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A Multiple Mediation Analysis

Bhatnagar et al.

Openness to Experience and Green Purchase Behavior: A Multiple Mediation Analysis

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Abstract

The aim of this study was to examine if there is an effect of openness to experience on green purchase behavior. Furthermore, the study also aimed to analyze if the attitude toward advertisement and green product knowledge mediates the relationship between openness to experience and green purchase behavior. The data for this study were collected in front of malls and departmental stores of Delhi-NCR (National Capital Region) with the help of survey method. The population consists of both the purchasers and non-purchasers of green products. Two hundred and fifty people participated in the study, out of which 200 questionnaires were used for data analysis after cleaning the data. To test the hypotheses, hierarchical multiple regression was conducted using model 4 of Process Macro. The findings of this study indicate that openness to experience strongly predicts green purchase behavior but no mediation effect of green product knowledge and attitude toward advertisements are seen. This study finds its importance in the fact that there has been a rise in the environmental concerns which may induce consumers to indulge into green purchase behavior. This study is one of the first, at least to the authors' knowledge, to empirically examine and confirm the effect of openness to experience on green purchase behavior as well as check the mediation effect of green product knowledge and attitude toward advertisement.

Keywords: Big five; Green purchase behavior; Mediation analysis; Process macro; Openness to experience.

1. INTRODUCTION

In the era where the environment has topped the charts among concerns, brands have started shifting their thoughts from just purchase behavior to green purchase behavior. Consumer awareness has led to this major shift to conscious consumption that does not harm the environment. Marketers globally are trying to understand the predictors of green purchase behavior to help make the consumer experience more enriching. Previous researches have mostly focused on the need of the consumers and have largely ignored the fact that personality could be a distinguishing factor in customizing the offer and taking relationship marketing to the next level (Myers *et al.*, 2010).

Marketers need to understand the customers in-depth to formulate strategies that could build a unique relationship with them. Big five traits have been long studied and accepted measure to access personality of an individual which fragments the personality traits into five broad categories, namely, openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (Costa and McCrae, 1988). Understanding consumers from the lens of psychology will garner more benefit in strategizing the advertisements toward the consumers.

This article specifically contributes to the literature of openness, as the trait is associated with people who are open to new ideas, revolutionary in nature, and do not resist change (George and Zhou, 2001;

2 Original Research Article

Matzler et al., 2006). Hirsh and Dolderman (2007) suggested that open people are often found to be concerned about the environment and sometimes end up indulging in eco-friendly behaviors as well. Attitude toward advertisements has also been found to be the predictor of purchase behavior (Aaker, 1995) and this research adds to the personality as well as advertising literature by adding attitude toward advertisements as a mediating variable between openness to experience and green purchase behavior to understand the relationship in-depth.

Marketers know about the factors that influence green purchase behavior. One of the key elements is green product knowledge. It means how much a person is knowledgeable about the product characteristic. Concerned with the green product knowledge, it shows that to what extent people have the knowledge and they process the information about a product, to buy that particular product. There are two levels of knowledge, that is, high-knowledge and low-knowledge consumers. The difference between high-knowledge and low-knowledge consumers is the way they process the information (Chang, 2004). This study finds its importance in the fact that there has been a rise in the environmental concerns which may induce consumers to indulge into green purchase behavior. Therefore, this study answers some aspects, such as significance of variables like openness to experience, attitude toward advertisements, and green product knowledge, for marketers to understand green consumption by society at large.

2. THEORETICAL BACKGROUND

2.1. Openness to Experience and Green Purchase Behavior

Openness to experience pertains to the traits of intellectual openness, unconventionality, novel ideas, flexibility, and creative stride (Goldberg, 1990; Matzler et al., 2006). People high on this trait generally tend to make their own rules, live by their original ideas, easily adapt to change, empathize with the surroundings, and most importantly, question the already accepted ideas. These individuals are revolutionary in nature and show an affinity for experimentation (George and Zhou, 2001). Their creativity gives them a unique perspective to view things and make decisions thereby.

People low in this trait tend to follow traditional methods, are not often enthusiastic in trying new things, resist change as well as flexibility. Open people found it easier to make decisions as they are highly independent in nature, basing their reasons on rational grounds, and an open-minded approach (Christensen et al., 2019; LePine et al., 2000). Moreover, individuals high in openness are resilient and logical in the ways, they deal with new situations. People with this trait are sensitive to both positive and negative emotions with a great sense of aesthetics, making them apt for pro-environmental behavior (DeYoung et al., 2012; Kaufman et al., 2016).

Affective components have more profound effects rather than cognitive elements when it comes to purchase behavior (Bosnjak *et al.*, 2007) and openness relates to both the elements of behavior (DeYoung *et al.*, 2012; Kaufman *et al.*, 2016), making it an important part of the purchase behavior study. Previous research suggests that the usage of green products and inculcating eco-friendly habits are influenced by the personality type of an individual (Balderjahn, 1988). Openness to experience is found to influence the green behavior in the consumer as suggested by a few researchers (Hirsh and Dolderman, 2007; Klein *et al.*, 2019). On the contrary, some researches also state the fact that personality is a significant predictor of environmental friendly behaviors, such as recycling, participating in ecological activities, and so on, but openness to experience does not influence the ecological behavior (Fraj and Martinez, 2006).

H₁: Openness to experience significantly influences the green purchase behavior.

2.2. Attitude Toward Advertisements and Green Purchase Behavior

Attitude has been an obscure phenomenon to understand, varying across time and places. Attitude refers to the way an individual analyzes an idea or a concept (Fishbein and Ajzen, 1980). Attitude toward advertisement ascribes how the audience perceives the advertisement. This will help in understanding and predicting the behavior of consumer toward the brand or any product in general after watching the advertisements. Cues seen in advertisement help in forming an attitude as they generate some emotions that may follow purchase behavior (Aaker, 1995; Khairullah and Khairullah, 1999). Celebrity endorsements are the popular example where research shows that a credible celebrity endorser may even mislead consumers about greenwashed claims (Bhatnagar and Verma, 2019)

Analyzing the personality of the audience will offer an insight into the probable behavior of the consumer toward green products (Hirsh and Dolderman, 2007). Moreover, attitude toward advertisements could mediate the relationship between openness to experience and green purchase behavior as attitude is a significant predictor of purchase intention which further leads to purchase behavior (Khairullah and Khairullah, 1999; Lutz *et al.*, 1983). Furthermore, an individual's personality may prove to be an important predictor in the formation of attitude in general (Schneider, 1973).

Openness to experience is associated with aesthetics, abstract concepts, and imagination (Goldberg, 1990). Interactive and out-of-the-box advertisements attract people who are high in openness trait, as they get involved in living the storyline shown in advertisements in imagination (Özhan *et al.*, 2018). This gives an edge to the marketers in experimenting with the advertisements if they target the product as per the personality of the consumers.

H₂: Attitude toward advertisements mediates the relationship between openness to experience and green purchase behavior.

2.3. Green Product Knowledge and Green Purchase Behavior

Before one person acts, he/she must know how a particular thing should be and what further can be done to improvise it (Kaiser and Fuhrer, 2003). According to Kaiser and Fuhrer (2003), knowledge is composed of the following types, which influences ecological behavior:

- 1. Declarative environmental knowledge
- 2. Procedural knowledge
- 3. Effectiveness of knowledge
- 4. Social knowledge

To interpret consumer behavior, it is important to know about consumer knowledge. Many researchers posited that various variables affect the prior knowledge (e.g. familiarity, product experience) on numerous activities that transforms the information (Alba and Hutchinson, 1987; Bettman and Park 1980; Johnson and Russo, 1984; Park and Lessig, 1981; Srull 1983). According to Chang (2004), attribution process is moderated by product knowledge. The buying behavior of consumers depends upon what they actually know about the product. If the consumers know most of the characteristics of the products they are planning to buy, they will definitely buy the product.

Magistris and Gracia (2008) posited that on the basis of organic logos and labels attached to the product, organic food consumers identify organic products. They also found that before deciding to buy a product, consumers evaluate the qualities of the product by transforming the information into the accepted characteristics of organic food products into search attributes. However, Barrena and Sanchez (2007) stated that people have a low level of knowledge about the qualities of organic products and the difference between organic and conventional products. The difference between the high-level knowledge and low-level knowledge depends on how a person processes the information available about the product (Chang, 2004). Verma *et al.* (2019) also indicated that green product knowledge, prior experience with environmental behavior, and influence of peers may impact the purchase of green products.

From the above discussion, we have come across that openness to experience influences the green purchase behavior and green product knowledge also influences the green purchase behavior. But there is no study that states whether green product knowledge mediates the relationship between openness to experience and green purchase behavior. So, with this, the authors hypothesize that:

H₃: Green product knowledge mediates the relationship between openness to experience and green purchase behavior.

3. METHOD(S)

3.1. Participants

The data for this study were collected in front of malls and departmental stores of Delhi-NCR with the help of survey method. The population consists of both the purchasers and non-purchasers of green products. Two hundred and fifty people participated in the study, out of which 200 questionnaires were used for data analysis after cleaning the data. Among the participants, 57.2% were female. Moreover, the majority of the

4 Original Research Article

participants were 24 to 34 years of age. The validity of the instrument was also tested using Kaiser–Meyer–Olkin (KMO) and Bartlett's test of sphericity that came out to be 0.801 and was above the minimum value of 0.50. The KMO value above 0.50 establishes the sampling adequacy criteria (Field, 2009; Kaiser, 1974).

4. MEASURES

4.1. Openness to Experience

For this study, openness to experience was measured using the four items taken from Schimt *et al.* (2000). The scale ranged from 1 (strongly agree) to 5 (strongly disagree). Reliability of the scale was 0.700, which indicates that the internal consistency of the scale is satisfactory. The Cronbach's alpha values are in the acceptable range of 0.5–1 (Field, 2009). A sample item is "I work best in an environment that allows to be creative and expressive."

4.2. Green Purchase Behavior

For this study, green purchase behavior was measured using the four items taken from Kaman Lee (2009). The scale ranged from 1 (strongly agree) to 7 (strongly disagree). Reliability of the scale was 0.873, which indicates that the internal consistency of the scale is satisfactory. The Cronbach's alpha values are in the acceptable range of 0.5–1 (Field, 2009). A sample item is "I often buy organic products."

4.3. Attitude Toward Advertisements

For this study, attitude toward advertisement was measured using the nine items taken from Onley *et al.* (1991). Reliability of the scale was 0.653, which indicates that the internal consistency of the scale is satisfactory. The Cronbach's alpha values are in the acceptable range of 0.5–1 (Field, 2009). A sample item is 7-point bipolar scale such as pleasant/unpleasant.

4.4. Green Product Knowledge

For this study, green product knowledge was measured using the four items taken from Park and Lessig (1981). The scale ranged from 1 (strongly agree) to 7 (strongly disagree). Reliability of the scale was 0.801, which indicates that the internal consistency of the scale is satisfactory. The Cronbach's alpha values are in the acceptable range of 0.5–1 (Field, 2009). A sample item is "I would consider myself an expert in terms of my knowledge of organic products."

5. RESULTS

The aim of this study was to examine if there is an effect of openness to experience on green purchase behavior. Furthermore, the study also aimed to analyze if the attitude toward advertisement and green product knowledge mediates the relationship between openness to experience and green purchase behavior. To test the hypotheses, hierarchical multiple regression was conducted using model 4 of Process Macro developed by Andrew F. Hayes (Hayes, 2012).

In the first step of the mediation process, the regression of openness to experience on green purchase behavior—ignoring the mediators, attitude toward advertisement and green product knowledge—came out to be significant, b = 0.81, t(198) = 0.81, $p \le 0.05$. Above results show that the first hypothesis is accepted, that is, openness to experience significantly impacts green purchase behavior. In step two, the regression of openness to experience on the mediator attitude toward advertisement was not found to be significant, b = -0.05, t(198) = -0.05, $p \ge 0.05$.

Similarly, openness to experience is also found to be an insignificant predictor of green product knowledge.

Further analysis revealed that attitude toward advertisement (b = -0.27, t(196) = -0.27, p ≤ 0.05) and green product knowledge (b = -0.025, t(196) = -0.025, p ≤ 0.05) are not significant predictors of green purchase behavior. The results showed that both attitude toward advertisement and green product knowledge do not mediate the relationship between openness to experience and green purchase behavior, thus, not supporting the second and third hypotheses.

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Table 1. Run MATRIX Procedure.

*********** PROCESS Procedure for SPSS Version 3.2 **********			
Written by Andrew F. Hayes, Ph.D. www.afhayes.com Documentation available in Hayes (2018). www.guilford.com/p/hayes3			
<pre>************************* Model : 4 Y : Green_purchase X : Openness M1 : Attitude M2 : Green_pr</pre>			
Sample Size: 200			

Model Summary R R ² 0.0170 0.0003 70		df1 df2 1.0000 198.00	-
Model coeff SE t constant 34.3215 3.50 Openness -0.0544 0.22		.0000 27	JLCI .2930 41.3500 .5028 0.3939

Madal Cumman			
	ISE F 6		p 0.5988
Model coeff SE t constant 17.7320 1.10 Openness 0.0390 0.00			ULCI 15.4435 20.0205 -0.1070 0.1850

	MSE F .2069 29.6166	df1 df 3.0000 196.0	-
Model coeff SE t constant 2.2592 2.18 Openness 0.8057 0.08 Attitude -0.0271 0.02 Green_pr 0.0255 0.083	9.3314 70 -1.0051	.3023 -2.0 0.0000 0.6 0.3161 -0.0	ACI 0489 6.5672 354 0.9759 0803 0.0261 1379 0.1888

6 Original Research Article

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OUTCOME VARIABLE:
Green purchase
Model Summary
                    R^2 MSE F df1 df2
                                                                                  р
        0.5551 0.3081 10.1599 88.1659 1.0000 198.0000 0.0000

        coeff
        se
        t
        p
        LLCI
        ULCI

        constant
        1.7803
        1.3491
        1.3196
        0.1885
        -0.8802

        Openness
        0.8081
        0.0861
        9.3897
        0.0000
        0.6384

coeff
               se
                             t
                                          р
                                                       LLCI
                                                                      ULCI
                                                                                    4.4408
                                                                                   0.9779
******* TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **********
Total effect of X on Y
                 SE t p LLCI ULCI 0.0861 9.3897 0.0000 0.6384 0.9779
      Effect SE
                                                                                     c_psc_cs
      0.8081
                                                                                     0.2114
                                                                                                   0.5551
Direct effect of X on Y
      Effect SE t p LLCI ULCI c'_psc'_cs 0.8057 0.0863 9.3314 0.0000 0.6354 0.9759 0.2108 0.5534
Indirect effect(s) of X on Y:
               Effect BootSE BootLLCI BootULCI
TOTAL
               0.0025
                              0.0112 -0.0195
                                                           0.0283
Attitude 0.0015

Green_pr 0.0010

(C1) 0.0005
                              0.0085
                                            -0.0156
                                                            0.0213
                             0.0067 -0.0126
0.0105 -0.0211
                                                            0.0163
                                                            0.0232
Partially standardized indirect effect(s) of X on Y:
Effect BootSE BootLLCI BootULCI
TOTAL 0.0006 0.0029 -0.0052 0.0074
Attitude 0.0004 0.0022 -0.0042 0.0055
Green_pr 0.0003 0.0018 -0.0033 0.0043
(C1) 0.0001 0.0028 -0.0056 0.0059
Completely standardized indirect effect(s) of X on Y:
Effect BootSE BootLLCI BootULCI
TOTAL 0.0017 0.0076 -0.0132 0.0195
Attitude 0.0010 0.0058 -0.0104 0.0145
Green_pr 0.0007 0.0046 -0.0085 0.0115
(C1) 0.0003 0.0072 -0.0146 0.0155
Specific indirect effect contrast definition(s):
       Attitude minus Green pr
******************** ANALYSIS NOTES AND ERRORS *****************
Level of confidence for all confidence intervals in output:
  95.0000
Number of bootstrap samples for percentile bootstrap confidence intervals:
NOTE: Variables names longer than eight characters can produce incorrect output.
       Shorter variable names are recommended.
----- END MATRIX -----
```

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6. DISCUSSION

This research proposes to find out if openness to experience is a significant predictor of green purchase behavior. Furthermore, it throws light on the proposed mediation effect of attitude toward advertisements and green product knowledge. The findings of the present study indicate that openness to experience strongly predicts green purchase behavior aligning with previous studies that stress the fact that open people may practice green behavior (Hirsh and Dolderman, 2007). Openness to experience is characterized by experimentation as well as adopting new methods along with logical thinking (George and Zhou, 2001), thus lending support to such behavior.

Though attitude toward advertisement is found to be a predictor of purchase intention and thus purchase behavior as well (Aaker, 1995) but this study revealed that attitude toward advertisement is an insignificant predictor of green purchase behavior, which adds to the literature of green marketing. Also, openness does not influence attitude toward advertisement as well as green product knowledge. Open people are generally independent thinkers, which may be the reason for openness to be not affecting attitude toward advertisements as well as green product knowledge. This research revealed that openness does not account in the factors that affect the prior knowledge about the green product.

Interestingly, findings suggest that green product knowledge does not predict green purchase behavior. Prior knowledge must encourage consumers to buy green products as knowledge helps to transform information into action (Johnson and Russo, 1984). On the contrary, this study refutes the relation between green product knowledge and green purchase behavior.

7. LIMITATIONS AND FUTURE RESEARCH

There are only a few researches to analyze green product knowledge and openness. This research has been conducted in limited area with a limited sample size. For more generalized insights, research should be conducted covering wider area and more sample size. Consumers from different countries may have different drivers for green consumption. Therefore, a comparative study is also suggested to the budding researchers of this field. Openness to experience, which itself is a rarely studied area in the field of green marketing, has been identified as one such variable that influences green purchase behavior. On the contrary, only the effect of openness to experience has been studied on green purchase behavior. Influence of other personality traits can also be studied in future research, which will strengthen the base for interdisciplinary research integrating personality research with research in green marketing

Further research should also focus on determining the reason for the insignificant impact of green product knowledge on green purchase behavior, and similarly, on contrary impact of attitude toward advertisement on green purchase behavior aiming to find out what other factors impact green purchase behavior such as peer influence and many others. This calls for a qualitative study for the same. The sample has been collected from general shoppers utilizing the mall-intercept method, which itself becomes a limitation.

8. CONCLUSION

The world is striving for greener options in the market with rise in the concerns for the environment. Therefore, this study has practical implications for marketers as well brands to understand factors preceding green consumption. In the world of great customization, it is highly important to understand the personality of the customer before making an offering. This research provides that open consumers are more likely to buy green products irrespective of green product knowledge and attitude toward advertisements, which makes it crucial to understand what other factors engage consumers to indulge in green purchase behavior. Our research paves way for interaction in the field of personality psychology and marketing for in-depth understanding of consumer behavior.

Author Contributions

AB has contributed on openness to experience variable as well as the analysis discussion part of the study. SV has worked on variable Green purchase behavior. VKS and AD have contributed in the form of data collection, limitation, and referencing.

Conflict of Interest

There is no conflict of interest.

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