The Moderating Effect of Price Sensitivity on the Relationship between Consumers Environmental Knowledge and Green Purchase Intentions

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Abstract

The aim of the paper was to examine the relationship between environmental knowledge and green purchase intentions with price sensitivity as a moderating variable. Structural equation modelling was employed for examining the relationship via Amos software. The findings revealed that environmental knowledge had significant positive impact on green purchase intentions. The Price sensitivity does not moderate the relationship. This study is an extension of the theory of planned behaviour that explores the eco-knowledge with presupposition to assess cognitive disparity in green purchase intention and attitude. This study contributes to the literature by exploring the motives behind consumer ecological perceptual knowledge with varying level of price. It is recommended for future research to broaden the study setting in other regions of Pakistan for understating a whole picture of environmental knowledge, price sensitivity and green purchase intentions. Longitudinal study in future research can better help in identifying the variations caused by price changes in consumer eco-knowledge with reference to purchase intentions of green products.

Keywords: green consumption, eco-knowledge. price sensitivity, green purchase intention

Introduction

The key challenge for humanity in new century is to search for more sustainable, justifiable and maintainable ways to harvest, produce, devour and live (In, 2017). Optimisation of output is the key to success around the globe which drive business setups to adopt greener strategies for gaining long term edge over competitors to meet international standards of sustainability. Bujang, Omar, and Baharum (2018) discussed the transformation of conventional marketing into green marketing that predicts the change in consumer's knowledge choices and preferences sweeping out complete change in marketing world. Businesses are embracing the new perception with introducing environmental friendly products and services. Ting, Hsieh, Chang, and Chen (2019) identified the association of environmental problems with green marketing and tied the

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phenomenon of global warming as emerging concept world-wide which needs careful considerations for preserving the biosphere. In the backdrop of preceding discussions it is assessed the consumers are more inclined towards sustainable consumption practices but they are unable to create an ideal balance between eco-friendly knowledge and green consumption patterns because of scarcity of resources (Ali et al., 2021).

Belmonte-Ureña, Plaza-Úbeda, Vazquez-Brust, and Yakovleva (2021) revealed that UN Agenda of 2030 emphasises responsible production and consumption in the form of sustainable development goal (SDG12) out of 17 Goals. Gap is identified as most of previous researchers identified the connection of sustainable knowledge with green marketing (Le, 2021). However, embedding the concept of pricing is rarely examined in combination with eco-knowledge and green purchase intentions particularly in developing countries like Pakistan where majority is economically marginalized (Ahmad & Zhang, 2020). Deficiencies lies in current research as green consumption conscious researchers shed light on the bunch of factors influencing green purchase intentions without realizing the consumers knowledge and awareness level on the basis of which their brain processes the chunks of information (Kumar & Mohan, 2021). Rare studies are carried out in developing countries regarding price sensitivity as an prime construct in acquisition of green products (Dutta, Chen, & Peng, 2022). Therefore, the rationale of the current study lies in examining the impact of environmental knowledge on green purchase intentions with role of price sensitivity as moderator. The current research desires to contribute to existing literature by examining the goal behind human cognitive thoughts that can assist in understanding human knowledge about environment in connection with biospheric purchase intentions.

Drawing on Fishbein and Ajzen (2011) Theory of Planned Behavior (TPB) was employed as foundation base for assessing the relationship between environmental knowledge, price sensitivity and green purchase intentions. Theory of Planned Behavior delineate that consumers determinations are formed by their attitudes and subjective norms which drives them towards purchase intentions (Moon, 2021). Structural equation modeling via Amos software was employed for analyzing the connection between variables under study. The current study aims to explore the role of price sensitivity as moderator between environmental knowledge and green purchase intentions. The main aim of this study was to assess the impact of environmental knowledge as independent variable

on green purchase intention as dependent variable with price sensitivity as moderating variable.

Literature Review

Green Purchase Intention

Ahmad and Zhang (2020) revealed that green purchase intention is the purchase, use and disposition of products and services that are less hazardous for society in general. It is expressed as internal desire of consumers to purchase eco-friendly products with less harm for surroundings (Dutta et al., 2022). The most authentic and comprehensive theory that explains the green purchase intentions is Theory of planned behavior (TPB) developed by (Fishbein, Jaccard, Davidson, Ajzen, & Loken, 1980). Theory of Planned behavior explains that behavioral intention of consumer is the final outcome of their attitude, subjective norms and perceived behavioral control, they all collectively explains the consumers buying intentions (Fishbein & Ajzen, 2011). TPB is widely applied by social researchers in their studies for explaining the relationship between behavioral intentions and buying patterns that helps in shaping the green purchase intentions of consumers (Biswas & Roy, 2015).

The willingness of consumers to buy environmentally friendly products is called green purchase intentions. In addition, it is a process which constitutes human values attitudes, norms and behavioral intentions integrated into a cognitive framework of consumers mind to think and peruse sustainable consumption practice (Paul, Modi, & Patel, 2016). It is associated with buying and exhibiting preferences to biodegradable, recyclable materials and supporting companies that follow green marketing practices (Mazhar, Jalees, Asim, Alam, & Zaman, 2022). Green consumption is described with social relevancy because of expeditious escalation of environmental hazards, sustainability provocations and high level of consumer awareness about environmental stagnations (Kautish, Paul, & Sharma, 2019).

Ahmad and Zhang (2020) asserted that consumer purchase intention is a process of decision making in which consumers starts from selection to finally consuming and deposing off the product with the ultimate purpose of their desires satisfaction. Dutta et al. (2022) revealed that green purchase intention is showing preference for more ecologically friendly products both for general well-being of society and environment. This is characterized as human internal desire for selection of more sustainable ways to consume products and services (Rizwan et al., 2013). Adaptation of technology is marked by serious destructions which is

characterized as air, water, soil pollutions which is reaching at threatening levels. With all these adverse effects some conscious consumers are considering to adopt new trends by carefully considering the use of green products and services (Otzen & Manterola, 2017). Based on the above discussion it is clear that green purchase intention stems from the consumers inclination towards acquiring and consumption of green products (Mazhar et al., 2022).

Environmental Knowledge

Knowledge, values and beliefs are the cognitive human personality factors which has direct impact on overall purchase behavior of consumers (Jaiswal & Kant, 2018). L. Wang, Wong, and Alagas (2020) declared environmental knowledge as imperative state for green purchase intentions that adds to the confidence level of consumers, consumers being more informed and knowledgeable about the green consumption and its merits will exhibit high level of confidence in making evaluation in decision making Aytar, Aykul, Altintas, and Tigli (2019) discussed that the more consumers have knowledge about the green side of consumption the more they will trust the enterprise that helps in making comprehensive judgements about green products. Safari, Salehzadeh, Panahi, and Abolghasemian (2018) proved the significant and direct impact of environmental knowledge on green purchase behavior. Environmental knowledge helps in the formation of consumer's belief about the constructive outputs of using green products (Heo & Muralidharan, 2019). From the forgoing debate it is asserted that increasing the environmental knowledge through any mean can enhance the consumers overall behavioral patterns transformation to adopt greener strategies in their daily life (Mohajan, 2017).

Environmental knowledge has two aspects, the first part refers to general knowledge and the second part is termed as action-based knowledge (Mohajan, 2017). General knowledge stands on consumers personal observations about their surroundings which rests on their interests and preferences about something, it is categorized as general piece of consumer's information and awareness about the surroundings (Marvi, Minbashrazgah, Zarei, & Baghini, 2020). Action based knowledge helps consumers to be responsible to the environmental issues which predicts that consumers having general and action based knowledge shows high involvement in buying environmentally sustainable goods (Y. A. Wang & Rhemtulla, 2021). Consumer's improvements in their knowledge about surroundings is the result of their conscious and

unconscious learning process (Marvi et al., 2020). Lack of knowledge about the negative outcomes of environmental hazards leads to obvious gap between consumer's attitudes and intentions to buy green products (Tong, Anders, Zhang, & Zhang, 2020). In the background of previous researches, it is assumed that environmental knowledge is the pre-requisite in adoption of green consumption practices. The previous literature leads to the development of first hypothesis of the study.

H1: Environmental Knowledge has significant positive impact on Green Purchase Intention

H01: Environmental Knowledge has no significant and positive impact on Green Purchase Intentions.

Price Sensitivity

Price is considered as a prime factor in consumer's evaluation of purchase decisions and it is termed as sum total of money the firm charges its customers with the addition of profitability margin in producing specific goods or services (J. Wang, Pham, & Dang, 2020). Equity theory can explain the outcome/input criteria for both consumers and suppliers which can leads to a comprehensive technique of price sensitivity interpretation (Oliver & DeSarbo, 1988). Consumer's acceptance of price changes is based on comparison of outcome to input ratio experienced by company. As suggested by Bolton and Lemon (1999), the theory explains that customer prefer what is in line with their perception about the cost of product, it consists of financial and non-financial sacrifices (time and stress) associated with buying specific products. The outcomes in equity theory are compared with sacrifices and gains in exchange process by both parties (customers and companies) (Luthra & Deshwal, 2022)

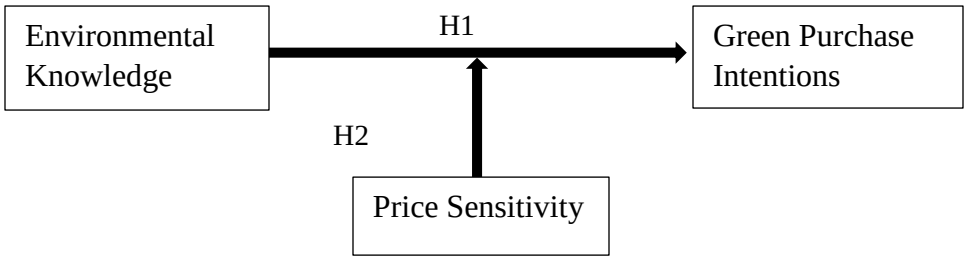
Kumar and Mohan (2021) assessed that consumer green behavioral differences rests on how price sensitive and insensitive they are about the green products consumptions; thus, price is marked as key determinant on the basis of which consumers analyze final purchase decisions of organic products. Price insensitivity leads to putting emphasis of non-price factors in terms of how it can contribute towards society well-being in general (Le, 2021). Extensive research is previously done on price sensitivity and its relationship with green purchase behavior in the context of developed nations but the studies considering these constructs are remarkably absent in developing countries (Ali et al., 2021). Therefore, in the light of preceding arguments it is clear that developing countries are in dire need to take into account the sustainability considerations from the perspective

of price variations of green products.(Hayat, Raza, Haider, Bilal, & Rahman, 2021).

Price sensitivity was studied with green marketing phenomenon from diverse perspective. Mohd Suki (2016) examined price sensitivity link with eco-friendly products, results of which revealed that consumer who prefer green products are less sensitive towards price variations in purchase of green products. Erdil (2018) investigated the moderating role of price sensitivity between environmental concern, attitude and green purchase intentions, the findings suggested significant relationship between dependent and independent variables. Consumers with less financial resources were negatively associated with green product purchase while consumers with high affordability were enthusiastically willing to pay premium prices for green products (Salve, Pabalkar, & Roy, 2021). Therefore, in the backdrop of preceding discussions is it crystal clear that price sensitivity is an important indicator that plays significant role in accelerating green purchase intentions.(Kumar & Mohan, 2021). Based on previous literature following hypotheses are developed.

H2: Price sensitivity moderates the relationship between Environmental Knowledge and Green Purchase intentions
H02: Price Sensitivity does not moderate the relationship between Environmental Knowledge and Green Purchase Intentions

Theoretical Framework



Research Method

Study Setting

This research employed quantitative, positivism philosophy with deductive approach of research. Survey method was recruited via adopted closed ended questionnaire that were administered personally with cross sectional approach. The study employed general educated consumers on

the basis of multistage sampling technique in the Khyber Pakhtunkhwa province of Pakistan. Khyber Pakhtunkhwa is the third largest economic base in Pakistan which comprises 35 districts and 7 divisions which accounts for 12 percent of the total country s population (Akhtar, Khalid, & Khan, 2020). Multistage sampling procedure was employed that starts from drawing samples into small groups from population in different stages and series of steps. In the first step the Khyber Pakhtunkhwa was split up into three main regions i.e. North regions, Central Region and South region. The north region comprises ten districts with 35 percent population of the total province, the central part has seven districts with 45 percent population of the province while the south region has seven districts with 20 percent of the total population (Rahman, Hayat, Habib, & Iqbal, 2011).

The second step in multistage sampling was the selection of two districts from central and south regions while three districts from north regions based on the number of districts each region owns. In the third stage, five universities were selected based on the population of each regions and number of districts. Two universities were sorted out from central region while two were picked in north region of Khyber Pakhtunkhwa. Two universities were chosen from south regions as a sample of the study. Rules for selecting sample size in survey method is explored by previous researchers with strong evidence. Models with simplified versions of conceptual framework can be comprehensively assessed with 200-300 respondents while model with medium complexity can be finely calculated and computed with sample size of 300-400 (Boomsma, 1983; Kelloway, 1998). Considering the complexity of the proposed theoretical framework it moving towards moderate intricacy on the continuum of complexity. However, 340 sample size was considered appropriate for the study. Personally administered 340 questionnaires were distributed among respondents in which 320 were duly filled form all aspects that were considered worthy of analysis. Structural equation modeling via Amos was employed for scrutinizing the causal analysis among variables under study.

Tools of Data Collection

Measures

Five questions related to construct Environmental knowledge have been adapted from the studies of (Mostafa, 2007). Five items that guided in analyzing the proposed relationship of price sensitivity as moderator were adapted from the previous studies conducted by Tan, Ojo, and Thurasamy (2019) and Huang, Nguyen, Natarajan, Nguyen, and Kuzyk

(2018). Five questions related to the dependent variable Green purchase intention were adopted from different studies which included first two questions from (Ko, Hwang, & Kim, 2013). one question from the studies of (Rizwan, Mahmood, Siddiqui, & Tahir, 2014), one question from (Kautish et al., 2019) and one question from the work of (Huang et al., 2018).

Results

Reliability

The overall reliability for sixteen adapted questions was .986 which is considered as highly reliable. Value for environmental knowledge Cronbach alpha was assessed as 0. 909; price sensitivity 0.865 and green purchase intentions 0.923. All the values of Cronbach alpha represents excellent reliabilities that is above 0.7 a minimum threshold for the data in acceptable range (Amirrudin, Nasution, & Supahar, 2021) which indicates that all the constructs have strong correlation as group.

Table 1

Reliability

Constructs	Number of Item	Cronbach 's alpha
Environmental Knowledge	5	.909
Price Sensitivity	5	.865
Green Purchase Intention	5	.923

Hypotheses Testing

Results of the study in the first phase revealed (β =0.80, Critical ration= 5.99, p value 0.000) positive and significant relationship between Environmental Knowledge and Green purchase intentions which supports the first hypothesis of the study . Second phase of the study reveled (β =0.23, Critical ration= 3.120, p value 0.002) positive and significant association of moderator (Price Sensitivity) and criterion variable (Green Purchase Intention). The H2 hypothesis of the study is rejected as the interaction terms p value is above 0.05 i.e .606 with (β =0.052, Critical ration= 0.515). Thus, The findings revealed that Price Sensitivity does not moderates the relationship between Environemntal Knowledge and Green Purchase Intention.

Table 2

Standard Loadings of the Items

Items	Standard Loadings
EK1	0.76
EK2	0.81
EK3	0.80
EK4	0.84
EK5	0.83
PS1	0.79
PS2	0.84
PS3	0.86
PS4	0.80
PS5	0.50
GPI1	0.83
GPI2	0.87
GPI3	0.84
GPI4	0.84
GPI5	0.85

Table 3

Path Coefficeint Analysis with Insertion of PS as Moderator between EK and GPI

Predictor	Standardized Estimates	β	SE	CR	P-Value
X(EK)	.80	.760	.127	5.99	.000
M(Price Sensitivity)	.23	.363	.116	3.120	.002
XxM(EKxPS)	.05	.018	.036	0.515	.606

Notes: N= 320; boostrap sample size =2000. DV= Green Purchase Intention

Hypotheses of the Study

H1: Environmental Knowledge has significant positive impact on green purchase intention

H01: Environmental Knowledge has no significant and positive impact on Green Purchase Intentions

Based on the results of the study the first (null) hypothesis of the study is accepted that revealed positive and significant association of environmental knowledge and green purchase intentions. The alternate hypothesis of the study is rejected.

H2: Price sensitivity moderates the relationship between Environmental Knowledge and Green Purchase intentions

H02: Price Sensitivity does not moderate the relationship between Environmental Knowledge and Green Purchase Intentions

The second hypothesis of the study (null hypothesis) is rejected that revealed insignificant interaction terms p value above 0.05 i.e .606 with (β =0.052, Critical ration= 0.515). The alternate hypothesis s accepted that revealed no moderation between environmnetal knowledge and green purchase intentions.Thus, The findings revealed that Price Sensitivity does not moderates the relationship between Environemntal Knowledge and Green Purchase Intention.

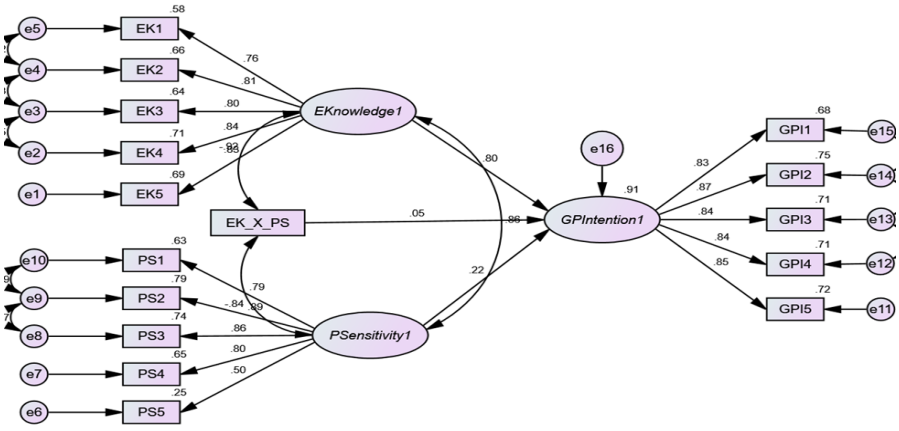


Figure # 2 Model fit for Structural path- yielding positive and significant relationship between EK and GPI with role of PS as moderating variable.

Discussions

The current research provides an insight about the role of consumer green knowledge and its impact on green purchase intentions with role of price sensitivity as moderator. The current study employed quantitative, deductive approach via structurally adapted questionnaire that was regressed via AMOS. Structured equation modeling was employed for checking the hypotheses of the study. The first hypothesis

was accepted as the association between Environmental knowledge and Green Purchase Intentions was found significant while second hypothesis of the study was rejected as the resultant output of the price sensitivity as moderator was in-significant depicting no role of moderation between environmental knowledge and green purchase intentions. The findings goes in harmony with previous research carried out by Biswas and Roy (2015) that identified positive correlation between green knowledge and green purchase behavior which reveals that knowledgeable consumers are more likely to act towards green purchase behavior. Jaiswal and Kant (2018) examined the importance of environmental knowledge about green purchase intentions and concluded that consumers actively use environmental knowledge in comparing and purchasing green products.

Finding of another research revealed that consumers with more environmental knowledge are characterized as carefully conscious consumers who consider safety risks caused by environmental depletion in evaluation among alternatives (Heo & Muralidharan, 2019). Thus, the forgoing research revealed positive relationship of environmental knowledge with green purchase intention that goes in accordance with the findings of this research. But, the moderator role of price sensitivity does not have the capacity to modify the relationship between environmental knowledge and green purchase intention that spark novelty in the findings of this study. The findings goes an accordant with previous research conducted by Mohd Suki (2016) who examined price sensitivity connection with eco-friendly products, results of which revealed that consumer who prefer green products are not sensitive towards price variations in purchase of green products. Yue, Sheng, She, and Xu (2020) explored the role of price sensitivity and environmental concern as moderator and mediator respectively on crossing the environmental responsibility on green consumption; the findings showed that environmental responsibility sense can increase the concerns for sustainable ways of consumption, price sensitivity was found to have an inverse moderation role in alliance between the environmental variables of the study.

Conclusions

The current study provides an insight about the consumer's knowledge of ecological consumption with moderation of price sensitivity in Pakistan. Findings of the study in the first phase revealed (β =0.80, Critical ration= 5.99, p value 0.000) positive and significant relationship between Environmental Knowledge and Green purchase intentions which

supports the first hypothesis of the study. Hypotheis H2 assumes that's Price Sensitivity moderates the association between Environemntal Knowledge and Green Purchase Intentions. The H2 hypothesis of the study was rejected as the interaction terms p value is above 0.05 i.e .606 with (β =0.052, Critical ration= 0.515). Price Sensitivity does not moderates the relationship between Environemntal Knowledge and Green Purchase Intention. The first hypothesis was accepted as the positive and significant association between Environmental Knowledge and Green Purchase Intentions was in significant range while second hypothesis of the study was rejected as the resultant output of the price sensitivity as moderator were insignificant depicting no moderation between environmental knowledge and green purchase intentions.

The current study has several contributions. Firstly, it contributes to the overall literature of green marketing and sustainability concerns of businesses by enhancing the understanding of researchers regarding unique role of consumer's knowledge about environment and green purchase intentions. Secondly, this study investigates the role of price sensitivity as moderator between consumer environmental knowledge and green purchase intentions. Current study can assist brand and marketing managers to design, build, implement and maintain the green marketing strategies at their corporate level so that upper level managers can incorporate the greener strategies in their overall marketing campaign. It is recommended for future research to broaden the study setting in other regions of Pakistan for understating a whole picture of environmental knowledge, price sensitivity and green purchase intentions. Longitudinal study in future research can better helps in identifying the variations caused by price changes in consumer eco-knowledge with reference to purchase intentions of green products.

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