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Conceptualizing 5G's of Green Marketing for Retail Consumers and Validating the Measurement Model Through a Pilot Study

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Abstract

Purpose: This pilot study aims to conceptualize a new green marketing mix for retail consumers based on Stimulus-Organism-Response (SOR) model. Moreover, it also aims to conceptualize a testable research model of new green marketing mix with consumers' green purchasing behavior, and to validate the measurement model with traditional as well as modern suggested validating techniques. **Research design, data and methodology:** A pilot test data from 75 respondents of retail buyers of energy-efficient electric appliances in Pakistan were tested for the confirmatory factor analysis (CFA) by examining a measurement model of the construct through different validation techniques (like Composite Reliability, McDonald's Omega (ω), rho (ρ_A), HTMT, etc.) as heretofore these scales were not validated through these modern methods. **Results:** The results revealed that the instrument has a certain degree of reliability and validity through different validating techniques. All the measurement items reach the suggested threshold values. **Conclusions:** Therefore, this study conceptualized an integrated framework of all the three stakeholders of the environment (government, companies, and public or consumers) to achieve environmental sustainability. Hence, future studies can extend these findings and conduct a full-scale study to establish an empirical relationship between the 5G's of green marketing for retailing businesses and consumers' green purchase behavior.

Keywords: Government Policies, Green Marketing Mix, Retailing of Energy-Efficient Electric Appliances, Green Purchase Behavior, Pilot Study, SEM, Stimulus-Organism-Response (SOR) Model

JEL Classification Code: L68, M31, M38, Q58

1. Introduction

Thousands of animal species have died with devastated blazes in a vast forest area of Australia in late 2019 and early 2020, a similar event happened in California USA in the year 2020 which resulted in hundreds of deaths of many animal species, and the largest fire in the history of Turkey affected thousands of people and living species in July 2021. Consequently, experts say, "climate change is a major

culprit" and they have warned for decades that climate change will result in extreme weather events, including heavy rains and deadly flooding. According to the Global Climate Risk Index 2019, extreme weather conditions caused around 526,000 deaths of people from 1998 to 2017, also resulting in an approximate loss of US\$ 3.47 trillion (Eckstein, Hutfils, & Winges, 2018).

The present environmental situation is the result of governments', organizations', and humans' past ignorant

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behaviors. Some organizational and human activities, such as toxic wastes from manufacturing, smoke from transportation, unethical marketing practices, use of inefficient electric appliances, excess use of natural resources have directly or indirectly caused major environmental issues (Anwar & El-Bassiouny, 2020; Ziaur-Rehman & Dost, 2013). These issues include pollution, global warming, climate change, and the shortage of natural resources in the future (Rahbar & Wahid, 2011). Among all the drivers of global warming and climate change, energy-producing companies are one of them and it is the largest single source of global warming which contributes 25% of total greenhouse gas emission (US Energy Protection Agency, 2014). Combustible fuels like natural gas, oil and its products, coal, biofuels including animal products and solid biomass, industrial and municipal wastes, provided 66.8% of global energy generation in 2017, according to the International Energy Agency (IEA) ("Electricity Statistics," 2017). However, this energy production results in greenhouse gases and emission of carbon dioxide (CO₂) which are the major drivers of climate change (Ritchie & Roser, 2019; Testa, Cosic, & Iraldo, 2016; Vainio, Pulkka, Paloniemi, Varho, & Tapio, 2019).

In recent decades, the environment has become a critical matter not only for governments, but also for businesses, scholars, and societies to deal with (ElTayeb, Zailani, & Jayaraman, 2010; Sandhu, Perumal, & Fauzi, 2018). The pressure on governments is immense to make policies for environmental safety, also support the organizations to manufacture and offer green products to the rapidly growing retail green consumers worldwide (Dangelico & Vocalelli, 2017). Consequently, these environmental problems intensified a pervasive impression that it is the right moment to take corrective measures (Ali & Ahmad, 2018). Governments are making efforts to shift energy production to renewable energy resources (like solar, water, geothermal, etc.), but it will cost trillions of dollars for a complete shift (Shreve, 2019). Similarly, it will be much more difficult for developing nations and the 3rd world economies like Pakistan. Therefore, governments should think of some additional solutions to this environmental problem with the collaboration of organizations, retail businesses, and societies as well. It has been stated that the more consumers comprehend the environmental ramifications of their consumption patterns through market choices and buying habits, the greener attitudes, green product retail purchases, and consumption, eventually benefiting the natural environment.

Moreover, United Nation Sustainable Development Goals (UNSDG) assert pressure on governments to work in multi-stakeholder partnerships and voluntary commitments, as well as should play an active part that can be helpful for all the stakeholders of the environment to achieve these

goals. Akenji (2014) argues that governments in collaboration with the industries ought to make attempts to minimize energy consumption. Considering this, the current study proposed the new green marketing mix or 5Gs of marketing (government policies, green product, green price, green place, and green promotion) for retail businesses which is the integration of government policies with the basic marketing mix of the retail businesses. This new green marketing mix can be an effective stimulator for organizations specifically for retail businesses to change the consumers' traditional attitude towards green (environmental) attitude, and in response, this green attitude can transform into consumers' green purchase behavior.

Similarly, the future is depending upon the current actions and behaviors. The more people behave environment friendly, the more likely it will make a better future for the coming generations. Adding to this, A sustainable society can only be accomplished by altering consumer retail buying and consumption behaviors in their homes (Sandhu et al., 2018). Consumers' domestic use is responsible for around 40% of negative environmental impact (Barbaro & Pickett, 2016). A larger part of the energy is consumed by domestic users (Pakistan Economic Survey, 2021). Similarly, a significant portion of total household consumption is composed of electricity consumption which is mostly consumed through electric appliances. Accordingly, to reduce the carbon emission into the atmosphere from electricity generating companies and to protect the environment, consumers must consider the electric efficiency of electric appliances by the time of retail purchasing (Testa et al., 2016). Thus, studying consumers' electric appliance retail purchasing behavior for environmental benefits is crucial (Song, Zhao, & Zhang, 2019). As the issue of environmental safety growing rapidly over the globe, the efforts also intensified for altering the conventional consumer attitude to green attitude that can be transformed into retail green buying, which will not only benefit the consumers but also the natural environment (Song et al., 2019). A conceptual framework has been established conclusively that will enable wellbeing and environmental sustainability through the new green marketing mix, consumers' attitude towards the green purchase, and green purchasing behavior. To summarize this, green marketing strategies should be the key focus for companies especially for electric products in an environmental context (Chen & Chang, 2013).

Furthermore, this study also analyzed the measurement scales of the construct adapted from the previous research work. Although the measurements used in the present research were already validated by the researchers in different sectors with different research models. However, due to the emergence of new techniques of construct reliability and validity, like McDonald's (1999) omega (ω),

Dijkstra-Henseler's rho (ρ_A) (Dijkstra & Henseler, 2015), and Heterotrait-Monotrait (HTMT) ratio (Henseler, Ringle, & Sarstedt, 2015), there is a need to re-confirm the validity and reliability of the measuring items employed for the current study. Furthermore, the current pilot study has been conducted for the consumers of electric appliances in Pakistan. This sector is completely different from the previously conducted research with the adapted measurements. Hence, for further validation of the adapted measurements for the electric appliances sector in Pakistan with the construct established in this study, this research has conducted a pilot study.

Based on the above arguments, the aims of this paper are:

1. To conceptualize a new green marketing mix or 5's of green marketing (green product, green price, green place, green promotion, and government policies)
2. To formalize the testable model for new green marketing mix as a stimulator for organizations to stimulate consumer green purchasing behavior.
3. To authenticate (reliability and validity) the construct-instrument of the consumers' green purchase behavior and the new green marketing mix with the traditional as well as modern suggested techniques of assessing measurement model.

2. Literature Review

The terms green, environmental, ecological, sustainable, and ethical, are all considered as reflecting the same meaning of more benefiting and less harming the natural environment (Reisch & Thøgersen, 2015). The literature of this paper, however, elaborates the concepts of green marketing, 5G's of green marketing (the new green marketing mix), and the research framework of 5G's of green marketing using the hypothetical foundation of the stimulus-organism-response (S-O-R) model.

2.1. Green Marketing and Green Marketing Mix

Most of the scholars have defined green marketing makes use of a variety of terms such as green marketing, ecological marketing, environmental marketing, and responsible marketing. In 1975, The American Marketing Association (AMA) hosted the first session on ecological marketing, and after that, the notion of green marketing originated in 1980. AMA describes green marketing as "the marketing of products that are presumed to be environmentally safe, it incorporates several activities such as product modification, changes to production processes, packaging, advertising strategies, and also increase awareness on compliance marketing amongst industries" (Yazdanifard & Mercy, 2011). In recent times, the concept

of green marketing has been shifted from green marketing as a type of consumerism (the 1970s to 1990s) to green marketing as corporate social responsibility (Chamorro et al., 2009).

Likewise, marketing is a powerful tool for organizations as it acts as a change agent to alter consumers' purchasing behavior, also has an impact on amending government policies regarding green orientation (Gordon et al., 2011). Now, green marketing indicates the social responsibility of the organization, and it is an attempt to build and maintain a sustainable association with stakeholders such as nature, society, and consumers (Hameed & Waris, 2018). Furthermore, the environmental protection for the present and the generations to come is the end-creation of green marketing. The utilization of energy-efficient processes and products, improved control over pollution, reusable and recyclable packaging, and environmentally harmless products are all the outcomes of green marketing that ultimately take the lead to sustainable development (Yazdanifard & Mercy, 2011).

In the discipline of marketing research, Kotler (1973) first explains the importance of the atmospheric environment as a "marketing tool". McCarthy (1960) developed a standard marketing mix model comprised of product, price, place, and promotion, as well understood as four P's of marketing. Now, according to Kotler (2011), the traditional marketing mix or marketing practices (product, price, place, and promotion) should be updated to environmental perspectives (such as green product, green price, green place, and green promotion) to contribute to conservation and protection of the environment. For a successful green marketing strategy, marketers have to implement their green marketing strategy through green marketing mix variables (Peattie, 2012; Reisch & Thøgersen, 2015). Polonsky (2011) describes green marketing practices as "the effort by a company to design, promote, price, and distribute products in a manner which promotes environmental protection". However, it is now challenging for marketers to use the green marketing mix in an innovative manner (Mahmoud, 2019). Similarly, different strategies and policies are required to market green products and services contrary to non-green products and services (Groening et al., 2018).

2.2. The Concept of New Green Marketing Mix

Complex environmental problems entail complex solutions. The current competitive situation and challenges in the markets such as government tough environmental regulations and consumers' environmental needs for green products create a motivation to study and identify the factors of green consumption. Business literature has taken a broader stakeholder approach to examine social concerns

such as green marketing in recent decades (Cronin et al., 2011; Freeman & McVea, 2001). Further, it was stated that the traditional strategic approaches are no more helping the practitioners to create new opportunities in a rapidly changing scenario. In a similar vein, it is suggested that there should be a framework for green marketing and green consumerism that can affect green purchasing and green consumption (Groening et al., 2018). Now, there is a shift of companies' marketing strategies in the context of environmental solutions to uncover the attitude of consumers, to meet consumers' increasing green product demands, and to provide information about the sustainability of the planet (Hameed & Waris, 2018). Similarly, governments also making efforts to make green policies for a safe and sustainable future. As to promote sustainable consumption, there is a need for some environmental legislation for creating an atmosphere for organizations and consumers.

The first agreement of high carbon-emitting nations to cut carbon emissions was agreed in 2011 at the UNFCCC's 17th Conference of the Parties (COP17) and agreed to help poor nations by establishing the Green Climate Fund of USD 100 billion a year (Lin & Hsu, 2015). This effort ultimately will help the governments to establish a partnership with organizations to promote a green economy and green consumption. Similarly, governments are now increasing their engagements with the private sector (which is a very important participant) to stimulate green consumerism. Working in partnerships with companies will help in shifting conventional consumer behavior to green consumer behavior. Well-designed environmental policies by the government lead to a "win-win" situation, not only for the natural environment but also for the organizations to improve green products and production processes through green innovative technologies supported by government policies (Guo et al., 2018). The aim is to alter the consumers' consumption patterns to green consumer behavior. Researchers emphasized the responsibility of the government in protecting the environment by focusing on the behavioral patterns of consumers. Summarizing all this, the current study is an effort to conceptualize a new green marketing mix model (5G's of green marketing) with the integration of government policies and the traditional green marketing mix (i.e., government policies, green product, green price, green place, and green promotion) for green consumer behavior. However, this study formalized a research framework using the new green marketing mix (5G's of marketing) as a stimulator for electric appliances companies to stimulate the consumers' green purchasing behavior.

2.2.1. Green Product

A green product is described as "a product that was

manufactured using toxic-free ingredients and environmentally-friendly procedures, and which is certified as such by a recognized organization" (Kumar & Ghodeswar, 2015). The product is the central part of the green marketing mix. Likewise, it is an extremely vital element of the entire green marketing strategy. But it should be kept in mind that contrary to the conventional product the green product is not restricted to the outcome only, rather it comprises of all the essential components of the product, for instance, the ingredients utilized to develop the product, the production process, and the packaging of the product (Devi Juwaheer et al., 2012; Fan & Zeng, 2011). In addition to the above, the ingredients, composition, and packaging of the green product will not harm the natural environment (Mahmoud, 2019). Besides, Hossain and Khan (2018) concluded that green product is a vital component of the green marketing mix and has a strong significant impact on consumers' green purchasing in Bangladesh. Similarly, green product is an essential and significant contributing factor to consumers' green purchasing (Mahmoud, 2017).

Proposition 1: Green product has a significant relationship with attitude towards green purchase.

2.2.2. Green Price

The amount of money spent on a product and the most crucial component of the marketing mix is generally known as the price of a product or service. Customers often pay a set price for a product or service if its actual value matches the perceived value in the minds of consumers. Similarly, if consumers perceive any value added to the product or service offered, many customers will be ready to pay an extra amount (Hossain & Khan, 2018). In a similar vein, the environmental advantages of a product are usually a value addition, but during the purchasing process, it will habitually be the deciding feature among conventional products of the same quality and value (Singh & Gupta, 2013). In addition to this, it is also noted that some consumer segments are not concerned about paying extra for a product proclaimed "green". Therefore, marketers must emphasize more on the pricing strategy. Some researchers found a significant positive relationship of green price with consumers' green purchasing (Ansar, 2013; Mahmoud, 2017).

Proposition 2: The green price has a significant relationship with attitude towards green purchase.

2.2.3. Green Place

The planning and executing of the distribution channels for physical products or sites of service confront has been conventionally related to the concept of the "place" in marketing mix elements. The environmental impact

regarding tangible consumer goods in terms of 'place' is mostly associated with the energy and resources consumed in the distribution channels, also the access or distance the consumers move to and from selling sites (Godfray et al., 2010). For marketing scholars and practitioners, analyzing and developing eco-efficient distribution channels is a noteworthy matter of study. Moreover, reducing the time and effort to buy green products, easy to access or available, may be more important than price (Thøgersen, 2005). Green distribution is a very complicated procedure. The environmental nature of the product needs to be maintained and customers must be guaranteed of it. A superior level of conformity is required for bringing out the distribution of green products (Yazdanifard & Mercy, 2011). Researchers observed a significant positive relationship between the green place and consumers' green purchasing (Mahmoud, 2017).

Proposition 3: The green place has a significant relationship with attitude towards green purchase

2.2.4. Green Promotion

Even though every aspect of marketing action tends to convey the philosophy of the company to consumers and other stakeholders. Moreover, green promotion implies "delivering genuine information and knowledge regarding the products in a manner that probably does not damage the materialistic and ethical interests of consumers" (Hashem & Al-Rifai, 2011). The aim is to stimulate consumers' purchase behavior by motivating and persuading them to purchase products that certainly do not ruin the natural environment. In contrast, a lack of clear information about the environment-friendliness of any product can be a constraint for buying a green product (Phipps et al., 2013). Green promotion implicates the efforts made by companies for the communication of knowledge and information on environmental commitments to consumers. Furthermore, this factor in the green marketing mix involves several operations such as public relations, advertising, sales promotions, direct marketing, and on-site promotions (Fan & Zeng, 2011). Researchers suggested that through a good promotional campaign, marketers can increase consumers' awareness about green products and can enhance consumers' green buying because there is a significant relationship between green promotion and consumers' green purchasing in Bangladesh (Hossain & Khan, 2018). Other researchers also got a significant positive relationship among green promotion and consumers' green purchasing (Ansar, 2013; Mahmoud, 2017).

Proposition 4: Green promotion has a significant relationship with attitude towards green purchase

2.2.5. Government Policies

Efforts are made by governments to deliver the best services to the public (Khadzali, 2018). Government policies play a pivotal role in establishing systems for environmental problems (Wang et al., 2020). Testa et al. (2016) stated that it is the responsibility of the government to establish and propagate information about environmental policies and energy laws for energy saving which directly or indirectly affect environmental safety. In a similar vein, consumers get trusted while buying green products, if the information provided by the company is verified by the government in the way of an eco-label policy (Darnall et al., 2012). Over the past years, understanding behavior has become progressively more important for governments to develop and implement effective policies and regulations (Chatterton, 2011). According to Sinnappan and Rahman (2011), the role of government is a good predictor of GPB. The government initiative is the most powerful precursor of green purchasing (Mei et al., 2012). Likewise, Sang and Bekhet (2015) reveal that the government should intervene and make appropriate policies and regulations to support the growth of electric vehicle purchasing in Malaysia to reduce carbon emission for environmental protection.

To promote green consumer behavior, the government needs to be proactive. Similarly, by addressing the determinants of energy-efficient electric appliances, governments should improve the electric-efficient labeling campaigns and efficiency standards (Baldini et al., 2018). Moreover, the government should promote the consumption of energy-saving electric appliances and the consequences of using non-energy-saving electric appliances on the environment (Song et al., 2019). There is a substantial increase in the emission of carbon dioxide due to the failure of effective policy measurements (Kelly, 2012). However, researchers asserted that the consumers are now believing that the government must take part in building and supporting green consumption.

Proposition 5: Government policies has a significant relationship with attitude towards green purchase

2.3. Attitude Towards Green Purchase

"Attitude refers to a psychological tendency represented by a favorable or unfavorable evaluation of the natural environment" (Felix & Braunsberger, 2016). It was also discovered that when the attitude was operationalized as a specific environmental activity rather than a general attitude toward the environment, the link between attitude and behavior was stronger (Hines et al., 1987). Karunarathna et al. (2017) stated that consumers have different attitudes, as some consumers care about the environment having eco-supportive behavior and green buying. Whilst others do not

show green behavior and green purchasing even if they care about the environment and awareness of environmental problems.

Furthermore, the literature also elaborated that attitude towards green purchase is a good determinant of GPB (Hong & Park, 2018; Joshi & Rahman, 2015; Soares Júnior et al., 2019; Uddin & Khan, 2016). Also, few studies are showing an insignificant relation of attitude with green purchase behavior (Moser, 2015). According to Ashraf et al. (2019), attitude fully mediated the relationship between the determinant factors affecting GPB in the organic food sector.

Proposition 6: Attitude towards green purchase has a significant relationship with green purchase behavior

Proposition 7: Attitude towards green purchase mediates the relationship between green product and green purchase behavior

Proposition 8: Attitude towards green purchase mediates the relationship between green price and green purchase behavior

Proposition 9: Attitude towards green purchase mediates the relationship between green place and green purchase behavior

Proposition 10: Attitude towards green purchase mediates the relationship between green promotion and green purchase behavior

Proposition 11: Attitude towards green purchase mediates the relationship between government policies and green purchase behavior

2.4. Green Purchase Behavior

Understanding GPB is vital for businesses due to environmental communication and scientific reasons. Nowadays, consumer awareness is increasing about environmental hazards, growth in world population, and global warming (Groening et al., 2018). From the business and marketing perspective, developing green (eco-friendly) products will not be effective unless consumers adopt a green lifestyle and start purchasing green products (Jansson et al., 2010). Moreover, Thøgersen (1999) argues that environmental hazards can be reduced or even eliminate through “right” purchasing behavior. GPB is a behavior that is environmentally significant and defined as “the purchasing practices that contemplate the environmental impact of products and their production processes” (Stern, 2000). Likewise, Steg and Vlek (2009); and Robert (1996) define green purchasing behavior as the purchasing behavior that minimizes environmental damage or even benefits the environment. According to Khoiruman and Haryanto (2017); and Tan (2011), the purchase and consumption of the products, that have minor influences on the environment, considered as green purchasing behavior. Such decisions

include the purchase and use of products like appliances that spend less energy, hybrid cars that release less carbon dioxide, purchasing recycled products, purchasing solar and wind energy to generate electricity, and buying organic and locally farmed fruits and vegetables.

As retail purchasing is also a very important type of behavior in human's everyday life, therefore, it attracts not only the marketers but also the academicians to explore and explain the phenomenon of purchasing, and the factors that affect the purchasing decisions. Different sectors and markets have been analyzed by researchers from the perspective of purchasing behavior. Hence, it is evident that green consumerism is a foremost issue of the research for strategy formulation about green product development and marketing (Maniatis, 2016).

2.5. Stimulus-Organism-Response (SOR) Model

The most appropriate theoretic foundation for the basic psychological concept is the S-O-R (stimulus-organism-response) created by Mehrabian and Russell (1974), an extension of the behavioristic Stimulus-Response (S-R) interpretation that was suggested by Skinner in 1935 (Liu et al., 2019). The S-R model presented by Skinner (1935) was criticized by many scholars as to the theory that viewed individuals as machines reacting to stimulus automatically (Kawaf & Tagg, 2012). However, the effect of the environment on individuals can never be neglected. Scholars suggested that there is one missing link between stimulus and response which is the organism itself, from where human beings are different from machines. Therefore, the SOR model intimated that when an individual is subjected to some stimuli, the inner cognition of the organism perceived it and creates response as behavior (Mehrabian & Russell, 1974). The SOR model postulates the relation between the environment as a stimulus and consumer behavior as a response of the organism (Mehrabian & Russell, 1974). In this milieu, the organism implies internal cognitive, perceptual, psychological, and emotional procedures within the mind between external stimulus and consumer behavior (Barros et al., 2019). From a marketing perspective, SOR is a theory of information-processing-behavioral response (C. C. Tan et al., 2019).

SOR model is broadly used in marketing research in the perspective of consumer behavior. Specifically, in a traditional store environment, online shopping, organic food purchasing, scholars investigated the store environment on consumer buying preferences (Changa et al., 2011; Kawaf & Tagg, 2012; Lee & Yun, 2015; Peng & Kim, 2014). Lee and Yun (2015) applied the SOR model to provide a foundation to the research framework, and to reveal how organic food attributes (stimuli) lead to consumers' attitude (organism) and behavioral intention to pay for organic food

(response) amongst buyers in the USA. Barros et al. (2019) analyzed the influence of store atmosphere (stimulus) on a positive emotional response (organism) and consumers' impulsive behavior (response) while applying the SOR model to the research framework. In addition to this, situational characteristics moderates the association between positive emotional response and consumers' impulsive behavior.

According to Bagozzi (1986), when the behavior of consumers is described within an S-O-R system, the stimuli are outside to the individual and consist of together marketing mix elements and other environmental inputs. In this study, the research framework has been conceptualized with the theoretical foundation of this theory. Therefore, in this context, the new green marketing mix elements (government policies, green product, green price, green place, and green promotion) are the stimulus part of the model. Whereas attitude towards the green purchase, which is the cognitive part, is considered as the organism, and lastly the green purchase behavior is the response.

2.6. Conceptual Framework

The concepts and assessment of the literature on the topic of this study have been useful for the development of a research framework. Figure 1 demonstrates the conceptual framework for this study theoretically based on the SOR model, which shows the dependent variable (green purchase behavior) as a response, independent variables (government policies, green product, green price, green place, green promotion) as the stimulus, and mediator (attitude towards green purchase) as organism. In addition to this, attitude towards green purchase is expected to have a direct link with green purchase behavior of electric home appliances, as well as it acts as a mediator and is expected to mediate the relationship between stimulus factors and response.

This research work is distinct to study the external stimulus factors (5G's of green marketing), cognitive factor (attitude), and green purchase behavior in the electric appliances sector in Pakistan.

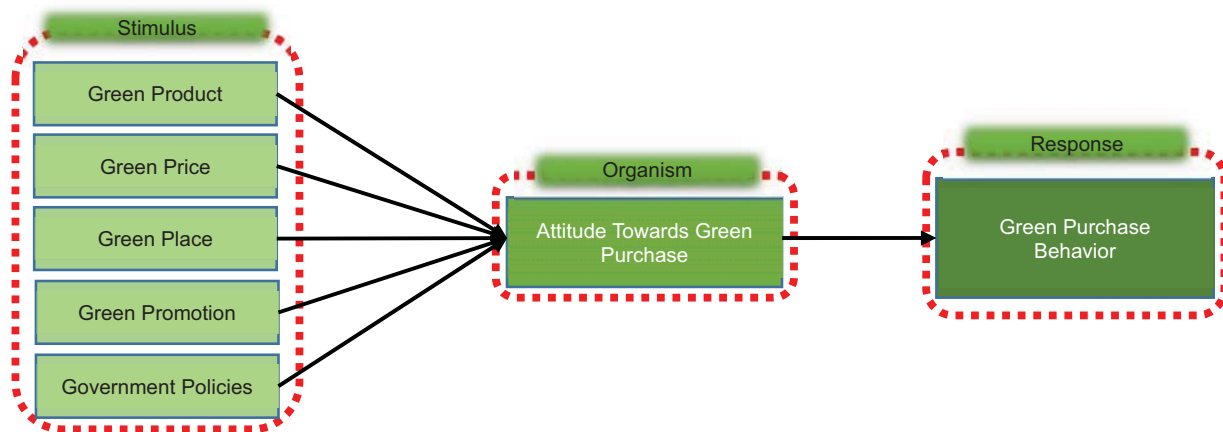


Figure 1: Conceptual Framework

2.7. Measurement Validating Techniques for Pilot Study

A pilot study is a foundation of an excellent research design, specifically for quantitative methodological research in business administration and social sciences (Hazzi & Maaldaon, 2015; Malmqvist et al., 2019). Moreover, a pilot study can uncover the methodological issues, notify viability, and identify amendments needed in the core study (Hazzi & Maaldaon, 2015). Gudmundsdottir and Brock-Utne (2010) emphasized conducting pilot research for enhancing the reliability and validity of the research. As a result, a pilot study should be regarded as an essential component of research planning and design. Contrary to this, Scholars in the research literature have paid little attention

to pilot studies (Kim, 2011). Fewer pilot studies were found in the literature but seldom discussed in-depth. Hence, this pilot study tried to discuss an in-depth analysis of the measurement model to validate the instrument.

For further assessment of collected data, a measure should qualify few reliability and validity tests. The degree of random measurement inaccuracy or "noise" in a collection of measurements is quantified by reliability, whereas validity refers to measuring what an instrument claim it is measuring (Hayes & Coutts, 2020). In line with recent recommendations on PLS-SEM in the literature (Awang et al., 2015; Hair et al., 2014; Ryan, 2020), the reliability and validity of the reflective construct were assessed through traditional and commonly used methods like Cronbach's alpha (α) (Nunnally, 1978), composite

reliability (ρ_c) (Chin, 1998b) under the assessment of construct reliability, indicator reliability (Churchill, 1979), average variance extracted (AVE) (Fornell & Larcker, 1981) under the convergent validity, and for discriminant validity the Fornell-Larcker criterion (Fornell & Larcker, 1981) and cross-loading (Chin, 1998a). In the same vein, the measurement model has also been assessed through the modern suggested techniques like Dijkstra-Henseler's rho (ρ_A) (Dijkstra & Henseler, 2015), McDonald's Omega (ω) (Hayes & Coutts, 2020) for construct reliability, and Heterotrait-Monotrait (HTMT) ratio (Henseler et al., 2015) for discriminant validity.

3. Research Methods and Materials

The current study is quantitative and adopted a survey method for collecting the primary data from the respondents through a questionnaire. The questionnaire was created with a five-point Likert scale, anchored to “strongly disagree” (1)

and “strongly agree” (5). The appropriate sample size for a pilot study is 30 to 500 respondents as described by Roscoe (1975). As recommended by Churchill (1979) the multi-item scale is much better than the single-item measure specifically in marketing research and in investigating behavioral relationships. In addition to this, the multivariate measurements improve the accuracy of research findings (Hair et al., 2014). Thus, the multi-item scale was applied to assess the phenomenon under study, and all the measurement items were adapted from the literature.

GPB is measured through eight items adapted from Abid and Latif (2015), ATGP measured through four items adapted from T. N. Nguyen et al. (2018), GTPL assessed through six items adapted from Masi and Karatu (2015), whereas, GPDT, GPRC, and GPLC are measured through the four, five, and four items respectively adapted from the study of Hossain and Khan (2018), and lastly, GPRM measured through five items adapted from the study of Mahmoud et al. (2017). Table 1 shows the measurement items and measuring statements.

Table 1: Measurement Items of the Construct

Construct	Item Code	Statement	Method of reliability assessment in past research
Green purchase behavior	GPB1	I care about buying green products	Cronbach's alpha
	GPB2	If I understand the potential damage to the environment that some products can cause, I do not purchase those products	
	GPB3	The products with green labels are more attractive to me	
	GPB4	The probability of buying products with green labels is high	
	GPB5	I am willing to pay more money for green products	
	GPB6	I have switched products for ecological reasons	
	GPB7	I have avoided buying a product because it had the potentially harmful environmental effect	
	GPB8	I make a special effort to buy electric home appliances such as refrigerators, air conditioners, that are energy efficient	
Government policies	GTPL1	The government should enforce environmental regulations on green practices	Cronbach's alpha Composite Reliability (CR)
	GTPL2	Environmental protection is the sole responsibility of the Pakistan government	
	GTPL3	The government should help to develop green consumption in Pakistan	
	GTPL4	The government regulations support the purchase of green products in Pakistan	
	GTPL5	The Pakistan government should actively promote green marketing activities in Pakistan	
	GTPL6	The government should encourage me to consume green products by providing subsidies on green	
Green product	GPDT1	The energy-efficient electric appliances companies contribute to producing electric appliances resulted in less environmental pollution	Mean score
	GPDT2	The quality of energy-efficient electric appliances is high	
	GPDT3	The brands of energy-efficient electric appliances are credible	
	GPDT4	The energy-efficient electric appliances are free of toxic materials	
Green price	GPRC1	The price of energy-efficient electric appliances is proportionate with their quality	Mean score
	GPRC2	The quality of energy-efficient electric appliances justifies the price	
	GPRC3	The price of energy-efficient electric appliances is reasonable	
	GPRC4	I am willing to pay a high price for energy-efficient electric appliances	
	GPRC5	The price gap between energy-efficient electric appliances and conventional electric appliances is huge	
Green place	GPLC1	There is more choice of energy-efficient electric appliances available in the stores	Mean score
	GPLC2	The energy-efficient electric appliances are getting easy in the locality	
	GPLC3	The energy-efficient electric appliances are available in the stores	
	GPLC4	The energy-efficient electric appliances companies are keen to deal with dealers friendly to the environment	

Green promotion	GPRM1	Electric appliances companies promote energy-efficient electric appliances through the green marketing campaign	Cronbach's alpha
	GPRM2	Electric appliances companies promote energy-efficient electric appliances through green advertising	
	GPRM3	Electric appliances companies holding seminars and conferences related to the environment	
	GPRM4	Electric appliances companies devote a special day to the environment	
	GPRM5	Electric appliances companies contribute to supporting the environmental centers	
Attitude towards green purchase	ATGP1	Environmental protection is important to me when making purchases of appliances	Cronbach's alpha
	ATGP2	Energy-efficient appliances are important to reduce air pollution	
	ATGP3	Energy-efficient appliances are important to save natural resources that would be used for producing energy, e.g., coal, gas, oil, etc.	
	ATGP4	If I can choose between energy-efficient and conventional appliances, I prefer energy efficient	

3.1. Content Validity

High level of content validity is important before data collection. The questionnaire was pretested with four experts and scholars in Pakistan to ensure the clarity relevance of the questionnaire. It is also ensured that the items were interpreted correctly as expected. Consequently, the questionnaire of the current study had a high level of content validity.

3.2. Pilot Data Collection and Analysis

For this study, due to the lockdown and closure of most of the business premises to avoid the spread of the COVID-19 pandemic and to maintain safe social distance, the pilot data were collected online. The self-administered questionnaire was designed on Google form and distributed online via social media links (WhatsApp, Facebook, and messenger) to the respondents belonging to the top ten most populated cities of Pakistan (according to the 2017 census). Following the probability sampling approach, this study used a multi-stage cluster sampling and proportionate sampling method to maximize the representation of total population. A total of 85 responses were received out of which 75 responses were valid for analysis. Partial Least Square Structural Equation Modelling (PLS-SEM) is used as statistical tool for data analysis. As this paper is based on the pilot data collected from 75 respondents, the PLS-SEM is being used through SmartPLS 3.3 software for analyzing the collected data. The reason to use PLS-SEM method is that it can execute the data analysis with a small sample size (even less than 100) and can achieve a high level of statistical power (Awang et al., 2015; Ryan, 2020; Sarstedt et al., 2020).

3.3. Multivariate Data Normality Test

According to Hazzi and Maaldaon (2015), testing the normality of a pilot study in a quantitative methodology is also an important issue. Skewness and kurtosis are insightful methods to comprehend multivariate normality and are rarely reported in the literature (Cain et al., 2016). Before further analysis, assessing the multivariate normality through

skewness and kurtosis, the present study used the web power software accessible at <https://webpower.psychstat.org/models/kurtosis>, as suggested by Hair et al. (2017) and Cain et al. (2016). As shown in Figure 2, the web power software revealed that the collected data is multivariate normal; Mardia's (Mardia, 1970) measures for multivariate skewness and kurtosis were ($\beta = 14.14, p > 0.1$) and ($\beta = 72.00, p > 0.1$) respectively. Therefore, the data is normally distributed as p values are greater than 0.1 accepting the null hypotheses. For further analyses, the current study had used PLS-SEM by SmartPLS software.

Sample size: 75				
Number of variables: 7				
Univariate skewness and kurtosis				
	Skewness	SE_skew	Kurtosis	SE_kurt
CM_GPB	-1.04550445	0.2774001	1.4467574	0.5482113
CM_GTPL	-0.87686481	0.2774001	1.0727847	0.5482113
CM_GPD	-0.06108607	0.2774001	-0.8335929	0.5482113
CM_GPRC	-0.13176401	0.2774001	-0.6705080	0.5482113
CM_GPLC	-0.30874203	0.2774001	-0.6347576	0.5482113
CM_GPRM	0.17861071	0.2774001	-0.7932506	0.5482113
CM_ATGP	-1.35272623	0.2774001	2.1404773	0.5482113
Mardia's multivariate skewness and kurtosis				
	b	z	p-value	
Skewness	14.14688	176.836057	1.404646e-08	
Kurtosis	72.00496	3.473739	5.132601e-04	

Figure 2: Mardia's multivariate skewness and kurtosis

3.4. Respondents Profile

A total of 75 responses were compiled and the demographic profile of the respondents of the present study is shown in table 2. The demographics revealed that both the genders have almost equal participation (male = 52% and female = 48%) whereas most of the participants were youngsters (age group of 15-30 = 74.4%) and largely were single (74.7%). Additionally, most respondents have bachelor's degree (45.3%) and are still students (76.0%) with income level 0-20,000 PKR (53.3%) largely. Lastly, most of the respondents belong to Multan (38%).

Table 2: Demographics of the Respondents

Demographics	Frequency	Percentage (%)
Gender		
Male	39	52
Female	36	48
Age group		
15-30	56	74.7
31-45	16	21.3
46-60	2	2.7
Above 60	1	1.3
Marital status		
Single	56	74.7
Married	19	25.3
Academic Qualification		
Metric	0	0
Intermediate	10	13.3
Bachelor's degree	34	45.3
Master's degree	25	33.3
PhD	5	6.7
Other	1	1.3
Profession		
Student	57	76.0
Business	7	9.3
Professional	4	5.3
Employee	5	6.7
Other	2	2.7
Income		
0-20,000	40	53.3
20,001-50,000	18	24.0
50,001-100,000	8	10.7
Above 100,000	9	12.0
City		
Karachi	1	1.3
Lahore	3	4.0
Faisalabad	10	13.3
Rawalpindi	10	13.3
Gujranwala	6	8.0
Peshawar	5	6.7
Multan	29	38.7
Hyderabad	1	1.3
Islamabad	1	1.3
Quetta	0	0
Other	9	12.0

3.5. Descriptive Statistics of Latent Construct

The descriptive statistics showed the results associated to mean, minimum, maximum, and standard deviation values that were calculated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Consequently, the descriptive statistics show that mean values ranging from 3.57 to 4.44 show that people are more towards agreeing to the phenomenon of green marketing and green purchasing, and standard deviation values range from 0.632 to 0.905.

Table 3: Descriptive Statistics

Construct	Min	Max	Mean	SD
Attitude towards green purchase	1	5	4.440	0.632
Green purchase behavior	1	5	4.075	0.734
Green product	1	5	3.920	0.711
Green price	1	5	3.611	0.863
Green place	1	5	3.583	0.905
Green promotion	1	5	3.571	0.812
Government policies	1	5	4.149	0.668

In addition, the sampling adequacy has been assessed through Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was 0.717 which is above the commonly recommended value of 0.6, and Bartlett's test for sphericity is statistically significant ($p = 0.000$ with an approximate chi-square value of 1795.963 and a degree of freedom of 630).

3.6. Assessment of Measurement Model

The assessment of the measurement model enables the researchers to evaluate the reliability and validity of the construct and to reduce the measurement error as much as possible (Hair et al., 2014). The measurement model (also known as the outer model) with outer loadings and the relationship of variables and its items is shown in Figure 3.

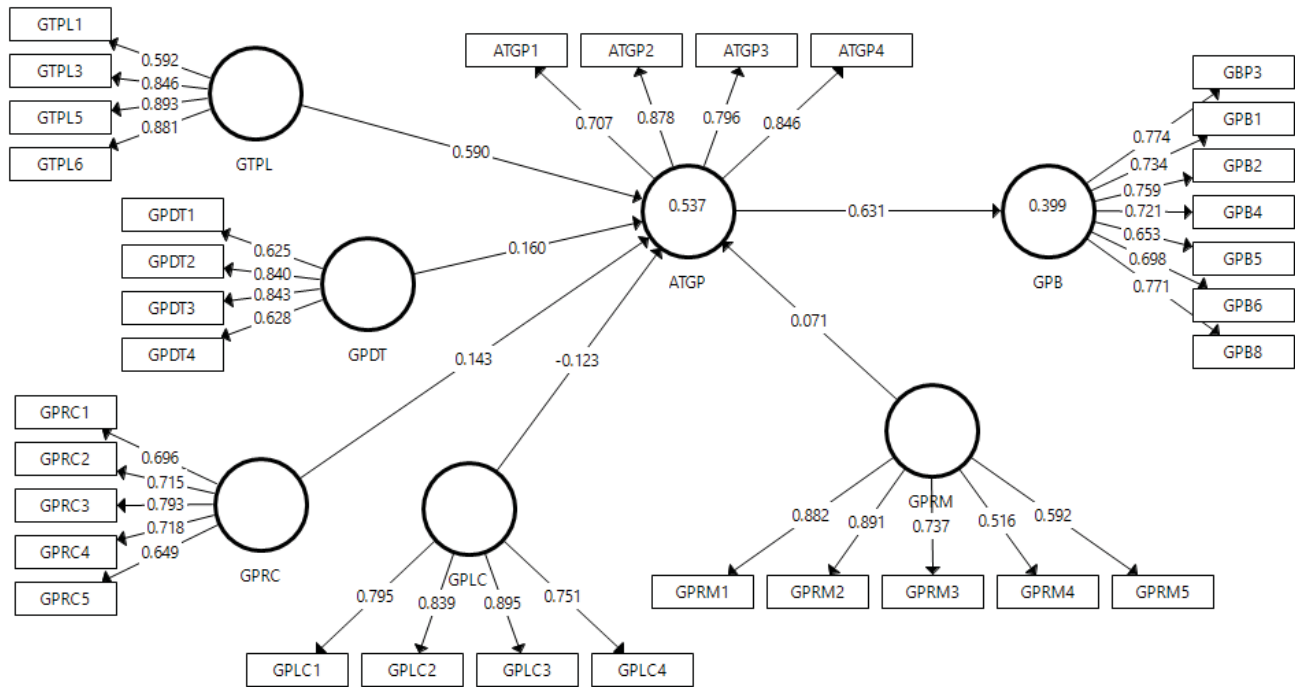


Figure 3: Measurement model

3.7. Internal Consistency Reliability

Generally, Cronbach's alpha (α) is the most common and excessively used method in the literature of business management and socio-psychological disciplines for assessing reliability (Hazzi & Maaldaon, 2015). It evaluates the indicator variances and covariances to determine the internal consistency reliability. The rule of thumb for acceptable values of α are >0.9 "Excellent", >0.8 "Good", >0.7 "Acceptable", >0.6 "Questionable", >0.5 "Poor", while <0.5 "Unacceptable" (as cited in Hazzi & Maaldaon, 2015). In addition to this, the literature also recommended the single standpoint value of 0.7 (Reid, 1990) for a fair survey instrument. In the current study, the values of Cronbach's alpha are in line with the standard values, i.e., higher than 0.70 signifies that the instruments have better reliability standards (Hair et al., 2014; Sekaran & Bougie, 2016).

The composite reliability, also known as Jöreskog's rho (ρ_c) is another tool to calculate the internal consistency reliability of the model (Chin, 1998b). This method assesses the indicator loading to verify the reliability of the construct. The results of this pilot study revealed that all the values are above 0.60 and accomplished the conditions of internal consistency reliability (Sarstedt et al., 2019).

Miltgen et al. (2016) argued that alpha and composite reliability are the traditional and inconsistent reliability measures. Moreover, in most cases, alpha underestimates while composite reliability overestimates the actual reliability of the construct. To overcome this deficiency, Dijkstra and Henseler (2015) developed a consistent reliability measure coefficient ρ_A also known as Dijkstra-Henseler's rho for assessing the reliability of the construct. The construct measurement analysis showed that most of the values of Dijkstra-Henseler's ρ exceeding 0.8 and fewer 0.7

speak the high internal consistency reliability of the construct under study.

The McDonald's (1999) omega as suggested by Hayes and Coutts (2020) is also a better alternative to Cronbach's alpha in confirmatory factor analysis (CFA). It has been argued that alpha underestimates the reliability due to its assumptions of equal variance while Omega doesn't. The McDonald's omega (ω) has been calculated through the macro downloaded from <http://afhayes.com/spss-sas-and-r-macros-and-code.html> and installed in SPSS. The omega results for this study showed that all the measurements met the reliability requirements as the values are exceeding 0.7 (see Table 4).

3.8. Convergent Validity

Similarly, convergent validity is elucidated by Hair et al., (2017) as "the degree to which a latent construct explains the variance of its indicators". The analysis of the measurement model of this study revealed that there is 50% of the variance is achieved by each construct (i.e., AVE is equal and greater than 0.50), which is higher than the threshold value as prescribed by Hair et al. (2017). Table 4 showed the construct reliability and convergent validity results.

Table 4: Construct Reliability and Validity Results

Construct	Items	Factor Loadings	Cronbach's alpha (α)	Composite Reliability (ρ_c)	Dijkstra-Henseler's rho (ρ_A)	McDonald's Omega (ω)	Average Variance Extracted (AVE)
ATGP	ATGP1	0.707	0.822	0.883	0.840	0.819	0.655
	ATGP2	0.878					
	ATGP3	0.796					
	ATGP4	0.846					
GPB	GPB1	0.734	0.855	0.889	0.864	0.852	0.535
	GPB2	0.759					
	GPB3	0.774					
	GPB4	0.721					
	GPB5	0.653					
	GPB6	0.698					
	GPB8	0.771					
GPDT	GPDT1	0.625	0.729	0.827	0.794	0.733	0.550
	GPDT2	0.840					
	GPDT3	0.843					
	GPDT4	0.628					
GPRC	GPRC1	0.696	0.780	0.840	0.769	0.809	0.512
	GPRC2	0.715					
	GPRC3	0.793					
	GPRC4	0.718					
	GPRC5	0.649					
GPLC	GPLC1	0.795	0.846	0.892	0.967	0.851	0.675
	GPLC2	0.839					
	GPLC3	0.895					
	GPLC4	0.751					
GPRM	GPRM1	0.882	0.803	0.852	0.928	0.779	0.546
	GPRM2	0.891					
	GPRM3	0.737					
	GPRM4	0.516					
	GPRM5	0.592					
GTPL	GTPL1	0.592	0.820	0.884	0.852	0.832	0.660
	GTPL3	0.846					
	GTPL5	0.893					
	GTPL6	0.881					

3.9. Discriminant Validity

The assessment of discriminant validity is characterized as a prerequisite for examining the relationship between latent variables under a study (Henseler et al., 2015). Moreover, it ensures that a constructed scale is distinctive and represents the phenomena of concern that other instruments in a structural equation model do not capture (Henseler et al., 2015). In addition, Voorhees et al. (2016) asserted that failure to achieve discriminant validity has serious implications to overall research and it is very

common in marketing literature. The literature suggested techniques for discriminant validity are assessing cross-loadings, the Fornell-Larcker criterion, and HTMT.

By taking the square root of AVE defines the discriminating validity as given by Fornell and Larcker (1981). Furthermore, Fornell and Larcker (1981) proposed that “the value of the AVE square root should be greater than the latent variables, which indicates a discriminating value”. Hence, the diagonal values are greater than the other latent variable values as shown in table 5.

Table 5: Discriminant Validity Matrix (Fornell-Larcker criterion)

	ATGP	GPB	GPDT	GPLC	GPRC	GPRM	GTPL
ATGP	0.809						
GPB	0.631	0.731					
GPDT	0.438	0.392	0.742				
GPLC	0.270	0.307	0.452	0.822			
GPRC	0.411	0.366	0.514	0.602	0.716		
GPRM	0.436	0.413	0.525	0.674	0.639	0.739	
GTPL	0.696	0.595	0.378	0.316	0.363	0.462	0.812

Likewise, Henseler et al. (2015) provided the Heterotrait-Monotrait (HTMT) ratio, which is another criterion to assess the discriminant validity of the constructs. Moreover, Henseler et al. (2015); Voorhees et al. (2016) assessed that fewer marketing studies rely on HTMT rather more rely on the Fornell-Larcker criterion and cross-loading even though both these methods are not effective to assess

discriminant validity. To assess the HTMT values, this ratio includes two regularly used metrics with cutoff thresholds of HTMT.85 and HTMT.90, respectively. Similarly, Voorhees et al. (2016) suggested that HTMT (with a cut-off value of 0.85) performed well overall. The values shown in Table 6 are less than the threshold values which confirm the discriminant validity of the construct.

Table 6: Heterotrait-Monotrait ratio of correlations (HTMT)

	ATGP	GPB	GPDT	GPLC	GPRC	GPRM	GTPL
ATGP							
GPB	0.737						
GPDT	0.528	0.514					
GPLC	0.294	0.347	0.599				
GPRC	0.460	0.435	0.732	0.771			
GPRM	0.470	0.462	0.668	0.844	0.813		
GTPL	0.832	0.719	0.472	0.346	0.420	0.487	

4. Results and Discussion

Environmental sustainability is a key focus for every stakeholder of the environment. Scholars have stressed the key role of government to develop and encourage environmental policies and strategies for green behavior. The governmental support for companies in making environmental policies, especially for green product development, eco-labeling, promoting green buying and consumption, and facilitating the availability of green products can be a great initiative to achieve sustainable

development goals. Furthermore, it can also help the companies to alter the conventional buying behavior of consumers to green buying behavior through altering the consumers' attitude. Therefore, this study conceptualized an integrated framework of all the three stakeholders (government, companies, and public or consumers) of the environment to achieve environmental sustainability.

Moreover, to authenticate the measurement instrument for this study, the current study has applied different techniques for reliability and validity authentication of the measurement construct. As recommended by Hayes and

Coutts (2020), the researchers should cross-validate the instruments by using different rigorous validation techniques. The findings revealed that every method has its way of calculating the scores for reliability and validity. The construct measurement showed decent reliability and validity throughout (see Table 4 to 7). The measurement scores under the traditional techniques like Cronbach's alpha ($\alpha > 0.7$) and composite reliability ($\rho_c > 0.8$) are in line with the recommended threshold values. Similarly, the construct was also verified through convergent validity (i.e., $AVE > 50\%$), and the measurement model also got decent scores under the Fornell-Larcker criterion. In the same vein, the instrument also achieved the standard scores through modern validating techniques (i.e., $\omega > 0.7$ and $\rho_A > 0.7$). The study-wide maximum HTMT is 0.844 which is less than the threshold of 0.85 confirming the discriminant validity of the construct. Additionally, three items (GPB7, GTPL2, and GTPL4 having factor loading 0.463, 0.197, 0.350 respectively) were deleted from the measurement model to get the required degree of validity and reliability cut-off-point.

Furthermore, the current study has certain limitations. Firstly, since it is a pilot study, a full-scale study is needed to confirm the results at a larger scale. Secondly, it has a limited sample size of 75 respondents. Though the sample size of this study is far greater than the size suggested by the scholars for conducting a pilot study (i.e., at least 30 sample size). Thirdly, the current study only assessed the measurement model of the construct to validate the measurement items. Thus, the researchers stress the need for a full-scale study with a larger population and to assess the structural model for significance as well.

5. Conclusions

Green consumer behavior is vital to understand not only for the retail businesses and organizations but for the governments as well. Due to increased pressure on governments to reduce carbon emission, decrease carbon footprints, save the natural life of species on earth, and save the natural resources, are requiring rapid improvements in their environmental policies regarding organizations as well as for overall customers and specifically for retail consumers. The role of the government in making environmental policies for enterprises' production and retailing activities and green consumption is not negligible. To facilitate green consumerism and green retailing, the government should integrate with organizations to understand the needs and requirements of both organizations and retail consumers. It also needs the financial intervention of the government (such as green labeling policies, tax incentives, and R&D funding) to support and facilitate green production and green consumption.

Saving the natural environment in the future for coming generations is depending upon our current environmental behaviors. By stimulating the consumers' attitude towards green buying through green products with the governmental support for electric appliances companies, the consumers can take initiative to buy energy-efficient electric appliances. Nevertheless, this pilot study will shed light for researchers to conduct future studies of the new green marketing mix and green purchasing behavior based on the validated measurements used in the current study. Regarding the implication of this study, researchers can empirically analyze it in different sectors (such as the energy sector, electric appliances sector, organic food sector) and can conduct full research. Therefore, governments and organizations, especially retail businesses, will be able to promote green consumerism and green purchase behavior with the incorporation of the 5G's of the green marketing mix.

However, the current study also aims to substantiate the validity and reliability of the measures used in this study. Furthermore, the measurement model of the current study is verified by convergent validity and discriminant validity tests by using SmartPLS 3.3 and SPSS. From the results, all constructs recorded satisfied values of α , ρ_c , ρ_A , ω , and AVE. Moreover, the items of the constructs were also verified through the Fornell-Larcker criterion and HTMT. Therefore, the instruments in the current study are considered valid. Future studies can use these verified pilot study results to conduct full research in the electric appliances sector in Pakistan, in similar contexts and countries.

Consequently, it is the right time to switch traditional and falsified methods to rigorous and newly suggested methods of measurements validation. However, in our opinion, using omega instead of alpha, ρ_A instead of ρ_c , HTMT in place of Fornell-Larcker would be a better choice for constructs validation as these methods are superior and preferred measures for reliability and validity in the recent literature. The authors also recommend that developing or selecting a better scale to measure any phenomena is much better than trying to establish reliability and validity through finding different methods.

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