

The moderating effect of price consciousness on the relationship between green products purchase intention and customers' purchase behavior: Does environmental knowledge matters?

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ABSTRACT

This research intends to explore the relationship between subjective and objective environmental knowledge and green products purchase intention and if green products purchase intention leads to green products actual purchase behavior in the context of UAE consumers. It also intends to explore the moderating effect of Price consciousness on the relationship between green products purchase intention and green products actual purchase behavior. A self-administered questionnaire used to collect the data about the study variables, 186 respondents from UAE participated in this research and data analyzed using Statistical Package for Social Sciences (SPSS) version 22. The findings of this research indicate that Subjective and Objective Environmental Knowledge were determinants of Green Products Purchase Intention, and that Purchase Intention was positively and significantly associated with actual Purchase Behavior. No significant relationship found of price consciousness as a moderator.

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1. Introduction

Environmental concerns dominate marketing and management research, scholars investigated the antecedents of green marketing in attempts to explore the factors affecting the consumers to buy environmentally products. This interest has emerged from scholarly works on the importance of protecting the environment, maintaining the natural resources, providing healthy products to people, and applying sustainable practices by companies (Al-Aomar & Hussain, 2018; Wang et al., 2019). These scholarly attempts gain significance in recent years due to increased public concerns over climate change, pollution, world warming, waste, and excess use of the available natural resources due to enhanced buying power by consumers in many countries in the world (Degirmenci & Breitner; 2017; Al-Aomar & Hussain, 2018; Kaufmann et al., 2012; Raharjo; 2018). Scholars addressed several issues as they examined what shapes consumers attitudes toward green products, some proposed environmental knowledge and green product awareness as major drivers of consumers intention to buy green products and this has its foundation in the theory of planned behavior, so it was argued that exposing consumers to more knowledge on green products and environmental concerns is believed to affect and drive the intention to buy green products. However, little is known on the actual behavior of the consumers, namely, little research has been done on the relationship between environmental knowledge and green products awareness and the actual buying behavior of consumers. The findings of previous research also are not conclusive in the link between environmental knowledge and purchase intention, that is; some research

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found environmental knowledge positively and significantly associated with purchase intention, whereas some other research did not find evidence on the proposed association. Little research has been done on how green product awareness and environmental knowledge can affect the actual behavior or the customers as portrayed in the action of actually buying green products. Furthermore, little is known about the effect of price consciousness on this proposed relationship. This research intends to explore the relationship between subjective and objective environmental knowledge and green products purchase intention, it also intends to examine whether or not green products purchase intention leads to actual purchase behavior and whether or not this relationship is moderated by price consciousness.

2. Literature Review

Environmental studies have dominated marketing literature for decades, which is attributed to increased interest and awareness about environmental problems and concerns. Customers are demanding healthy products, employees want healthy work place, governments want compliance with local and international standards with regard to carbon emission, pollution and waste, stakeholders focus mainly on maximizing the revenues causing the pressure on companies on their environmental initiative as being green to sacrifice short term revenues with long term profit (Degirmenci & Breitner, 2017; Wang et al., 2019; Handique, 2014), and at last, public pressure on companies to produce environmentally friendly products that protect the environment and maintain the resources (Kaufmann et al., 2012; Wang et al., 2019).

Researchers examined the antecedents and consequences of green marketing, consumer intention to buy environmentally friendly products, and how environmental awareness and knowledge could lead to actual behavior. Interestingly, research provides some contradicting findings when it comes to the relationship between the environmental knowledge and consumers intention to buy green products as some research findings indicate positive and significant relationship between environmental knowledge and purchase intention (Molina et al., 2013; Goh & Wahid, 2014; Jaiswal & Kant, 2018), and researchers assert that there is a casual relationship between environmental knowledge and green intention and actual behavior (Levine & Strube, 2012; Chen, 2013; Maichum et al., 2016) and also explained that environmental knowledge plays an important role in explaining consumers' attitudes towards green products (Vazifehdoust et al., 2013; Kumar et al., 2017; Jaiswal & Kant, 2018). Maichum et al. (2016) asserted that environmental knowledge is an important antecedent to green attitudes and green products purchase intention whereas some other studies found weak relationship between them (Kumar et al., 2017), in addition, Aman et al. (2012) found no relationship between environmental knowledge and green attitudes, and Vazifehdoust et al. (2013) found no significant relationship between environmental knowledge and green behavior. Hassan et al. (2010) even found negative relationship between environmental knowledge and customers' attitudes toward green products in what seems to be a contradiction with the theory of reasoned action and the theory of planned behavior.

In an attempt to explain this contradiction, some researchers explained that environmental knowledge should be measured by using two dimensions rather than only one scale. Subjective Knowledge measures what consumers think they know about environmental issues, and Objective Knowledge that measures what consumers really know about the environmental problems (Molina et al., 2013; Jaiswal & Kant, 2018). For instance, Jaiswal and Kant (2018) argued that few studies have been accomplished on the subjective knowledge and objective knowledge and how these affect consumers' attitude and behavior. Molina et al. (2013) defined environmental knowledge as the general knowledge that individuals have about environmental concepts and ecosystem, and it encompass whatever individuals know about the environmental issues and problems (Wang et al., 2019), so subjective environmental knowledge is a self-assessment (Molina et al., 2013), and the abstract knowledge that individuals have (Jaiswal & Kant, 2018), whereas the objective knowledge is a measure of the actual knowledge (Molina et al., 2013) or what is referred to by Jaiswal and Kant (2018) as factual knowledge.

According to Maichum et al. (2016) and Kumar et al. (2017), environmental knowledge is served as an antecedent to green products' purchase intention. One can conclude that research findings are far from being conclusive, and thus the need arises for more research into this relationship.

Furthermore, as green products do not come without costs, as manufacturers need to apply modern practices and advanced technologies in their production and operations, little is known about how price consciousness really affects the actual behavior of the consumers away from merely the intention to buy, for instance, Chekima et al. (2016) argued that customers who demanded green products are willing to pay premium price for these green products as they believe in its value, furthermore, Gleim et al. (2013) asserted that green products price affects consumers' buying decisions, Neff (2012) argued that consumers in general are less willing to pay premium price for green products, and this argument is even supported by Malhotra and Maheshwari (2011) but they attributed this to the lack of consumers' awareness of environmental issues and thus those consumers are sensitive to green products price. One can conclude that research is still in its infancy when it comes to the customers perception of green products quality as compared to the conventional products, this research is an attempt to shed more lights on the relationship between subjective and objective environmental knowledge and how these variables are associated with forming intention to buy green products, and whether intention is linked with actual green products purchase behavior, the actual purchase behavior of UAE customers, it also intends to explore the effect of price consciousness as a moderator on this relationship.

This research argue that objective knowledge is a major predictor of purchase behavior as compared to subjective knowledge, it also proposes a negative effect of price consciousness as a moderator, i.e., this research proposes that price conscious customers will buy less of green products even though they are environmentally knowledgeable as compared to consumers

who are ready to pay more for green products. Nonetheless, Chekima et al. (2016) found that consumers walk the talk and that premium price does not prevent or affect consumers' intention to buy green products, at the other hand, Wang et al. (2019) argued that even though consumers' claim they are concerned about environment, but their claim has no foundations when it comes to actually buying green products, and they called for more research into the link. Similarly, Kim and Choi (2005); Kaufmann et al. (2012) and Mas'od and Chin (2014) argued that there is little evidence that positive green attitudes can lead to actual purchase behavior of green products.

Kaufmann et al., (2012) defined green products purchase as the actual behavior of consumers' as they buy only environmentally friendly products. However, Chekima et al. (2016) study focused on the effect of premium price on purchase intention rather than the actual purchase and this research will examine this effect on actual purchase behavior.

According to Al-Aomar and Hussain (2018); companies that practice sustainability are known for providing high quality products and this can be attributed to the implementation of the best practices in supply and reduction of waste. Alameeri et al. (2018) argued that sustainable strategies are needed and considered as competitive necessity.

The theory of reasoned action and the theory of planned behavior are served as the underpinning theories for this research, it is believed that environmental knowledge will form the intention to buy environmentally friendly products, and that purchase intention leads to purchase behavior. Purchase intention is covered intensively by many researchers, and in particular when it comes to environmental knowledge as antecedent (Akroush et al., 2018; Nguyen et al., 2017). For instance, Goh and Wahid, (2014) and Jaiswal and Kant (2018) argued that environmental knowledge has positive effect on consumers' attitudes, and consumers' attitudes are found to be directly related to purchase behavior (Chaudhary, 2018; Akroush et al., 2018).

2. Research Framework and Hypotheses

Based on the literature review of previous research, the following theoretical framework and hypotheses were developed.

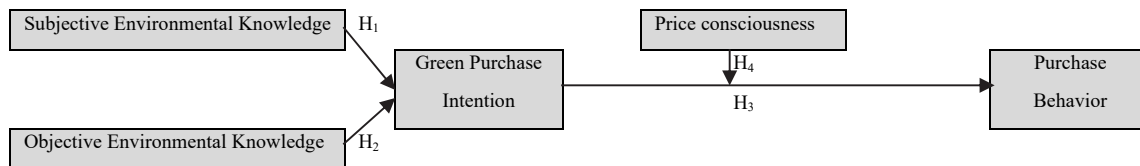


Fig. 1. Research Theoretical Framework

From Fig. 1 above, it is proposed that both types of environmental knowledge have influence on green products purchase intention, and that purchase intention is linked with actual purchase behavior, and that this relationship is moderated by consumers' consciousness about price. Based on the theoretical framework above, the following hypotheses were developed:

H₁: There is a positive and significant relationship between Subjective Environmental Knowledge and Green Products Purchase Intention.

H₂: There is a positive and significant relationship between Objective Environmental Knowledge and Green Products Purchase Intention.

H₃: There is a positive and significant relationship between Green Products Purchase Intention and Green Products Purchase Behavior.

H₄: Price Consciousness negatively moderates the relationship between Green Products Purchase Intention and Green Products Purchase Behavior.

3. Data and Research Methods

This research employed a self-administered questionnaire as a method of data collection from customers residing in the United Arab Emirates whereas simple random sample is targeted as survey which was sent by emails and link to the survey was provided, so this research is empirical in nature, and the results of this survey on 186 responses were found valid and usable out of 188 responses received while 2 responses dropped from the analysis due to incomplete data. As this research intends to measure the relationship between subjective and objective environmental knowledge, purchase intention and purchase behavior, as well as how the link between green products purchase intention and actual purchase behavior possibly is moderated by price consciousness, hence, the need has emerged to build 5 constructs to measure the 5 variables used in this study, to do so, a five-item Likert scale ranging from 1 = Strongly Agree to 5 = Strongly Disagree were developed. For the purpose of this research and in order to measure Subjective Knowledge, 6 items were adapted from Issock (2019), Pieniak et al. (2010) and Wang et al. (2019). To measure Objective Knowledge, 6 items were adapted from Degirmenc and Breitner (2017), Kautish (2017) and Pieniak et al. (2010) so it covered customers' objective knowledge of Renewable Energy, Ozon Layer, Chemical Fertilizers, Organic Food, Rainforest Destruction and Global Warming concepts. Furthermore, 6 items were adapted from Akroush et al. (2018) and Chaudhary (2018) to measure consumers' green products purchase intention, whereas 5 items were adapted from Akroush et al. (2018) and Chaudhary (2018) to measure the actual purchase behavior of the customers. As to measure price consciousness which was proposed as a moderator variable in this research, 4 items were adapted from Sun

and Wang (2019). Finally, 4 items were used to capture the demographic profiles of the respondents including age, income, education and gender in the survey. Descriptive and frequency analysis to have the feeling of the data as well as some advanced statistical techniques were carried out to test the research hypotheses by using the statistical Package for Social Sciences (SPSS) version 22 as follows:

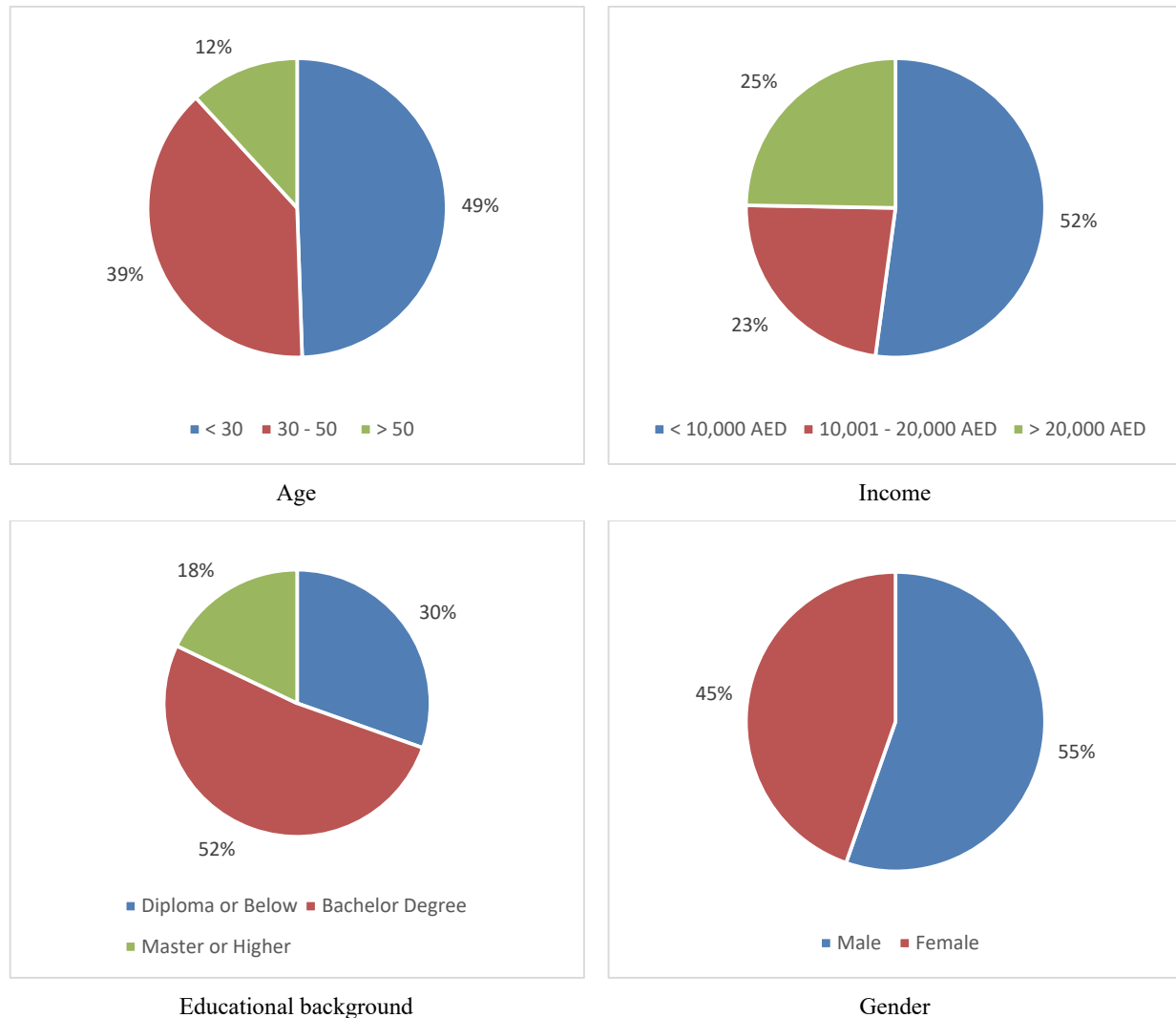


Fig. 2. Demographic Profiles of the Respondents

From Fig. 2 above, one can clearly see that the majority of the respondents are male (N: 103) making 55% of the research sample, the majority of the respondents hold bachelor degree (N:95) or 52% of the respondents, and the majority of the respondents (N:97) or 52% earn 10,000 AED in monthly income, and finally, the majority of the respondents (N:92) or 49% of the sample. This makes identical fit as the majority of the respondents are at the entry level or midcareer level making them identical group of people that can represent the society in general as average customers. As the constructs of all the variables used in this research adapted from different sources, it becomes imperative to test for reliability, that is, to measure if these instruments actually measure what it supposed to measure, thus, reliability analysis was conducted by using Cronbach's Alpha 0.70 as cut-off point, if an item showed less than 0.70 in Cronbach's Alpha then it would be excluded from further analysis. Reliability analysis was conducted at three levels for all variables used in this research, namely, item level, scale level, and scale if item deleted level as shown in Table 1. All constructs used in this research crossed the cut-off point of Cronbach's Alpha and thus considered to be reliable instruments in measuring what they are supposed to measure, Cronbach's Alpha found to be (0.74) for Objective Environmental Knowledge scale, (0.87) for Subjective Environmental Knowledge scale, (0.92) for Green Products Purchase Intention scale, (0.90) for Actual Purchase Behavior scale, and finally, (0.70) for Price Consciousness scale. It has been noticed as a result of scale -if-item-deleted analysis that item 4 of Price Consciousness scale, if deleted, would produce (0.71) of Cronbach's Alpha making only (0.01) increase in Cronbach's Alpha value of the said scale which found as marginal and thus it was decided not to delete the item given also that only 4 items made the construct of Price Consciousness.

Table 1
Cronbach's Alpha Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ObjKnow1	9.72	7.900	.539	.685
ObjKnow2	9.56	8.420	.383	.731
ObjKnow3	9.91	8.981	.354	.735
ObjKnow4	9.81	8.013	.547	.684
ObjKnow5	9.64	8.059	.482	.702
ObjKnow6	9.88	7.785	.562	.678
SubKnow1	12.44	12.151	.689	.845
SubKnow2	12.64	13.821	.561	.866
SubKnow3	12.49	12.186	.648	.853
SubKnow4	12.37	11.639	.703	.843
SubKnow5	12.03	12.031	.683	.846
SubKnow6	12.33	12.677	.764	.836
PurchInten1	10.73	15.422	.722	.913
PurchInten2	10.67	14.600	.821	.899
PurchInten3	10.76	15.060	.792	.904
PurchInten4	10.73	14.717	.840	.897
PurchInten5	10.72	14.108	.815	.900
PurchInten6	10.86	15.234	.661	.922
ActPurch1	10.88	11.741	.727	.896
ActPurch2	10.63	11.282	.792	.882
ActPurch3	10.67	10.849	.805	.880
ActPurch4	10.58	11.413	.798	.881
ActPurch5	10.77	12.081	.720	.897
PriceConsc1	6.78	3.924	.522	.618
PriceConsc2	6.98	3.346	.645	.529
PriceConsc3	6.56	4.183	.427	.676
PriceConsc4	7.05	4.457	.369	.707

Table 2
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Objective Knowledge	186	1.00	3.50	1.9507	.55814	.312
Subjective Knowledge	186	1.00	5.00	2.4767	.69580	.484
Green Purchase Intention	186	1.00	4.83	2.1487	.76483	.585
Purchase Behavior	186	1.00	5.00	2.6763	.83723	.701
Price Consciousness	186	1.00	4.00	2.2809	.63410	.402
Valid N (listwise)	186					

Table 2 above displays the descriptive statistics of the five variables measured in this research and it can be concluded that the Objective Knowledge scored as the lowest mean (1.95) and Purchase Behavior was the highest (2.67), ascending means of 2.14, 2.47, 2.67 reported for green purchase intention, subjective environmental knowledge, and Purchase Behavior, respectively. The highest variance was found for purchase behavior variable (0.70) and the lowest variance was found for Objective Knowledge, and more advanced analysis is also needed to detect the relationship between the variables and to test the hypotheses, which is done mainly through simple and multiple regression analysis as follow:

Table 3
Multiple Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.008	.175		.043	.966
	Objective Knowledge	.619	.084	.452	7.403	.000
	Subjective Knowledge	.377	.067	.343	5.617	.000

a. Dependent Variable: Green Purchase Intention

Table 3 above depicts the results of multiple regression analysis that is carried out to measure the relationship between the 2 independent variables, namely, subjective environmental knowledge and objective environmental knowledge, and the dependent variable, i.e., green products purchase intention, With R (0.86) and R square value (0.46) we have realized that 46% of variance in the dependent variable is attributed to independent variables. The analysis above indicated a very strong (B = 0.61) and significant (0.00) relationship between objective environmental knowledge and green products purchase intention

and thus H₁ is accepted. Furthermore, a strong (B= 0.37) and significant (0.00) relationship between subjective environmental knowledge and green products purchase intention, therefore, H₂ is also accepted.

Table 4
Multiple Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.130	.139		8.151	.000
	Green Purchase Intention	.719	.061	.657	11.828	.000

a. Dependent Variable: Purchase Behavior

From Table 4 above, with R value (0.65) and R square (0.43), the Beta coefficient of the relationship between the independent variable, i.e., green products purchase intention and the dependent variable, namely, purchase behavior is strong (B=0.71) and significant (0.00) which lend support to H₃ of this research that proposed a positive and significant relationship between Green Products Purchase Intention and Green Products Purchase Behavior, and hence H₃ is accepted. When it comes to testing the suggested moderating effect of price consciousness as in H₄ on the relationship between green products purchase intention and actual purchase behavior, an advance regression model needed. To test for moderating effect, the first test to be done is to consider the moderator variable as independent and to conduct multiple regression analysis with the original independent so see the significant, Table 5 below portrayed this test.

Table 5
Multiple regression with Price as Independent

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.111	.203		5.474	.000
	Green Purchase Intention	.718	.062	.656	11.605	.000
	Price Consciousness	.010	.075	.007	.133	.895

a. Dependent Variable: Purchase Behavior

As based on the results of the multiple regression analysis displayed in Table 5, with R (0.65) and R square (0.43) it is found that even though green purchase intention is still showing positive (0.71) and significant (0.00) relationship with purchase behavior, there is a very weak (0.01) and non-significant relationship (0.89) between price consciousness and purchase behavior, indicating that price consciousness does not have any direct effect on purchase behavior, and thus, bring the analysis to the second level to figure out whether it works as a moderator, and the analysis is provided in Table 6 below.

Table 6
Multiple Regression of the Moderator

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.131	.142		7.975	.000
	Green Purchase Intention	.717	.099	.655	7.235	.000
	Intention × price	.001	.028	.003	.036	.971

a. Dependent Variable: Purchase Behavior

From Table 6, and at R (0.65) and R square (0.43), it is found that price consciousness is not acting as a moderator in the relationship between green products purchase intention and actual purchase behavior as Beta coefficient is (0.00) and insignificant (0.97) and hence H₄ that proposed a moderating effect of price consciousness on the relationship between green products purchase intention and actual purchase behavior is rejected.

4. Research Findings

Different types of analysis were conducted to test the four hypotheses proposed in this research, the findings of this research indicate that both subjective and objective environmental knowledge act as antecedents to green products purchase intention as positive and significant relationship between these variables were detected, hence, H₁ and H₂ were accepted. In addition, the findings of this research support the proposed relationship between green products purchase intention and actual purchase behavior, that is, purchase intention found to be a strong and significant predictor of green products actual purchase behavior and thus H₃ of this research is accepted. However, the moderating role of price consciousness on the relationship between green products purchase intention and actual purchase behavior was found as weak and statistically insignificant and thus H₄ of this research is rejected. Table 7 below summarizes these findings.

Table 7
Research Findings and Hypothesis Testing Results.

Hypotheses	R	R Sq.	B	Sig.	Results
H1: Objective Knowledge with Intention.	0.86	0.46	0.61	0.00	Accepted
H2: Subjective Knowledge with Intention.	0.86	0.46	0.37	0.00	Accepted
H3: Intention with Actual Purchase Behavior	0.65	0.43	0.71	0.00	Accepted
H4: Price Consciousness as moderator	0.65	0.43	0.00	0.97	Rejected

5. Conclusions and Recommendations

This research has intended to construct a valid and reliable scales of Subjective and Objective Environmental Knowledge, and to measure whether these factors can act as antecedents to green products purchase intention, which also examined the relationship between green products purchase intention and actual purchase behavior and whether price consciousness moderates this relationship. Both subjective and objective environmental knowledge found to be positively and significantly associated with green purchase intention, that is, the more the subjective and objective knowledge of environmental problems and issues, the more the consumers intend to buy green products. Interestingly, Objective Environmental Knowledge found to be the stronger predictor of green purchase intention, i.e., the actual knowledge of environmental problems is a strong cause of the perceived knowledge, these findings can drive the attention of practitioners and academicians to focus on more objective education about environmental problems and green concerns as it found to be the main driver of purchase intention. Purchase intention is also found to be a strong predictor of actual purchase intention. Surprisingly, price effect was not detected in this research, that's is, consumers will continue buying green and environmentally friendly products once intention is formed through objective education regardless of the price. These findings are impressive as it can shape the attention of companies to focus more on educating the customers about the environmental issues and problems, purpose driven customers who believe in sustainability and who are well educated about environmental issues and problems found to have positive intention towards buying green products and actual buying behavior that is not affected by price.

6. Recommendations for Future Research

Further research on these variables is encouraged as to provide more evidences from different countries, it will be interested also to measure if the demographic variables included in this study, i.e., gender, age, income and education act as moderators in the relationship between green products purchase intention and actual purchase behavior. Adding more antecedents, variable to this research model other than objective and subjective environmental knowledge can also shed more lights on what form the intention to buy green products. measuring the performance of companies that implement green practices is also recommended as these practices come with costs.

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