Identifying Factors Affecting Green Consumer Purchase Behavior on E-Commerce Websites

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Abstract: As ecological problems are rapidly expanding, they bring with them increasingly threatening and drastic complications. On the other hand, the economic benefits of plastic products have created a dilemma for consumers and business owners. Since one of the main channels for satisfying daily needs is online shopping and social media, and the market share of electronic commerce is growing inexorably compared to traditional brick-and-mortar methods, it would be useful to understand the factors related to consumer behavior on these platforms in order to resolve environmental issues. This research attempts to identify the factors affecting green consumer purchase decisions on social commerce platforms. A questionnaire was designed based on data gathered using bibliographic methods, and collected data from 532 valid samples was analyzed using SmartPLS software. According to the findings, subjective norms such as social network

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inference is positively correlated to green product attractiveness. In addition, the results show that personality traits and green product attractiveness are positively correlated; moreover, the results show that there is a positive relation between green advertising and green product attractiveness. It is believed that the outcomes of this research will contribute to and be beneficial for manufacturers and businesses by proposing a new model for green marketing and green product awareness.

Keywords: *consumer behavior, eWOM, green marketing, green product, SEM, TPB, TRA*

1. Introduction

While the phenomenon of globalization is proceeding at maximum speed around the world, it has also brought with it some challenges. Ecological problems are one of the main issues that have an adverse effect on life on our planet; hopefully, this problem has been recognized as a priority in recent years, and therefore debates on this issue have emerged among the scientific community (Zhang & Dong, 2020). Consumers are now more than ever aware of the problems, which makes the markets favorable for green products, there is a huge growth in green marketing advertisements, and companies and manufacturers are trying to adopt new strategies and inform their consumers about the environmental friendliness of their products and services (Panda *et al*., 2020).

Considering the economic results of green product utilization, researchers have initiated an effort to unravel the relationship between variables affecting ecologically friendly practices, which have expanded rapidly in the course of the last ten years, with a focus on green purchase practices. Given that organizations are socio-economic structures, it would be farfetched to see them as neutral towards environmental awareness and the attraction created among consumers toward green products (Marvi *et al*., 2020).

Advertising companies now are trying to influence buyers with a new type of approach, and that is the sense of responsibility for ecological problems caused by humans. As customers are reflecting interest in the planet's ecological conditions, manufacturers are showing a significant inclination toward eco-friendly products. Based on these facts, understanding the green purchaser's

behavior remains an interesting field of research and an important focus of research. Liobikienė and Bernatonienė (2017) showed in their study the multi-lateral structure of green product issue, with their findings suggesting that multiple factors, such as the level of consumer awareness and knowledge of green products, the level of consumers' green awareness, and consumer commitment to preserving nature using eco-friendly products, are an influencing factor (Soomro *et al*., 2020). They also pointed out that, despite the various factors that have been introduced in other studies, there is a gap in research as no study provides a well-structured model depicting the relationship of factors presented in previous studies. They emphasize that, based on consumer choice theory, economic conditions of people can play a key role in their preference of a particular product. On the other hand, Rahnama and Rajabpour (2017), in their research, pointed to the influential role of social values and how they may vary under different conditions, and argued that their purchase behavior may be a function of different consumption values across multiple interrelated dimensions (Kajanová & Nováček, 2022). In addition to the aforementioned theories, other related models have been introduced based on the theory of reasoned actions (TRA) and the theory of planned behaviour (TPB). Fishbein and Ajzen (1975) introduced TRA to explain the social entities' behavioral intention; therefore their theory is very beneficial in explaining consumer purchase decisions and adaptation of green behavior (Martin, 2017). In addition, by combining the concept of behavioral control with the TRA model, there is a possibility of finding a link between individuals' beliefs and their behavior (Paul, Modi & Patel, 2016). However, despite the above-mentioned advancements, there is still a gap that requires a full understanding of consumers' pro-environmental attitudes and sustainable green purchase activity. Since all the aforementioned theories and models are focused on economic and value-oriented factors, or consumer psychology and cognitive conditions or social entity's beliefs, the importance of external stimulants such as green ads and existing social media promoting green product usage and adopting a pro-environmental lifestyle has been ignored.

Social commerce as a new form of e-commerce was introduced after advancements in web2 and ICT (Hajli *et al*., 2013). With new advancements in technology, online platforms can communicate more flexibly than ever before. All these technological leaps and additional attributes have led to the reshaping of previously provided business models, opening doors to new opportunities (Farajnezhad *et al*., 2021). Social commerce can be considered a new form of e-commerce that combines social innovations presented by web2

(Turban & Mühlhäuser, 2008). The ubiquity of social networking services (SNSs) is the main reason for the current change. This new advancement in commerce models based on virtual communities has created a more consumer-oriented business arena where consumers receive support from their peers on social networks (Varah *et al*., 2021).

Even though identifying the factors that will increase customer's interest in e-commerce and brand social networking sites (SNS) are vital (Alagarsamy *et al*., 2021), understanding methods to coordinate social media exchanges are at the center of marketing research (Ogiemwonyi & Harun, 2020). To address this, it would be beneficial to investigate the factors affecting consumers' interest in buying green items or services using the manufacturer's SNS.

Since in most of the available research about the mentioned subject, constructs such as subjective norms and e-awareness created by advertisements within social networks are mostly neglected, this article seeks to fill the above-mentioned gap by adding external variables such as subjective norms and green awareness with a focus on the influence of social networks and e-ads. The article is structured as follows: the literature review begins by presenting the concepts and theories used, as well as the variables, followed by demonstrating the conceptual relation of each variable with one another based on the cited literature, introduction of the hypothesis, and finally a restatement of the research method, results, and the conclusion.

2. Literature review

2.1 Personality traits

Shrum, McCarty and Lowrey (2013) indicated that the actions of individuals stem from their values, therefore in the absence of values for the preservation of the environment, it is impossible to witness eco-friendly product purchase. Paço *et al*. (2014), in their research, pointed out that buyers need to feel that when they buy an eco-friendly product, they are bringing about fundamental changes. Based on Goodman and Malkoc's (2012) findings, due to consumers' low level of self-involvement in environmental protection, it is less likely that individuals engage in eco-friendly behaviour. Bailey, Mishra and Tiamiyu (2014) argue that ignoring the importance of environmental problems can lead to a decline in customers' environmentally friendly behaviour.

Even though the results of research regarding consumers' environmental awareness were sometimes conflicting, most of the research in this area demonstrates that consumers believe that products made of recycled materials are of lower quality (Laroche *et al*., 2009). Moreover, it is believed that consumers find recycled products to be less efficient and lacking in performance, compared to non-recycled items and, as Mishra (2016) explained in his research, buyers are either unsure or believe that recycled products were of lower perceived quality.

According to previous research, the demographic profile of consumers is closely related to their preferences. Based on the findings, there is a positive correlation between purchasers' decision and their education (Govender & Govender, 2016). Moreover, based on the results of past research, there is a negative relationship between social responsibility and age, and the most eco-friendly consumers are of younger age (Cheung & To, 2019). Besides, gender plays a significant role in ecologically friendly activities witnessed by consumers, with women being more sensitive to eco-friendly issues compared to men (Chuang & Chiu, 2017). Finally, there are conflicting results in the case of the effect of income on consumer purchase decisions; according to Sathaye and Murtishaw (2004), consumer income and purchase decisions are positively related, on the other hand, research findings in other articles show no significant relationship between income and environmental concerns (Sinobas, 2017).

To sum up, for the above reasons, using a demographic profile to categorize consumers would be insufficient (Alagarsamy *et al*., 2021). Consumers who are environmentally aware seek to protect the environment in various ways (Holagh, Noubar & Bahador, 2014). Therefore, on the basis of the above theories and information, we present the following hypothesis:

H1: Personality traits (PT) positively correlate to green product attractiveness (GPA).

2.2 Green advertising and e-awareness (green awareness)

Businesses have always tried to demonstrate the eco-friendliness of their products to their consumers through advertisements. The information transfer from green advertising to consumers has given rise to a new form of well-informed green consumers that is forcing manufacturers to increase their product's eco-friendliness (Skvarciany *et al*., 2021). Bailey, Mishra and Tiamiyu (2016) in their research tried to understand the relation between

green value usage and buyer reactions to green products, the results of their research report a positive correlation between the two constructs. They found that values transferred from different sources such as green advertisements have a positive impact on consumers' purchase activities. Haq, Ahmed and Khalid (2019) attempt to fully comprehend the message sent by green ads. Individuals require a certain level of knowledge about green products and environmental problems, making those ads suitable only for a fraction of a society. Cho, Soster and Burton (2017) in their paper emphasize that green marketing ads have an impact on consumers who already possess information and insight regarding environmental concerns and thus stimulate them to make green purchases. Moreover, Hayes and Whitehill King (2014), in their research based on collective action theory and e-awareness, indicated that social media and social network platforms are ideal vehicles for social movements and collaborative efforts. Circulation of e-ads about the existing environmental crises on different social networks among numerous online users usually results in awareness in individuals participating on those platforms, and as a result, people with sharing ideas about these issues might cooperate to resolve them (Sander & Teh, 2019). Concerning the provided information and discussions in this section, we present the following hypothesis:

H2: Green awareness (GA) is positively correlated to GPA.

2.3 Subjective norms

A subjective norm is a set of rules that social groups apply or impose on their members, and individuals consider these rules in their decisions (Musso & Risso, 2017). In other words, subjective norms are a systematic compliance with rules for individuals within a particular group or society (Balakrishnan & Foroudi, 2019). Payne and Frow (2017) believed that an individual's behavior is based on their membership in social groups. In addition to the criteria mentioned above, Shan and Whitehill King (2015) showed in their study on the effect of electronic word of mouth (eWOM) that interpersonal relationships between members of virtual networks have a positive impact on members' behavior related to a particular issue. Nearly all studies agree on the positive influence of social ties on the diffusion of newly introduced products among members of virtual societies (Lee, Ham & Kim, 2013). Previous studies have shown that the diffusion of innovation in products and services is positively related to social impact if replacing the green product with their traditional predecessor is considered an innovation. Therefore,

the role of social networks in influencing society's interest in buying these products cannot be ignored (Balakrishnan & Foroudi, 2019). Based on the above discussion, the following hypothesis is presented:

H3: Subjective norms (SN) are positively correlated to GPA.

2.4 Green product attractiveness

Studies related to the effect of consumer attitudes and orientations on their purchase behavior show that customers' attitude toward the environment is one of the main predictors of consumer eco-friendly behavior (Mishra & Sarkar, 2018). Most studies show that there is a positive relationship between consumers' level of environmental awareness and their attitude toward eco-friendly products (Tripathi & Singh, 2016). For example, Line, Hanks and Zhang (2016) noticed that the effectiveness of consumer actions on the ecosystem have a positive influence on their actions toward environmental issues. However, regarding the consumer attitude toward environmental problems, many researchers suggest a combination of influential factors to analyze this issue (Ogiemwonyi & Harun, 2020).

H4: GPA is positively correlated to green product purchase (GPP).

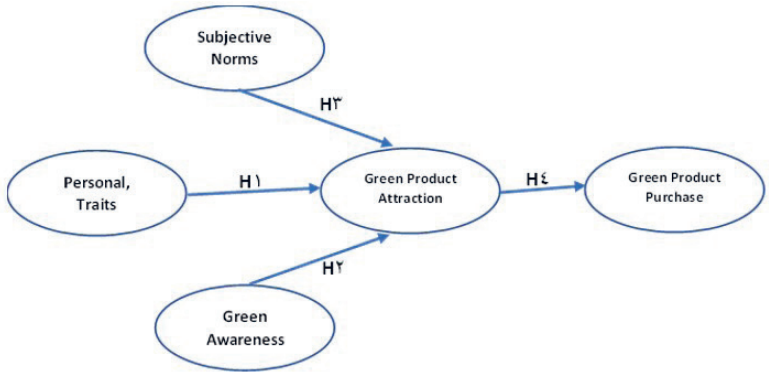
2.5 Green product purchase

Green product purchase encompasses multiple factors including, but not limited to, ethical, responsible, sustainable, and environment-friendly purchases. In other words, recycled products and products that are beneficial to the environment and society fall into that category (Zhuang *et al.*, 2021). As mentioned in the introduction, many models such as TRA and TPB by Fishbein and Ajzen (1975) are suggested related to this issue. Even though these models provide a foundation for other models, many researchers have provided different modifications of mentioned models (Laroche *et al.*, 2009; Bailey, Mishra and Tiamiyu, 2016; Paul, Modi & Patel, 2016). However, as the effectiveness of these models in addressing new issues is doubtful, their use is questionable (Joshi & Rahman, 2015). Various studies point to several behaviors of green buyers, for example, according to Maichum, Parichatnon and Peng (2016), the engagement of consumers in the purchase of green products depends on various factors such as the price, quality, and acquisition convenience of the green product (Cho, Soster & Burton, 2017).

3. Research method

In terms of its purpose, this study is part of applied research because the results of the research can be used in companies. In terms of its method, it is descriptive-correlational because it identifies the factors affecting the purchase behavior of green consumers on e-commerce websites, without manipulating the relevant variable. A correlation study is a descriptive (non-experimental) research method that examines the relationship between variables based on the purpose of the study. The hierarchical nature of the cognitive process of a behavioral model includes a variety of factors such as what users believe, what their values are, the social group norms they participate with, and consumer's attitudes toward green products (e.g., Park & Ha, 2014; Paul, Modi & Patel, 2016). Based on literature provided at the beginning of this research, we propose a conceptual model (see Fig. 1). Based on the introduced model, a set of personality traits such as beliefs, values, attitudes, etc. are among the factors that create attraction to green products among consumers. Furthermore, this green product attractiveness would ultimately result in green purchase behaviour among consumers. In addition to these constructs, social norms, such as green virtual societies, and green advertising would act as a catalyst for the purchase of green products.

Figure 1. The proposed conceptual model.



Based on the above model, the hypotheses are:

H1: There is a positive relation between personality traits (PT) and green product attractiveness (GPA).

H2: There is a positive relation between subjective norms (SN) and GPA.

H3: There is a positive relation between green awareness (GA) and GPA.

H4: There is a positive relation between GPA and green product purchase (GPP).

Customers in Iranian municipality markets from all over the country were taken as the research population. As the exact number of consumers purchasing from this market was unknown, the Cochran formula for an infinite population was used to calculate the sample size. Based on the calculation, a sample size of 532 adult customers was determined, with 426 respondents, the majority of whom were women. The demographic composition of the sample is as follows: the highest percentage of participants was in the 30–40 age group, and women were the main participants in this study with 80.1%. In addition, 43.5% of participants had an undergraduate university degree.

The study used a self-designed questionnaire based on collected literature from previous research; in addition, data gathered from the distributed questionnaire was used to test the fit and meaningfulness of the relationship between the factors identified in this study. The data gathered in this research is divided into two separate sections: The first section contains questions related to factors such as social traits and exogenous factors, namely, subjective norms and green advertising, calculated on the basis of a seven-point Likert scale. The second section consists of questions related to demographic information which were calculated based on a nominal scale. Table 1 illustrates the measurements and constructs of both questionnaires. The mentioned constructs have been gathered from previously published research and some notable studies, and their peered constructs.

The reliability index is a measure to evaluate the reliability of the model. For the reliability of the index to be desirable, the factor loadings of the indices should be more than 0.6. According to the results of Table 2 (see p. 50), it is clear that the factor loadings for all the items are above 0.6, so the reliability of the index is ensured. To evaluate the collinearity problem, a set of exogenous variables must be examined separately to determine whether a variable should be deleted or merged with another variable. VIF must be equal to 5 or less for there to be no collinearity problem. Usually, the criteria used to evaluate internal consistency reliability are Cronbach's alpha coefficient and composite reliability. If the value of Cronbach's alpha coefficient is above 0.7, reliability is confirmed, and the value of composite reliability is between 0 and 1. The higher the value, the higher the reliability (Lunneborg, 1979). In research studies, values of 0.7 and 0.9 are desirable.

As can be seen in Table 2, all variables have good reliability in the model. Composite reliability and Cronbach's alpha coefficient are more than 0.7 for all variables; as a result, the results of this research confirm the appropriate fit of the model. According to the results of Table 2, the average variance extracted (AVE) of all constructs is more than 0.5, and as a result, the validity of the convergence of the model and the appropriateness of the fit of the measurement models are confirmed (Fornell & Larcker, 1981); therefore, it can be said that the measurement model has good convergent validity.

Table 1. Notable constructs and variables in research.

Construct	Definition	Resource and scale	
Consumer beliefs	Consumer knowledge related to the function of products and their effect on the environment	(Biswas, 2017)	Seven-point Likert scale
Consumer values	Consumers' perceived level of self-involvement toward the protection of the environment	(Laroche *et al*., 2001)	
Subjective norms	Social group's influence on consumers	(Fishbein & Ajzen, 1975)	
Green ads	Green advertising of products influences purchaser's intention toward green products	(Paul, Modi & Patel, 2016)	
Consumer requirements	The degree of consumers' willingness to give up their comfort and quality to preserve the environment	(Qin, 2017)	
Consumer orientation	The level of consumers' ecological responsibility	(Singh, 2017)	
Demo-graphics	Consumers' personal information (age, gender, etc.)		Nominal scale

Table 2. Factor loading for reliability test.

	Mean	Factor loadings	VIF	Composite reliability	Cronbach's alpha	AVE
Personality traits (PT)	-	-	-	0.894	0.810	0.741
PT1	5.32	0.894	2.866			
PT2	5.21	0.854	3.65			
PT3	5.42	0.798	3.394			
PT4	5.12	0.843	2.635			
PT5	5.54	0.842	1.959			
PT6	5.32	0.856	2.122			
Green awareness (GA)		-	-	0.851	0.805	0.691
GA1	5.22	0.874	1.533			
GA2	5.17	0.891	1.578			
GA3	5.22	0.799	1.642			
GA4	5.67	0.789	1.365			
Subjective norms (SN)		-	-	0.847	0.789	0.751
SN1	5.18	0.832	1.519			
SN2	5.13	0.854	1.84			
SN3	5.21	0.821	1.889			
SN4	5.12	0.867	1.601			
Green prod. attract. GPA)		-	-	0.822	0.752	0.712
GPA1	5.78	0.791	1.749			
GPA2	5.87	0.689	1.36			
GPA3	5.68	0.812	1.429			
GPA4	5.43	0.867	2.06			
Green prod. purchase (GPP)		-	-	0.844	0.852	0.642
GPP1	5.91	0.654	2.477			
GPP2	5.89	0.891	2.141			
GPP3	5.56	0.851	2.028			
GPP4	5.71	0.823	1.682			
GPP5	5.64	0.848	1.494			

Two methods of descriptive and inferential statistics were used to analyze the collected data. In the descriptive statistics section, the central indicators (mean and standard deviation) of the research variables were discussed, using SPSS24 software. In the inferential statistics section, to fit and test the hypotheses using structural patterns, the partial least squares method and the third version of SmartPLS software were used. Since the interaction effect of two variables with a normal distribution is skewed in most cases, it is better to use the PLS method to analyze the interaction effect, which is not sensitive to the normal distribution. To analyze the patterns in the structural equation method with the partial least squares approach, one should first check the fit of the pattern and then test the research hypotheses.

4. Research results

Information about the mean, standard deviation, skewness, and kurtosis of the research variables was extracted using SPSS software (see Table 3). Since the 7-point Likert scale was used in this research, the average values are in the range of 1 to 7. Standard deviation represents the dispersion of the values of a variable around its mean value. Standard deviation is the symmetry or asymmetry of the distribution function. For a completely symmetric distribution, the skewness is 0, and for an asymmetric distribution with a tendency towards larger values, the skewness is positive. Skewness also indicates the height of a distribution; in other words, elongation is a standard of the height of the curve at the maximum point. Positive skewness means that the peak of the desired distribution is higher than the normal distribution, and negative skewness indicates that the peak is lower than the normal distribution. In general, if the skewness and kurtosis are between +2 and -2, the data has a normal distribution, which confirms the sub-normality of the data of the present study. According to the values of skewness and kurtosis in Table 3, the data distribution of all research variables is normal.

Table 3. Descriptive statistics.

Variable	N	Minimum	Maximum	Mean	Std. deviation	Skewness	Kurtosis
Personality traits (PT)	532	20	41	31.93	4.112	-.201	-.192
Green awareness (GA)	532	16	28	21.27	3.144	.373	-.797
Subjective norms (SN)	532	13	27	20.64	3.475	-.116	-.543
Green prod. attract. GPA)	532	18	28	22.76	2.025	.157	-.718
Green prod. purchase (GPP)	532	24	34	28.71	2.215	.252	-.614

To investigate the two-by-two relationship between research variables, bivariate analysis was used. Spearman's correlation coefficient shows the correlation between two ranking variables (such as the Likert levels). A correlation between two variables indicates that the increase or decrease of one variable has an effect on the increase or decrease of another variable, and this correlation does not necessarily indicate a causal relationship between the variables. The results of the bivariate analysis are presented in Table 4. The items marked with ** are significant at the 0.01 level and are considered non-significant otherwise.

Table 4. Correlation between variables.

		PT	GA	SN	GPA	GPP
PT	Pearson correlation	1				
	Sig. (2-tailed)					
GA	Pearson correlation	.386**	1			
	Sig. (2-tailed)	.000				
SN	Pearson correlation	.401**	.384**	1		
	Sig. (2-tailed)	.000	.000			
GPA	Pearson correlation	.236**	.137**	.368**	1	
	Sig. (2-tailed)	.000	.002	.000		
GPP	Pearson correlation	.422**	.283**	.330**	.358**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

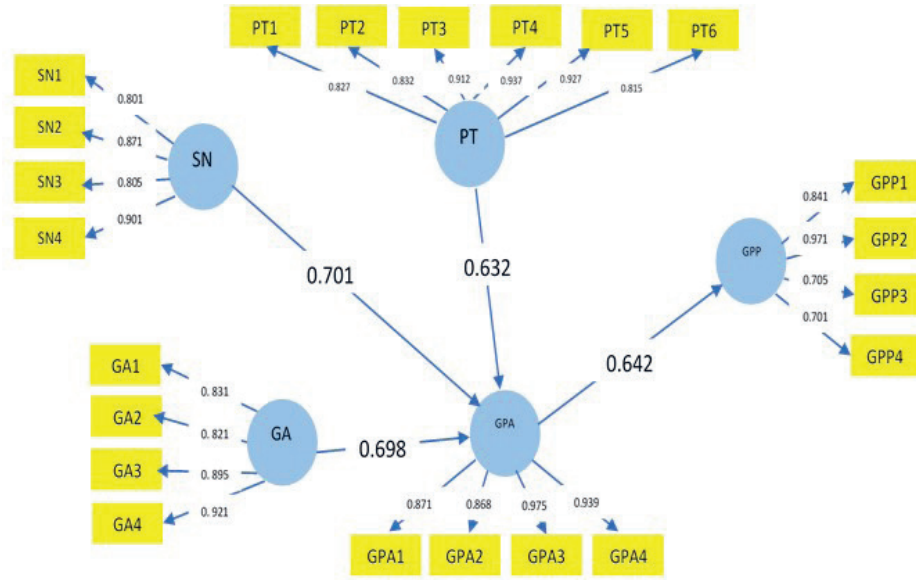
** Correlation is significant at the 0.01 level (2-tailed).

In the second part of the research, the used variables and constructs were evaluated using several indicators, structural model testing was initiated by calculating the R2 value and the statistical significance of the diverse structural coefficients (Haq, Ahmed & Khalid, 2019). The R2 value indicates 60% which explains the variation among all constructs related to purchasing behavior. Table 4 illustrates all the statistical details and path coefficients of the research constructs.

Table 5. Statistical values and path coefficients.

Relation	Path value	t-value	Sig.
PT → GPA	0.632	25.02	0.001
SN → GPA	0.701	23.33	0.001
GA → GPA	0.698	20.01	0.001
GPA → GPP	0.642	19.87	0.001

Figure 2. Final path model.



According to Figure 2, factors like personality traits which incorporate multiple constructs like consumers' demographic profile, consumer beliefs, and values, are positively related to GPA. Therefore it is possible to conclude that consumer traits, such as income, age, gender, beliefs, and values, would influence consumers' decision to consider green products in their shopping

basket, H1: personality traits (PT) positively correlate to green product attractiveness (GPA). These results confirm the findings of Zimmer, Stafford and Stafford (1994) but contradict those of Robertson (1989).

Furthermore, with a path value equal to 0.701 it is observed that subjective norms are positively correlated with green product attractiveness, so it can be inferred that other exogenous pressures exerted on consumers, such as virtual social groups, friends and families influence consumers' choice of green products, H2: Subjective norms (SN) are positively correlated to GPA. This supports the findings of Cheng, Lam, and Hsu (2006), White Baker, Al-Gahtani, and Hubona (2007), and Cronan and Al-Rafee (2008).

In addition, based on findings presented in Table 4, green ads with a path value equal to 0.698, predispose purchases to be more prone to green products, therefore, H3: Green ads (GA) are positively correlated to GPA. These findings are completely aligned with Bailey, Mishra and Tiamiyu (2016) and also support the results of Hayes and Whitehill King (2014).

Finally, based on the outcomes with a path coefficient equal to 0.642, green product attractiveness would eventually result in green product purchases in consumers, hence confirming H4: GPA is positively correlated with green product purchase (GPP). These findings are also in line with Howell and Ratliff (2019) and Zhuang *et al*. (2021).

5. Discussion

This research aimed to investigate the variables affecting consumer behavior about purchasing eco-friendly products and close the existing related logical gaps by introducing a conceptual model. Based on the findings of the study, there is a direct meaningful relation between the main constructs of the study, namely personality traits, social network norms, and green awareness. The main difference between this research and previous studies is that other researchers have only focused on a fraction of the related variables. For example, Paço *et al*. (2014) only focused on personality traits and variables affecting consumers' purchase decision in their study, or Balakrishnan and Foroudi (2019) only assessed the social networks' architecture and the norms and variables affecting consumers' purchase intention, neglecting other variables such as information channels that create awareness among customers about the benefits of green products,

for example, green advertising. Furthermore, based on the findings, there is a direct relationship between green product attractiveness and green product purchase behavior; the findings of this research are aligned with Alagarsamy *et al*. (2021) and Zhuang *et al*. (2021).

Another contribution of this study is the introduced structural model, which fills in the gaps in research in a significant way by identifying the relation of included variables in this study. Furthermore, the outcomes of this research provide a solid reference for industrial and commercial applications. Therefore this study recommends that manufacturers and businesses focus on the green aspects of their goods, and that, in addition, it would be more useful to increase the environmental awareness of their corresponding customers using advertising on social network sites. One of the main focuses of this study was to evaluate the relationship between green advertisements, especially the ones used in a social network environment, and the electronic word of mouth among the users of those social networks, personality traits and subjective norms, such as the effect of social media groups on the attractiveness of green products, which usually leads customers to purchase green products.

By adding a new, wider perspective on the factors affecting green product purchase behavior, this study attempts to contribute to both the theories and literature in relevant areas of research. In addition, one of the achievements of this study is the identification of the positive role of virtual societies and the impact of advertisements delivered through these social media channels on consumers' green product purchase behavior.

As the data used in this study were gathered from designated local market zones, due to the limitations this data imposes on the results of this study, we recommend that caution is exercised regarding the outcomes of this study.

6. Conclusions

This study has sought to expand the readers' comprehension and enhance the discussions related to the literature on the variables affecting green purchase behavior. The findings show that factors such as social media groups and electronic ads on social media, are relevant as they assign a substantial amount of value to green products in the eyes of consumers.

At the outset, it is important to point out that consumer values and consumer expectations have a significant impact on social norms, as discussed before,

this multidimensional factor can increase the purchase intention. In addition, the results indicate that consumers' beliefs are positively associated with the creation of purchase intention. Consumers' awareness of the benefits of green products to nature may increase the level of green product attractiveness in their mind, thereby increasing the possibility to engage in green product purchases from green e-commerce platforms. To sum up, the findings of this study suggest the possibility of using existing personal connections among social commerce users to promote the adoption of green products. Friends, family members, and social media influencers can be an excellent means to transfer awareness to other nodes on the social network. In addition, companies that are active in the field of green products can use social media resources to create more awareness about environmental problems and hence stimulate consumers to buy more green products, and also create a new set of social norms that would facilitate the purchase of green products. As this research was limited to a certain geographical area, gathering samples from different geographical locations to juxtapose the results acquired from different locations would increase the accuracy of the results and would also provide insight into the cultural impact on green product purchase. Also, using simulation software, such as NetLogo, and implementing different scenarios would be beneficial for future research.

Disclosure statement

Authors participating in this research declare that they do not have any competing financial, professional, or personal interests from other parties.

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