minimum of 384 respondents, Cochran formula was employed and the margin of error is 5 and confidence level at 95 percent (Cochran, 1977). Pilot testing and Cronbach alpha (>0.7), confirmatory factor analysis, and Fornell-Larcker/HTMT tests were used to measure reliability and validity since the measurement tools were built on existing TPB and green behavior studies including 3-5 items per construct with a five-point Likert Scale (Hair et al., 2017; Nunnally and Bernstein, 1994). On the whole, this is an interplay of rigorous theory and practical policy implications in an attempt to provide empirical evidence on sustainable consumer behaviour.

Results and Findings

Pilot Study

Before we talk about the main study data was collected, a pilot study was carried and conducted to determine the reliability and clarity of the research instrument, which was recommended to be the base of a sound research design and improve the quality of the primary investigation (Hazzi and Maldaon, 2015). The pilot basically assessed the internally within consistency of the measuring scales through the Cronbach alpha reliability analysis by administering and analysing the questionnaire to a small sample sizable enough to form a preliminary sample. The findings established that reliability coefficients of all constructs were greater than the recommended value of 0.70 as was built by Nunnally which proved that the instrument was appropriate. In particular, the ATT, SN and PBC were highly internally consistent and the scales of Ethical Obligation, Environmental Concern and Government Regulations had acceptable to strong reliability. This pilot test served to clarify the ambiguous questions and also confirmed the soundness of the instrument and thus a good basis to go ahead with the actual data collection process.

Data Screening

A comprehensive screening of the obtained data was carried out before the analysis of primary data, to verify its integrity and appropriateness to the structural equation modeling. It entailed the absence of values, univariate outliers, and multivariate outliers, which were checked as advised. It is intriguing that the author endeavors to illustrate how the aforementioned roles are integrated within the micro-organizational environment (Tabachnick, Fidell, and Ullman 2007). The preliminary data gathering provided 400

responses. Firstly, the dataset was checked on the missing values and none were observed which meant that there were no missing responses. Then, univariate outliers were detected by determining the standardized Z-scores of every item and those with scores of more than the value of +3.29 were noted and dropped. As a second step, Mahala Nobis Distance (D2) was used to evaluate multivariate outliers at $p = 0.001$. Following this intensive process of screening, 16 responses were eliminated as outliers. As a result, the resulting validated dataset consisted of 384 valid responses, which fulfilled the sample size consideration according to Cochran formula and was considered sufficient to undergo the next stage analysis on the Partial Least Squares Structural Equation Modeling (PLS-SEM).

Demographic Profile of the Respondents

The statistical demography of the 384 respondents gives a good description of the sample population. Regarding the age group, majority of the respondents (55.2) were aged 21–26, 2732 (23.7), and 3340 (13.5). This denotes a sample that is mostly made up of young and early career adults who are usually the most targeted in green marketing efforts. In terms or when we talk about education, more than half of the respondents (53.9) had a Bachelor degree, 37.0 had a Master degree and 9.1 had a PhD degree or higher. This education level is also consistent with the fact that the study was focused on the environmentally conscious users or consumers as the education level is often associated or Aligned with the higher level of environmental awareness. The sample was more focused geographically in the urban centers with 86.7% of the sample living in Karachi, 6.0% in Lahore and 4.4% in Islamabad. This city orientation is agreeable to the extent of the research, since these cities are generally more exposed to products which are good for environment and marketing campaigns and regulatory debates and therefore, their squads of people form an apt group to study the hypotheses of this study.

Measurement model

Table 1

<i>Items</i>	<i>Construct</i>	<i>Loadings</i>	<i>Prob.</i>	<i>Alpha</i>	<i>CR</i>	<i>AVE</i>
<i>ATT1</i>		0.922	0.000	0.931	0.950	0.863
<i>ATT2</i>		0.929	0.000			
<i>ATT3</i>		0.943	0.000			
<i>SN1</i>		0.915	0.000	0.924	0.924	0.924
<i>SN2</i>		0.936	0.000			
<i>SN3</i>		0.915	0.000			
<i>PBC1</i>		0.872	0.000			
<i>PBC2l</i>		0.919	0.000			
<i>PBC3</i>		0.926	0.000	0.921	0.921	0.921
<i>PBC</i>		0.921	0.000			
<i>EC1</i>		0.897	0.000			
<i>EC2</i>		0.905	0.000			
<i>EC3</i>		0.928	0.000	0.890	0.932	0.819
<i>EO1</i>		0.894	0.000			
<i>EO1</i>		0.911	0.000	0.913	0.945	0.851
<i>EO3</i>		0.934	0.000			
<i>PI1</i>		0.888	0.000			
<i>PI2</i>		0.868	0.000	0.898	0.898	0.898
<i>P13</i>		0.934	0.000			
<i>PB1</i>		0.690	0.000			
<i>PB2</i>		0.751	0.000	0.811	0.811	0.811
<i>PB3</i>		0.686	0.000			

<i>PB</i> ₄	0.790	0.000			
<i>GR</i> ₁	0.851	0.000	0.888	0.923	0.749
<i>GR</i> ₂	0.852	0.000			
<i>GR</i> ₃	0.834	0.000			
<i>GR</i> ₄	0.872	0.000			

Discriminant validity

Table 2: Fornell and Larcker (1981) criterion (FLC)

Constructs	PB	ATT	EC	EO	GR	PBC	PI	PIxGR	SN
Purchase Behavior	0.731								
Attitude	0.506	0.931							
Environmental Concern	0.391	0.444	0.910						
Ethical Obligation	0.573	0.569	0.482	0.913					
Government Regulation	0.572	0.372	0.304	0.299	0.852				
Perceived Behavior control	0.529	0.563	0.573	0.655	0.374	0.910			
Purchase Intent	0.444	0.689	0.556	0.562	0.390	0.625	0.898		
Purchase Intent x Government Regulation	0.413	0.512	0.546	0.583	0.305	0.664	0.519	1.000	
Subjective Norms	0.503	0.627	0.539	0.635	0.288	0.628	0.649	0.602	0.924

The Table above shows and implies that the square root of AVE values (diagonal elements) are greater than their corresponding inter-construct correlations, thereby confirming discriminant validity built on the Fornell and Larcker (1981) criterion.

HTMT ratio

Table 3:

Constructs	PB	ATT	EC	EO	GR	PBC	PI	PI x GR	SN
Actual Purchase Behavior									
Attitude	0.611								
Environmental Concerns	0.483	0.486							
Ethical Obligations	0.711	0.622	0.531						
Government Regulation	0.726	0.413	0.342	0.336					
Perceived Behavioral Control	0.643	0.604	0.623	0.710	0.414				
Purchase Intent	0.553	0.762	0.622	0.627	0.440	0.683			

Above mentioned table has shown that all HTMT ratios between latent constructs are below the recommended or preferred threshold of 0.90 providing that constructs have substantial divergence from each other (Henseler et al., 2016; Henseler et al., 2015). Therefore, the discriminant validity using HTMT ratio is established.

Structural model

Hypothesis-testing using PLS path analysis

TABLE 4						
	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	
ATTITUDE -> PURCHASE INTENT	0.358	0.349	0.069	5.190	0.000	
ENVIRONMENTAL CONCERNS -> PURCHASE INTENT	0.162	0.168	0.045	3.558	0.000	

ETHICAL OBLIGATIONS -> PURCHASE INTENT	0.027	0.026	0.052	0.520	0.603
GOVERNMENT REGULATION -> ACTUAL PURCHASE BEHAVIOR	0.448	0.454	0.050	8.897	0.000
GOVERNMENT REGULATION -> PURCHASE INTENT	0.083	0.084	0.036	2.295	0.022
PERCEIVED BEHAVIORAL CONTROL -> PURCHASE INTENT	0.157	0.161	0.053	2.992	0.003
PURCHASE INTENT -> ACTUAL PURCHASE BEHAVIOR	0.173	0.166	0.064	2.692	0.007
PURCHASE INTENT * GOVERNMENT REGULATIONS -> ACTUAL PURCHASE BEHAVIOR	0.138	0.137	0.046	2.995	0.003
SUBJECTIVE NORMS -> PURCHASE INTENT	0.198	0.199	0.047	4.201	0.000

The results of the path analysis indicate that the attitude has a favourable influence on the purchase intent and is Statistically meaningful meaning that the existence of favourable consumer attitudes predisposes the users or consumers to form purchase intents.

The other impact of issues on the purchase intent is favourable as well Statistically meaningful and this implies that the more the users or consumers are aware of the environment, the more likely they are to form intents. The perceived behavioral control and subjective norms were established to have favourable and Statistically meaningful effects on purchase intent and it indicates that, the perceived ability to perform the behavior to the users or consumers, and their social influence is important in shaping the intents.

Moral responsibility on the other hand is found to be inStatistically meaningful on purchase intent and this suggests that moral consideration in its own right may not Statistically meaningfully influence consumer intent to purchase. Furthermore, the government regulation has been proven to have very favourable impacts on the purchase intent and actual purchase behavior and that is why the regulatory frameworks are relevant to consumer decision-making. The intent behavior relationship is also true because purchase intent is a highly important predictor of actual purchase behavior. In addition, the interaction variable purchase intent and government regulation is presented as statistically Statistically meaningful; which means that the government regulation moderates Interrelationship between purchase intent and actual purchase behavior on a favourable side.

Indirect Effects

Table 5:

	ORIGINAL SAMPLE (O)	SAMPLE MEAN (M)	STANDARD DEVIATION (STDEV)	T STATISTICS (O/STDEV)	P VALUES
ATT -> PI -> PB	0.062	0.058	0.026	2.374	0.018
EC -> PI -> PB	0.028	0.027	0.012	2.306	0.021
EO -> PI -> PB	0.005	0.005	0.010	0.483	0.629
GR -> PI -> PB	0.014	0.014	0.008	1.795	0.073
PBC -> PI -> PB	0.027	0.026	0.012	2.189	0.029
SN -> PI -> PB	0.034	0.034	0.017	2.001	0.046

Collinearity Statistics (VIF)

Table 6:

Constructs	VIF
Attitude	1.929
Environmental Concerns	1.644

Ethical Obligations	2.131
Government Regulation	1.228
Perceived Behavioral Control	2.329
Purchase Intent	1.490
Purchase Intent × Government Regulation	1.393
Subjective Norms	2.293
Actual Purchase Behavior	1.199

To obtain accurate and unbiased results, it is essential that multicollinearity among the independent constructs is absent. This assumption was assessed by examining the Variance Inflation Factor (VIF) values. As per the (Hair et al. 2019), VIF values equal to or above 5 indicate serious collinearity issues, whereas values between 3 and 5 suggest a moderate level of collinearity. Therefore, VIF values below the threshold of 3 are considered acceptable. The results showed and presented in the preceding table tells or indicate that all construct-level VIF values range between 1.199 and 2.329, which are well below the preferred and recommended threshold. Hence, it is concluded that multicollinearity is basically not a concern in the structural model, and Interrelationships among the constructs can be interpreted reliably.

Predictive relevance

Table 7			
	R Square	Adj. R-Square	Q Square
Purchase Behavior	0.410	0.405	0.211
Purchase Intent	0.611	0.605	0.477

It has been indicated that latent constructs whose R² are more than 0.25, 0.50, and 0.75 are weak, moderate (in mid) and strong predictors of structural model (Hair et al., 2011). The percentage of variance in the dependent variable, which is the Actual Purchase Behavior (APB), explained by the independent variables, ATT, PBC, SN, and GR is 41, as reflected in the R² value.

On the same note, the value of R² of 0.611 suggests that the independent variables explain the variation in Purchase Intent (PI) of 61 percent, which means the model has a high predictive strength. Q² is another parameter that is applied in assessing the predictive relevance of the path model in SmartPLS (Geisser, 1974; Stone, 1974). The procedure of blind fold is used to calculate the value of Q² (Rigdon, 2014). A value of Q² that is less than 0 would be meaningless.

A threshold value of 0.50, 0.25, and 0 represents large, medium, and small predictive relevance of the model (Hair et al., 2019). The Q² values are 0.211 in the case of Actual Purchase Behavior and 0.477 in the case of Purchase Intent that represent the small to medium level of predictive relevance of the PLS path model.

Discussion

The research has effectively contributed to the existing and already known knowledge of the impact of government regulations on the behavior of green purchasing by expanding the theory of Planned Behavior (TPB). The results empirically verify that presence of favourable and Statistically meaningful influence of ATT, SN, PBC, EC on green purchase intent. This confirms the main principles of TPB and proves the incorporation of EC as an important, value-based addition to the model (Ajzen, 1991; Yadav and Pathak, 2017). Particularly, Users who give high ratings of products which are good for environment, those who feel that they are under social pressure to consume in a sustainable manner, those who feel that they can afford to make green purchases and those who are more ecologically conscious are much more likely to have and develop the purchase intents.

Nevertheless, the research found out that the ethical obligation did not have much of an effect on the purchase intent. This implies that although users or consumers might recognize a moral obligation towards the environment, this internal obligation may not be enough to trigger practical purchases intents in the face of practical market constraints such as higher prices or lower supply, a subtlety that is reflected in the existing literature about sustainable consumption (Carrington et al., 2014; Testa et al., 2018). Most importantly, the research confirms the main hypothesis that government regulations are a favourable moderation between the green purchase intent and the AGP behavior. This observation takes direct action in response to the ubiquitous intent and behavior gap in green consumerism (Sheeran, 2002; Gupta, 2021).

The discussion has shown that with powerful regulatory frameworks, that is, clear eco-labeling standards, financial incentives like subsidies and effective enforcement mechanisms, translation of intent to action has a high likelihood of being enhanced. The regulations operate by decreasing major barriers: they decrease financial and accessibility obstacles, improve consumer confidence in green assertion by lessening the apprehensions of greenwashing, and legitimize the sustainable options to the social and institutional surroundings (Thøgersen, 2005; Chen and Tung, 2020). Thus, this work supports the thesis that external policy level conditions are not simply conditions of the background but rather enabling factors that combine with psychological motivators to support pro-environmental behavior.

Conclusion

Finally, this study was focused at examining the reasons behind the behaviour of green purchase by extending the TPB to the aspects of EO, EC, and GR as a moderating effect. The results confirm that ATT, SN, perceived control over behaviour, and EC can be regarded as very strong predictors of green purchase intent, whereas ethical obligation is not Statistically meaningfully directly effected. Importantly, the research confirms that the intent to green purchase is a strong predictor and of actual green purchase behaviour but the role of green purchase intent in predicting actual green purchases is further boosted by the presence of governmental regulations. This moderating factor highlights the fact that sustainable consumption is not necessarily an activity that is fuelled by personal motivation or moral belief; it is absolutely essential to have a favourable socio-political and regulatory system in the form of which ethical decisions could be made affordable, realistic and reliable. This longer model combines psychological constructs in relation to policy level variables to give a more functional and realistic framework to learn and know the green consumer behaviour, especially in situations such as that of Pakistan where awareness has increased but the adoption of behaviour is inconsistent.

Managerial Implications

The research results have Statistically meaningful implications to practitioners and policymakers who would like to induce sustainable consumption. To policy makers and regulators, the findings remind them that they need to go beyond awareness campaigns and put in place concrete and well imposed regulatory tools. The cost and credibility and accessibility barriers facing the users or consumers can be directly decreased with policies like mandatory and standard eco-labelling, subsidies or tax rebates on products which are good for environment as well as strict penalties on false environmental claims. Such regulations provide the users or consumers with a strong signal to ensure that they can follow their intents towards acting pro-environmentally (OECD, 2021).

The study brings out the significance of ensuring that the corporate sustainability communications and strategies align with the current regulatory environment to marketers and business managers. The focus on the government standards compliance, the demonstration of eco-certifications, and the clear and complete explanation of the benefits of the environment can contribute greatly to increasing consumer confidence and the experience of being in control of their behaviour. In addition to that, companies ought to actively lobby and cooperate with the policymakers in a bid to create favourable regulatory conditions, in addition to making sure that their distribution and retailing strategies enhance the physical accessibility of products which are good for environment to close the final gap between intent and purchase.

Limitations of the study

The study contains its contributions and constraints, although it has limitations, which can offer future research opportunities. First, a cross-sectional design do not provide the opportunity to make a causal decision and/or trace the development of the intent-behaviour relationship over time due to the development of regulations. Second, the consumption of non-probability convenience sampling, though convenient, can influence the deduction of the results to the broader population outside of the city, the educated and green-conscious population that is mostly represented in the sample. Third, the emphasis of one national context (Pakistan) warns against general cross-cultural assumptions because the effectiveness of the regulatory settings and consumer confidence in institutions may be quite different. Longitudinal or experimental research might be used in future studies to better determine causation lines and time influences. The model could be improved by widening the geographical and demographic coverage and including rural populations, as well as cross-national comparisons, to boost the external validity of the model. Also, other possible moderators can be explored by the researchers (individual income level, brand trust, or perceptions of greenwashing) to create a more sophisticated view of the contingencies influencing green consumption. A mixed-method methodology that involves a combination of the quantitative surveys and qualitative interviews may also provides more information regarding the cognitive and emotional mechanisms of ethical obligation and regulatory trust that were not entirely reflected in the research.

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