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ADVANCES IN GLOBAL SERVICES AND RETAIL MANAGEMENT

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Using the Theory of Planned Behavior to Explore Green Food Purchase Intentions

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Abstract

Predicting sustainable consumption behavior is particularly important in the field of marketing and public policy making, as environmental sustainability becomes a major concern for the public and private sector. This paper aims to contribute to the development of the extended theory of planned behavior (TPB) and to gain some insight into what drives students' intentions to purchase green food in Algeria as a developing country. Results from multiple linear regression (MLR) using data from the convenience sample of 265 students enrolled at three universities in Algiers, Algeria, shows that attitude, subjective norm, perceived behavioral control (PBC), and environmental concern have positive effects on intention to purchase green foods. Implications of the results for academics and practitioners are discussed.

Keywords: attitude, environmental concern, green food, intention, perceived behavioral control, subjective norm

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Introduction

Increased public concerns of environmental problems around the world have led to increasing demand for sustainable and green business practices (Gadenne et al., 2009). As a result, there is a global political and social consensus on managing and raising awareness of environmental issues as one of the more important social goals (Ham et al., 2016), because many industries and human activities significantly contribute to climate change. Feeding 7.85 billion people significantly contributes to global warming due to degradation of terrestrial and aquatic ecosystems, and depletion of water resources (Godfray et al., 2010; Poore and Nemecek, 2018), and food systems alone are responsible for approximately 34% of total anthropogenic greenhouse gas (GHGs) emissions (Crippa et al., 2021). Thus, reducing global food and agricultural production emissions will be one of the biggest challenges facing humanity in the future (Ritchie and Roser, 2020).

Green food, being a sustainably produced food of high quality, can be a solution to environmental problems. Having the least possible carbon and water footprint and allowing for maximum recycling of its by-products thus ensuring greater efficiencies, a sustainable food system can tackle not only environmental sustainability but also improve health, safety, affordability, quality of food

(European Commission, 2014). However, in developing countries, green food is largely not consumed widely, as it is positioned as high-quality, expensive food, while organic foods sometimes are produced for exports only (Zhu et al., 2013). Such low green food consumption model in developing countries is not sustainable, as with projected increases in income, population and yield, many developing countries will demand more than double the cropland to sustain their people by 2060 (National Academy of Sciences, 2020). Therefore, to meet the food demands of the future, this paper takes a social psychology approach to question what forms intentions to purchase green food in developing countries, with the empirical study of Algeria. Green food purchase intention can be modelled as a function of attitudes towards behaviors, subjective norm, and perceived behavioral control (Ajzen, 1991), where any of the determinants can be the most important for intention to buy green food. This study approaches the question from the TPB framework, which over the past three decades has developed as one of the most important behavioral intention formation models in various fields of research. The green marketing literature, in particular, has paid strong attention to this theory to explore customer's intention to buy green foods (e.g., Ham et al., 2015). Sustainable food purchase intentions using TPB have been explored by Alam et al. (2020) finding that subjective norm, perceived behavioral control (value and effectiveness), and attitude significantly impacts purchase intention. On the other hand, non-green (genetically modified) food purchase intentions using the TPB framework have been explored by Akbari et al. (2019) finding that attitudes, belief about negative outcomes related to behavior and its health and environmental impacts predict intention to consume these foods. Saleki et al. (2019) and Maichum (2016) find that purchase intention is mediating the relationship between subjective norm, perceived behavioral control, and attitudes (self-identity), and environmental concern (EC). Researchers have incorporated extra variables in the TPB to improve the predictive power of the model (e.g., Aluri and Palakurthi, 2011; Qi and Ploeger, 2019), and the present study includes environmental concern, which is considered to be an important predictor of behavior intentions to purchase green food (Yogananda and Nair, 2019). Paul et al. (2016) confirm the relevance and robustness of the extended TPB in the prediction of green products purchase intention within the framework of TPB in developing country case. Based on the above reasoning, this study aims to develop an extended TPB model which includes environmental concern to identifying the drivers of customers' intentions to buy green foods. Bridging the research gap for the case of Algeria, this paper seeks to answer the following five questions in particular: (1) Does students' attitude affect the intentions to purchase green food? (2) Does students' subjective norm affect the intention to purchase green food? (3) Does students' perceived behavioral control (PBC) affect the intention to purchase green food? (4) Does students' environmental concern affect the intention to purchase green food? In addition to the introduction, this study contains four more sections. Section 2 describes the TPB model used in the study, and then present relevant literature review and hypotheses. Section 3 explains the methodology. Section 4 presents the main results of the empirical study using multiple linear regression and discusses the results. Section 5 concludes, and limitations and future research agenda are outlined.

Literature Review

Theory of Planned Behavior (TPB)

TPB predicts that attitudes towards certain behavior, subjective norms, and PBC form intentions to perform behaviors, which in turn account for a large variance in actual behavior (Ajzen, 1991). Behavioral intention is an intention to perform an action or not; the subjective norm (one's

evaluation of what important others think one should do) and perceived behavioral control (how much one controls for own actions), as well as an attitude towards behavior (behavioral belief – evaluation of outcomes associated with behavior–and normative belief that specific individuals or referent groups think one should perform the behavior) might each be a significant determinant for a particular behavior, or be so in conjunction with other determinants (Ajzen, 1985). Relaxing assumption of purely volitional control over external (e.g., opportunity) and internal factors (e.g., own confidence in ability) influencing behavior in the theory of reasoned action, Ajzen (1985) extended it with a belief of control over behavior forming behavioral expectations (what one expects one actually will do) and actual control over behavior, to predict performance of behavior. TPB thus rests mainly on assumptions that any of the factors can be important for performance of behavior, depending on behavior in question and varying from person to person without reference to traits or demographic effects. Attitudes are only related to behavior in question, not objects, people or institutions.

Although the problems identified by Ajzen (1985) of timing between intention at data point obtained by researchers and actual behavior persist, the theory has been influential among social psychology scholarship in predicting the actual behavior. TFB has been applied to green behaviors with considerable success: Alam et al. (2020) applied TPB to sustainable food consumption, and Maichum (2016) applied it to green food purchase behavior to find that attitude and perceived behavioral control (value and effectiveness) and lastly, subjective norm are all significant determinants for intention, which in turn significantly impacts actual behavior; also, Qi and Ploeger (2019) found TPB to be useful to predict green food purchases. However, Yadav and Pathak (2015) show that TPB is only partially useful to predict organic food purchase.

Hypotheses Development

Attitudes Towards Green Food (ATT)

As per Ajzen (1985), attitudes towards certain behavior are determined by salient beliefs about that behavior, with each of them linking behavior to some valued outcome or attribute. For example, one might believe that purchasing environmentally friendly grown produce in specialized stores or markets from the farmers is pleasant and leads to more health and environmental benefits. The strength and outcome evaluation linked to one or several attitudinal beliefs is going to determine the overall attitude towards the behavior (Ajzen, 1985). In this research, it is distinguished between positive or negative evaluation tied to the outcome, attitudes towards the process of the behavior, and attitudes formed from the knowledge regarding the behavior with respect to other potential behaviors.

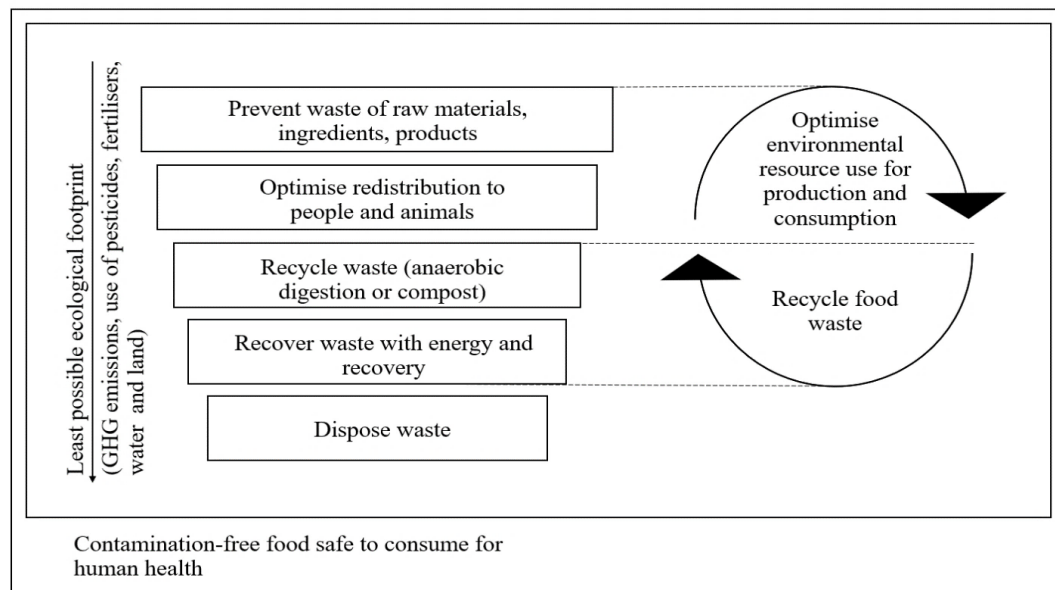
Green food has been defined in literature by referring to its environmental, as well as socio-economic sustainability qualities, or respective market regulations (Chemat et al, 2017; Leong, 2019; Zhu et al., 2013). As there is no official certification for green foods in Algeria, the green food definition used in this research is described in Figure 1.

In Figure 1, green food is defined as food that is produced, processed and transported to the end consumer in an environmentally sustainable way that is, using the least number of natural resources to reduce the environmental impact. Additional to the contamination-free and non-genetically modified food qualities that all foods sold in the Algerian market must possess, green foods can

have additional health and environmental benefits due to limited use of fertilizers and pesticides in the production and processing (United States Department of Agriculture, 2020; Wilson and Tisdell, 2001). Such production can be measured by carbon, water, or overall ecological footprint and the environmental resource use can be in turn lowered by preventing waste of raw materials, ingredients, and products, using more efficient redistribution to people or animals, recycling of waste and recovery or disposal as the last resort mechanisms to manage food production and consumption. Attitudes towards green food consumption have been explored by Leong (2019) finding that trust in green products (belief in environmental credibility, benevolence and ability) affect purchase intentions. Many studies (i.e., Ahmad and Judhi, 2010; Yogananda and Nair, 2019; Yogananda and Nair, 2019) find that belief of safety and health aspect of the product heavily influence organic and green food purchase intentions. Yada and Pathak (2016) find attitudes and environmental attitudes in particular to have a strong positive influence on organic and green food purchase intentions, and Maichum (2016) and Scalco et al. (2017) find that attitudes are the main determinants of green product purchase intention and organic food consumption. Nosi et al. (2020) and Woo et al. (2019) also find that attitudes almost completely explain and significantly positively impact behavioral intention for purchasing organic food and green food. Based on the above discussion, the hypothesis is:

- **H1:** Attitudes towards green food has a positive impact on consumer intention to purchase green food.

Figure 1. Green Food Framework



Subjective Norm (SN)

According to Bouarar and Mouloudj (2021, p.652), subjective norm refers to "the level of social pressures exerted by a reference group that can influence a person's perception, feeling, preference, judgments, attitude, intention, and behavior." According to Ajzen (1985), the subjective norm can be understood as social pressure, that is, one's beliefs that specific individuals or groups think one should or should not perform the behavior and is determined by one or several normative beliefs

concerning the reference individuals or groups, and one's intention to comply with respective individual or group. For example, intention to buy unsustainably packaged fast fashion items can be determined by influential social media user that one wishes to be more similar to, and social pressure from family members to make "green" purchases. As stated above, the subjective norm can be the most important or one of the important determinants forming intention to perform an action.

In previous empirical studies, the subjective norm in form or moral norm was found to have a significant positive effect on green food purchase intention (Saleki et al., 2019; Yogananda and Nair, 2019), but is a comparatively less important determinant for green product purchase intention in developing countries and less important than attitudes in countries at different stages of development (Maichum, 2016; Scalco et al, 2017). In the case of India, the subjective norm is found to be an insignificant predictor of organic food purchase intention (Yadav & Pathak, 2016). Yazdanpanah and Dorouzani (2015) and Qi and Ploeger (2019) find that differentiating subjective norm to account for cultural conditions delivers a better model fit to explain organic and green food purchase intentions, but even when the TPB model is not differentiated, the subjective norm has a positive impact on consumer intention for green food purchases. Therefore, the next hypothesis is proposed:

- **H2:** Subjective norm has a positive impact on consumer intention to purchase green food.

Perceived Behavioral Control (PBC)

PBC is one's belief in the ability to control specific behavior, or lack thereof, but the control also directly influences intention to perform the behavior (1991). This aspect allows dealing with behaviors over which people have imperfect volitional control, extending the theory to TPB. Factors of behavioral control can be external or internal in nature; while internal factors such as information, skills, abilities, and willpower to maintain behavior related to goal attainment are related to positive behavioral action, emotions and compulsions (i.e., emotional spending) are considered as problems of control; external factors as time and opportunity, and dependence on other people pose incomplete control over one's intended behavior (Ajzen, 1985). Perceived and not actual control directly influences intention to perform behavior; the greater the perceived behavioral control, the greater the intention to attempt or perform an action; thus, both motivation (intention) and ability (behavioral control) jointly determine behavioral achievement (Ajzen, 1991).

PBC was found to exert a positive impact on consumption decisions, by Leong (2019) and Eyinade et al. (2021) who find the willingness to pay an important factor for green and organic food purchase intention and consumption willingness. Willingness to pay a price premium for green food is in turn determined by income (Yu et al., 2014). The price of green products is also a direct determinant for green purchasing behaviour (Giao, 2018). Saleki et al. (2019) find perceived behavioral control to have a significant positive effect on purchase intention on sustainable foods. Greater behavioral control to significantly increase intentions for organic food purchase and behaviour of green consumption directly (Giao, 2018; Yadav and Pathak, 2016). Internal control factors, as knowledge of the health and safety attributes of green food, exert a positive influence on green food purchase intention, and so does familiarity with imported foods (Qi and Ploeger, 2020; Eyinade et al., 2021; Seo et al., 2018). Eco-label signalling ecological purchase, trust and

perceived risk have a positive influence on purchase intention with environmentally friendly labeled products (Wijayanto and Urip, 2018). Examining a large sample of countries of different development levels, Scalco et al. (2017) find the PBN influence to be positive, but the least important among all intention determinants for organic food consumption. Hence, the hypothesis is:

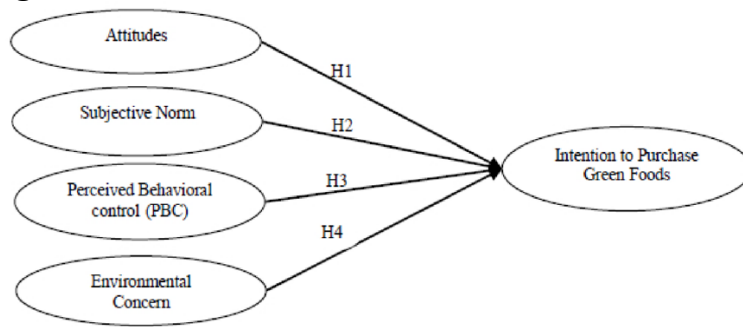
- **H3:** PBC has a positive impact on consumer intention to purchase green food.

Environmental Concern (EC)

Green food consumption is environmentally responsible consumption where consumers considered are environmentally concerned (Leong, 2019). Environmental concern has been referred to by researchers as environmental knowledge and the extent to which people are aware of environmental issues and their willingness to solve them (Alibeli and Johnson, 2015). Environmental concern in this research is defined as a state whereupon individuals are distressed about the state of the environment and environmental problems, and have an attitudinal belief that environmental problems are important generally and more specifically. In this view, perfect knowledge on environmental problems is not assumed, and rather a focus on the distressing aspect for individuals and groups is maintained, on which knowledge of environmental problems nevertheless has a positive impact (Hamilton et al., 2012). In the framework of TPB, environmental concern derived from general environmental beliefs and specific attitudes, subject to internal control factor (environmental knowledge, cognitive dimension) of perceived behavioral control. General environmental beliefs and to some extent specific attitudes positively impact environmental concern and pro-environmental intention (Han et al, 2019; Wurzinger and Johansson, 2006). Environmental concern has been researched in relation to purchasing intention, and Saleki et al. (2019) and Wang et al. (2020) find that organic food and purchase intention is positively driven by environmental concern and environmental consciousness among other factors; Qi and Ploeger (2020) find environmental consciousness to positively impact green food and purchase intention. Environmental concern and environmental knowledge are important determinants for green product purchases, and environmental concern in turn is a significant positive driver for attitudes, perceived behavioral control for green products (Maichum, 2016; Yogananda and Nair, 2019). However, some researches in developing countries suggest that environmental concern is not a significant positive determinant for intention to buy organic food (Yadav and Pathak, 2016). Contrary to marginal evidence of insignificance, the following research hypothesis is constructed:

- **H4:** Environmental concern has a positive impact on consumer intention to purchase green food.

The summary of the hypothetical relationships among the variables is shown in Figure 2. Figure 2 graphically describes the testable hypotheses within the theoretical framework of TPB adopted in this research. That is, attitude, subjective norm, perceived behavioral control and environmental concern are each expected to positively impact green food purchase intentions.

Figure 2. Research Theoretical Framework and Testable Hypotheses

Source. Compiled by authors based on Ajzen (1991)

Methods

Data Collection Process

The sample is selected using non-probability convenience sampling, which includes those who have the willingness to participate in the study. The population for the current research is students at three universities (University of Algiers 1, University of Algiers 2, and University of Algiers 3), in Algeria. Fore representative sample for the study, students were chosen for the following reasons: (1) the number of students in Algerian universities exceeded 1.6 million; this number exceeds the population of 82 countries in the world. Therefore, this category of the population can be considered a significant market segment for food industry companies; (2) according to Vermeer and Verbeke (2008), young adults are future consumers who can make difference in the years to come; and (3) student category compared to other categories of Algerians, are more likely to be more knowledgeable of green foods, and more aware of the chemical residues in conventional agricultural foods as well as their detrimental implications on health (Yazdanpanah and Forouzani, 2015). Data has been collected from October 5 to December 30, 2020. In total, 350 questionnaires were distributed, and 281 questionnaires were returned. However, the analyses were carried out on 265 questionnaires because sixteen of them were either incomplete or incorrect. Participants were intercepted at the three universities located in Algiers. The participants were required to fill the questionnaire and were promised that the process would not last more than 10 min (Menidjel et al., 2017). Participation in this research was voluntary, anonymous, and no compensation was provided (Nosi et al., 2020). The participants' demographical distribution is shown in Table 1.

Table 1. Demographic Characteristic of Participants ($n = 265$)

Characteristic	Variables	n	(%)
Gender	Male	138	52.08
	Female	127	47.92
Age	18-25	142	53.58
	26-30	84	31.70
	Above 30	39	14.72
Level of Education	Bachelor Students	98	36.98
	Master students	105	39.62
	Doctoral students	62	23.40
Household Income (Monthly)	Less than 40,000 AD	131	49.43
	40,000–70,000 AD	96	36.23
	Above 70,000 AD	38	14.34

Regarding demographic variables, Table 1 shows that 138 were male (52.08% of total) whereas 127 participants were female (47.92% of total). The participants were aged from 18 to 35 and had a mean age of 24.15 years. With regards to the level of education of the participants, 39.62% of participants are master students, and 36.98% of respondents are bachelor students, and the rest are doctoral students. With respect to participants' household income level, 14.34% of the participants reported a monthly household income above 70,000 Algerian dinars, 49.43% described their household income as less than 40,000 Algerian dinars.

Measurement Scales

This study used a survey-based questionnaire and employed a quantitative method of research to collect the sample data. The questionnaire was divided into two sections. The questionnaire included the questions on demographic profile (such as gender, age, level of education, and household income), and the questions related to the five constructs of this study. All items were adapted from previous studies and all the research constructs were measured on five-point Likert-type scales ranging from (1) strongly disagree to (5) strongly agree. A structured questionnaire developed in Arabic, English and French was pilot tested for adequacies in expressions on 30 students. The measured items for each construct are presented in Table 2.

Table 2. Measurement of Constructs

Construct	Measurement Item	Reference
Attitude	ATT1 For me, buying green food is a good idea.	Qi &Ploeger (2019); Yadav & Pathak (2016)
	ATT2 For me, purchasing green food is pleasant.	
	ATT3 For me, purchasing green food is a wise choice.	
Subjective Norm	SN1 Most people who are important to me think I should buy green food.	Qi &Ploeger (2019); Han et al. (2010)
	SN2 Most people whose opinions I value would prefer that I buy green food.	
	SN3 The extent of influence from the people or the group can strongly affect my decision.	
Perceived Behavioral Control	PBC1It is inconvenient to purchase green food, although I have the purchase intention.	Qi &Ploeger (2019); Han et al. (2010)
	PBC2 I am confident that if I want, I can buy green food.	
	PBC3 To buy or not to buy green food is entirely up to me.	
Environmental Concern	EC1I am extremely worried about the state of the world's environment and what it will mean for the future.	Hou & Wu (2021)
	EC2I think environmental problems cannot be ignored.	
	EC3 I think we should care about environmental problems.	
Intentions	INT1 I am willing to buy green food in the near future.	Nosi et al. (2020); Yazdanpanah&Forouzani (2015)
	INT2 I intend to buy green foods if they are available for purchase.	
	INT3 I plan to buy green foods if they are available for purchase.	

Findings

The internal consistency reliabilities of each set of TPB, environmental concern, and intentions measures are given in Table 3. The minimum coefficient was 0.795; a value greater than 0.6 indicates satisfactory internal consistency reliability (Malhotra, 2010). Test of normality is an important postulation of regression analysis. The reliability of the regression result requires the data to be normally distributed. According to Byrne (2016), the observed distribution was normal if both the skewness and kurtosis values were close to zero, with a measure of skewness statistics ranging between $\pm$ two (-2 and +2) and kurtosis between $\pm$ seven (-7 and +7). The results showed that skewness ranged between -0.983 and -0.784, whereas kurtosis ranged between +1.236 and +1.345, thus ensuring that the data used in the study is normally distributed.

Table 3. Reliability Analysis, Skewness, Kurtosis, Tolerance, and VIF

Constructs	Cronbach's alphas	Skewness	Kurtosis	Tolerance	VIF
ATT	0.814	-,909	1,286	,507	1,971
SN	0.935	-,784	1,236	,709	1,411
PBC	0.872	-,967	1,265	,662	1,512
EC	0.923	-,842	1,243	,516	1,939
INT	0.795	-,983	1,345	-	-

Furthermore, multicollinearity can affect any regression model with more than one predictor. The variance inflation factor (VIF) and tolerance are two closely related statistics for diagnosing collinearity in multiple regression. Hence, it is important to test for multicollinearity before conducting a regression analysis. Hair et al. (2013) suggest that when tolerance is less than 0.20 and the VIF value is above five, there is a problem of multicollinearity. The results in Table 3 suggest that the tolerance value is not below 0.2 and VIF is not greater than 5, meaning that multicollinearity is not a problem in this analysis.

Mean and standard deviation are presented in Table 4. Means for all constructs range between 3.437 and 4.080 on a scale of 1 (strongly disagree) to 5 (strongly agree) which demonstrate that the majority of participants had a positive attitude and intentions towards purchasing green foods. Table 4 shows that there is a strong relationship between attitude and environmental concern ($r=.664$, the value of $p \leq .01^{**}$). Attitude has also a strong relationship with intention to purchase green foods ($r=.744$, at the value of $p \leq .01^{**}$). Similarly, environmental concern has a strong relationship with the dependent variable, that is, the intention to purchase green food ($r=.734$, at the value of $p \leq .01^{**}$). For the relationship between subjective norms and intention, the correlation coefficient is 0.514, indicating a moderate positive linear relationship between the two variables. The same goes for the relationship between PBC and intention ($r=.539$).

Table 4. Descriptive Statistics and Correlation Matrix

Constructs	Mean	SD	ATT	SN	PBC	EC	INT
ATT	4,0138	,63050	1				
SN	3,6277	,71990	,399**	1			
PBC	3,7434	,63662	,494**	,468**	1		
EC	3,4377	,68381	,664**	,443**	,445**	1	
INT	4,0805	,60738	,744**	,514**	,539**	,734**	1

To test our research hypotheses, a multiple linear regression was conducted to evaluate the degree of importance of each variable (Table 5). Note that the global regression model is significant ($p=0,000<0,05$).

Table 5. Regression Analysis Results for Intention to Purchase Green Foods

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(constant)	,611	,155		3,956	,000
ATT	,376	,047	,391	8,073	,000
SN	,122	,035	,144	3,525	,000
PBC	,114	,040	,120	2,826	,005
EC	,317	,043	,357	7,439	,000

Independent variables: Attitude Towards Purchase Green Foods (ATT), Subjective Norm (SN), PBC, Environmental Concern (EC). Note: Model summary: $R = 83,1\%$; $R \text{ Square} = 69,1\%$; $\text{Adjusted } R \text{ Square} = 68,7\%$; $F = 145,585$; $P = 0.000$ ($p < 0.05$).

The results of this study demonstrate that a positive attitude towards buying green food products positively affecting the intentions to buy green foods ($\beta = 0.376$ $t = 8.073$) at the .05 level ($p < .05$), a hypothesis that was suggested by various authors in green marketing literature. Thus hypothesis 1 is supported. This result is consistent with the results of the study carried out by Paul et al. (2016) who found that the effect of attitude on green product purchase intention was greater than the subjective norm, PBC and environmental concern. Several studies examined the relationships between attitude toward purchasing green foods with respect to purchase intention and buying behavior. These studies found evidence of a positive relationship between attitude and green foods purchase intention (Ham et al., 2015; Qi and Ploeger, 2019; Woo and Kim, 2019), purchase intention of eco-friendly food (He et al., 2019), and purchase intention for vegetarian burgers (Shen and Chen, 2020), as well as with the intention to purchase organic foods (Ahmed et al., 2021; Honkanen et al., 2006; Nosi et al., 2020; Yazdanpanah and Forouzani, 2015).

Within the same context, it was found that subjective norm exerts a strong positive effect on the intention to purchase green foods ($\beta = 0.122$; $t = 3.525$). Thus, hypothesis 2 is supported. This suggests that for subjective norms, the perceptions of other significant individuals have a strong direct effect on the green food purchase intentions. Our result is consistent with several studies indicating that subjective norms were found to have a significant positive effect on the intention to purchase green food products (Ham et al., 2015; Qi and Ploeger, 2019; Yogananda and Nair, 2019). It also supported by Ahmed et al. (2021) saying that subjective norm positively influences behavioral intention toward organic food of young consumers. The positive relationship between subjective norm and purchase intention is also supported by other scholars (Shen and Chen, 2020).

Besides, results showed that PBC has a significant and positive effect on the purchase intention of green foods ($\beta = 0.114$; $t = 2.826$). Thus, hypothesis 3 is supported. This suggests that the high level of PBC should intensify a customer's intention to buy green foods (perform the behavior). This result is consistent with other studies conducted by Ham et al., (2015) and Yogananda and Nair (2019), as they found that PBC has a significant relationship with an intention to purchase green food. Similarly, Ahmed et al. (2021) discovered that PBC has a positive and significant effect on an intention to purchase organic food. In addition, Shen and Chen (2020) found that PBC significantly impacts the purchase intention for vegetarian burgers.

Finally, results indicate that environmental concern has a strong direct effect on the intention to purchase green foods ($\beta = 0.317$ $t = 7.439$). Thus hypothesis 4 is also supported. Empirical evidence supports a hypothesis that environmental concern affects consumers' intentions for green food. For example, Yogananda and Nair (2019) reported that health consciousness and environmental concern had a significant relationship with the intention to purchase green food. Shen and Chen (2020) found that environmental concerns significantly impact the purchase intention for vegetarian burgers. Paul et al. (2016) found that environmental concern is positively related to attitude, subjective norm, PBC, and purchase intention for green products. Also, Honkanen et al. (2006) pointed out that customer considerations about environmental concerns and animal rights issues are a key reason for buying organic food products.

Conclusions

This study aims to investigate students' green food purchase intentions using a survey conducted in three universities in Algiers, Algeria. According to TPB, behavioral intentions are predicted by

attitude toward the behavior, subjective norms, and PBC. The current study also modelled for environmental concern in relation to the intention to expand the original TPB model. The survey data was obtained from 265 participants via a paper questionnaire. Consistent with Ajzen's TPB, and similar to prior research that investigated green food purchase intentions, the findings of this study support the positive associations between intentions and subjective norms, attitudes, and PBC in line with more research by Ham et al. (2015). It was found that attitudes and environmental concern are the strongest predictors of intention to buy green food, followed by perceived behavioral constraint and subjective norm. In this respect, our results align with other country results, signifying that own attitudes are the primary driver, but the study differs from other developing country findings, as the subjective norm was not found to be the least important intention driver. The regression results reveal that three constructs of TPB and environmental concern explain 69 percent of the intention to buy green food products, while the remaining 31 percent was explained by other variables not included in our model.

Theoretical Implications

Our results provide further support for the utility of the extended TPB model in predicting intentions to buy green food products in Algeria. This study confirmed the efficacy of an extended model as a research model useful to investigate students' green food purchase intentions and validates the claim that, should three constructs of TPB be positive, customers will be more likely to have purchase intentions for green foods. The TPB constructs explained a significant proportion of the variances in intentions. In addition, an additional construct (environmental concern) in the new model considerably contributes to deepening our understanding of the factors that increase or lessen customers' tendencies to buy green food products. Furthermore, this study is one of the first applications of the TPB to green food consumption behaviors in the context of Algeria as a developing country. Accordingly, our study suggests that the TPB can usefully be applied in developing countries settings to predict the customers' purchase intention on green foods.

Practical Implications

The results indicated that students with a higher degree of environmental concern are more likely to form intentions to purchase green foods, thus making them a highly desirable marketing target for green food marketers. Students who are a positive attitude toward purchasing green foods may be another important segment to create the right strategy for market segmentation. Besides, students' positive attitudes towards green food have direct consequences for their intention to purchase green food. For example, the beliefs that green food consumption would improve customers' health and bring a better quality of life would form an overall attitude towards green food. Therefore, efforts to affect these attitudes, for instance through social media networks, hold much importance. Research results confirmed that subjective norms were found to have a significant positive effect on the intention to purchase green foods. Information about green foods from sellers might be biased. Thus, the customer will seek advice or opinion from their most trusted referent individual or group such as family members, friends, and colleagues. Accordingly, marketers should encourage positive word of mouth (WOM) publicity about their green food. Finally, our results suggest that a high level of PBC should strengthen a student's intention to green food purchase. Thus, to further strengthen the PBC, sustainable food companies can provide sales promotions (such as discounts, coupons, gifts) as an excellent short-term tactic, so as initial trial behavior can be motivated.

Limitations and Future Recommendations

The current study does have several limitations as well. First, the sampling method in the current study was utilizing convenient sampling, hence, the sample may not reflect the general population, and this limits the ability to generalize the results of the study. Therefore, future research could replicate the study using random sampling so that results can be more generalizable. Second, all of the respondents are students. This means, they can have a high level of general environmental concern, because most students at college have studied or researched at least once the topic about green, such as green economy, green marketing, and green accounting. Thus, it is recommended that future research would be better conducted with other categories of consumers, such as patients (obesity, diabetes), older persons, employees, etc., which would make the finding would be more meaningful. Third, even though an extension of TPB was attempted by incorporating environmental concern into the model, some marketing researchers have pointed out the need for the inclusion of other constructs when study the green food buying behavior in order to increase the explanatory power of the model. Future studies could include constructs that deal with customer perceptions such as perceived value, perceived price, and perceived quality. Lastly, this study examined the green foods purchase intention in general and did not consider specific kinds of food products. Thus, it is highly recommended for future studies to focus on particular foods, such as olive oil or vegetables, and meat.

References

- Ahmad, S. N. B., & Judhi, N. (2010). Organic food: A study on demographic characteristics and factors influencing purchase intentions among consumers in Klang Valley, Malaysia. *International Journal of Business and Management*, 5(2), 105-118.
- Ahmed, N., Li, C., Khan, A., Qalati, S.A., Naz, S., & Rana, F. (2021). Purchase intention toward organic food among young consumers using theory of planned behavior: role of environmental concerns and environmental awareness. *Journal of Environmental Planning and Management*, 64(5), 796-822. <https://doi.org/10.1080/09640568.2020.1785404>
- Ajzen, I (1985). From Intentions to Actions: A Theory of Planned Behavior. In Editors: Kuhl J., Beckmann J. (Eds.), *Action Control*, 11-39. <https://doi.org/10.1007/978-3-642-69746-32>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Akbari, M., Ardekani, Z. F., Pino, G., & Maleksaeidi, H. (2019). An extended model of Theory of Planned Behavior to investigate highly-educated Iranian consumers' intentions towards consuming genetically modified foods. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2019.04.246>
- Alibeli, M. & Johnson, C. (2009). Environmental concern: A Cross National Analysis. *Journal of International and Cross-Cultural Studies*, 3(1), 1-8. <https://doi.org/10.1016/j.jenvp.2020.101494>
- Aluri, A., & Palakurthi, R. (2011). The influence of demographic factors on consumer attitudes and intentions to use RFID technologies in the US hotel industry. *Journal of Hospitality and Tourism Technology*, 2 (3), 188-203. <https://doi.org/10.1108/17579881111173749>
- Bouarar, A.C., & Mouloudj, K. (2021). Using the theory of planned behavior to explore employee's intentions to implement green practices. *Dirassat Journal Economic Issue*, 12(1), 641-659. <https://doi.org/10.5281/zenodo.4478729>
- Byrne, B.M. (2016). *Structural Equation Modeling with AMOS: Basic Concepts Applications, and Programming*. London: Routledge.
- Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F. N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, 2, 198–209. <https://doi.org/10.1038/s43016-021-00225-9>
- Department for Environment, Food and Rural Affairs (2021). Food and drink waste hierarchy: deal with surplus and waste. <https://www.gov.uk/government/publications/food-and-drink-waste-hierarchy-deal-with-surplus-and-waste/food-and-drink-waste-hierarchy-deal-with-surplus-and-waste>

- European Commission (2014). Sustainable Food. <https://ec.europa.eu/environment/eussd/food.htm>
- Eyinade, G. A., Mushunje, A., & Folaranmi, S. G. Y. (2021). The willingness to consume organic food: A review. *Food and Agricultural Immunology*, 32(1), 78-104. <https://doi.org/10.1080/09540105.2021.1874885>
- Gadenne, D.L., Kennedy, J., & McKeiver, C. (2009). An empirical study of environmental awareness and practices in SMEs. *Journal of Business Ethics*, 84(1), pp. 45–63. <https://doi.org/10.1007/s10551-008-9672-9>
- Giao, H. N. K. (2018). The Affect of Destination Image Factors on Revisit Intention of Domestic Tourists at Ba Ria – Vung Tau Province, Vietnam [Abstract]. *Proceedings of the global conference on business, hospitality, and tourism research* (1), 39-40. doi:10.5038/2641-5046-v1
- Godfray, H.C., Beddington, J.R., Crute, I.R., Haddad, L., Lawrence, D., Muir, J.F., Pretty, J., Robinson, S., Thomas, S.M., & Toulmin, C. (2010). Food security: the challenge of feeding 9 billion people. *Science*, 327(5967), 812-818. <https://doi.org/10.1126/science.1185383>
- Hair, J.F., Hult, G.T.M., Ringle, C., & Sarstedt, M. (2013). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Thousand Oaks CA: Sage Publications.
- Ham, M., Jeger, M., & Ivković, A.F. (2015). The role of subjective norms in forming the intention to purchase green food. *Economic Research-Ekonomska Istraživanja*, 28(1), 738-748. <https://doi.org/10.1080/1331677X.2015.1083875>
- Ham, M., Mrčela, D., & Horvat, M. (2016). Insights for measuring environmental awareness. *Ekonomski Vjesnik - Econviews – Review of Contemporary Entrepreneurship, Business, and Economic Issues*, 29(1), pp. 159-176.
- Hamilton, L.C., Cutler, M., J., & Schaefer, A. (2012). Public knowledge and concern about polar-region warming. *Polar Geography*, 25 (2), 155-168. <https://doi.org/10.1080/1088937X.2012.684155>
- Han, H., Hsu, L. T. J., & Sheu, C. (2010). Application of the theory of planned behavior to green hotel choice: Testing the effect of environmental friendly activities. *Tourism Management*, 31(3), 325-334. <https://doi.org/10.1016/j.tourman.2009.03.013>
- Han, H., Moon, H., & Hyuan, S. S. (2019). Uncovering the determinants of pro-environmental consumption for green hotels and green restaurants: A mixed-method approach. *International Journal of Contemporary Hospitality Management*, 32 (4), 1581-1603. <https://doi.org/10.1108/IJCHM-04-2019-0354>
- He, Q., Duan, Y., Wang, R., & Fu, Z. (2019). Factors affecting consumers' purchase intention of eco-friendly food in China: The evidence from respondents in Beijing. *International Journal of Consumer Studies*, 43(5), 457-470. <https://doi.org/10.1111/ijcs.12525>
- Honkanen, P., Verplanken, B., & Olsen, S. O. (2006). Ethical values and motives driving organic food choice. *Journal of Consumer Behaviour*, 5, 420-430. <https://doi.org/10.1002/cb.190>
- Hou, H. (Cynthia), & Wu, H. (2021). Tourists' perceptions of green building design and their intention of staying in green hotel. *Tourism and Hospitality Research*, 21(1), 115–128. <https://doi.org/10.1177/1467358420963379>
- Leong, T.P. & Mariadass, A.M. (2019). Factors affecting young adults' purchase intention of green food products in Malaysia. *Journal of Tourism, Hospitality & Culinary Arts*, 11(2), 20-45.
- Malhotra, N.K. (2010), Marketing research: An applied orientation (6th Ed.). New Jersey: Pearson.
- Menidjel, C., Benhabib, A., & Bilgihan, A. (2017). Examining the moderating role of personality traits in the relationship between brand trust and brand loyalty. *Journal of Product & Brand Management*, 26(6), 631-649. <https://doi.org/10.1108/JPBm-05-2016-1163>
- National Academy of Sciences (2020, April 28) 2019 US-UK Scientific Forum on Sustainable Agriculture: 1- Welcome by David Tilman [Video]. YouTube. https://youtu.be/-nA2-l_4z3U
- Nosi, C., Zollo, L., Rialti, R., & Ciappei, C. (2020). Sustainable consumption in organic food buying behavior: the case of quinoa. *British Food Journal*, 122(3), 976-994. <https://doi.org/10.1108/BFJ-09-2019-0745>
- Paul, J., Modi, A., & Patel, J. (2016). Predicting green product consumption using theory of planned behaviour and reasoned action. *Journal of Retailing and Consumer Services*, 29, 123-134. <https://doi.org/10.1016/j.jretconser.2015.11.006>
- Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. *Science*, 360(6392), 987-992. <https://doi.org/10.1126/science.aag0216>
- Qi X, Yu H, & Ploeger A. (2020). Exploring influential factors including COVID-19 on green food purchase intentions and the intention-behaviour gap: A qualitative study among consumers in a Chinese context. *International Journal of Environmental Research and Public Health*, 17(19), 7106. <https://doi.org/10.3390/ijerph17197106>

- Qi, X., & Ploeger, A. (2019). Explaining consumers' intentions towards purchasing green food in Qingdao, China: The amendment and extension of the theory of planned behavior. *Appetite*, 133, 414-422. <https://doi.org/10.1016/j.appet.2018.12.004>
- Ritchie, H., & Roser, M. (2020). Environmental impacts of food production. Our World Data. Retrieved from: <https://ourworldindata.org/environmental-impacts-of-food>
- Saleki, R., Quoquab, F., & Mihammad, J. (2019). What drives Malaysian consumers' organic food purchase intention? The role of moral norm, self-identity, environmental concern and price consciousness. *Journal of Agribusiness in Developing and Emerging Economies*, 9(5), 584 – 603. <https://doi.org/10.1108/JADEE-02-2019-0018>
- Scalco, A., Noventa, S., Sartori, R., & Ceschi, A. (2017). Predicting organic food consumption: A meta-analytic structural equation model based on the theory of planned behavior. *Appetite*, 112, 235-248. <https://doi.org/10.1016/j.appet.2017.02.007>
- Seo S., Li, X., & Nurhidayati, V. A. (2018). Familiarity Matters on Purchase Intention of Imported Fruit in Taiwan? [Abstract]. *Proceedings of the global conference on business, hospitality, and tourism research (1)*, 95, doi:10.5038/2641-5046-v1
- Shen, Y-C., & Chen, H-S. (2020). Exploring consumers' purchase intention of an innovation of the agri-food industry: A case of artificial meat. *Foods*, 9(6), 1-15. <https://doi.org/10.3390/foods9060745>
- United States Department of Agriculture (2020). Food and Agricultural Import Regulations and Standards Country Report Algeria. https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Food%20and%20Agricultural%20Import%20Regulations%20and%20Standards%20Country%20Report_Algers_Algeria_12-31-2019
- Vermeir, I., & Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. *Ecological Economics*, 64(3), 542-553. <https://doi.org/10.1016/j.ecolecon.2007.03.007>
- Wang, J., Pham, T.L., & Dang, V.T. (2020). Environmental consciousness and organic food purchase intention: A moderated mediation model of perceived food quality and price sensitivity. *International Journal of Environmental Research and Public Health*, 17(3), 850. <https://doi.org/10.3390/ijerph17030850>
- Wijayanto, W., & Uripi, C. R. (2018) Eco-Label and Purchase Intention: The Role of Product Image to Green Products [Abstract]. *Proceedings of the global conference on business, hospitality, and tourism research (1)*, 101. doi:10.5038/2641-5046-v1
- Wilson, C., & Tisdell, C. (2001). Why farmers continue to use pesticides despite environmental, health and sustainability costs. *Ecological Economics*, 39, 449-462. [https://doi.org/10.1016/S0921-8009\(01\)00238-5](https://doi.org/10.1016/S0921-8009(01)00238-5)
- Woo, E., & Kim, Y.G. (2019). Consumer attitudes and buying behavior for green food products: From the aspect of green perceived value (GPV). *British Food Journal*, 121(2), 320-332. <https://doi.org/10.1108/BFJ-01-2018-0027>
- Wurzinger, S. & Johansson, M. (2006). Environmental concern and knowledge of ecotourism among three groups of Swedish tourists. *Journal of Travel Research*, 217-226. <https://doi.org/10.1177/0047287506291602>
- Yadav, R., & Pathak, G.S. (2016b). Young consumers' intention towards buying green products in a developing nation: Extending the theory of planned behavior. *Journal of Cleaner Production*, 135, 732-739. <https://doi.org/10.1016/j.jclepro.2016.06.120>
- Yazdanpanah, M., & Forouzani, M. (2015). Application of the theory of planned behaviour to predict Iranian students' intention to purchase organic food. *Journal of Cleaner Production*, 107(1), 342-352. <https://doi.org/10.1016/j.jclepro.2015.02.071>
- Yogananda, A.P.Y., & Nair, P. B. (2019). Green food product purchase intention: factors influencing Malaysian consumers. *Pertanika Journal of Social Sciences and Humanities*, 27(2), 1131-1144.
- Yu, X., Gao, Z., & Zeng, Y. (2014). Willingness to pay for the “Green Food” in China. *Food Policy*, 45, 80–87. <https://doi.org/10.1016/j.foodpol.2014.01.003>