

Original Research

Determinants and Outcomes of Ecological Behaviors of Young Consumers in Iran

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Abstract

Ecological behavior is defined as actions which contribute towards environmental preservation and/or conservation. Owing to an increasing awareness in environmental crises, consumers are more sensitive towards green products when making their purchasing decisions. The young generation seems to have a different attitude and belief which enables them to reflect on their choice of green products. The aim of this study is to investigating the determinants and outcomes of ecological behaviors of young consumers in Iran. The population of this study consisted of all students of the main universities of Ardabil city in Iran including University of Mohaghegh Ardabili, Islamic Azad University of Ardabil, New Novin Institution of Higher Education and Moghadas Ardabili Institution of Higher Education. According to the unlimited population, the sample size was determined 379 based on the Morgan table, that using non-probability sampling method was selected. Standard questionnaires have been used to measure the research variables. Smart PLS software was used for data analysis. According to the results, environmental knowledge, healthy food and healthy lifestyle have a positive effect on the ecological behaviors of the consumers. Moreover, ecological behaviors of the consumers have a positive effect on green purchase behavior and green purchase intention. This research is one of the few studies that has been conducted on green consumer behavior in developing countries and can provide practical implications for promoting such behaviors in the society.

Keywords: Ecological Behavior, Environmental Knowledge, Healthy Food, Healthy Lifestyle, Green Purchase Behavior, Green Purchase Intention.

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Introduction

There have been many claims during the last decades that environmental problems in overall bring forward a constantly worsening ecological crisis (Tilikidou & Delistavrou, 2008) The marketing principles known as green marketing e.g., (Stavros P, Michael , Robert , & Markos H. , 1999); (McDonagh & Clark, 1995); (Ottman, Stafford, & Hartman, 2006); (Peattie & Charter, 1997); (Peattie & Crane, Green marketing: legend, myth, farce or prophesy?, 2005) have evolved over recent decades and will continue to do so as a large number of consumers worldwide become more concerned about the importance of protecting the natural environment (Álvarez-González, López-Miguens, & Caba, 2014).

Ecological behavior of consumer is related to the sensitivity of the consumer, the vigilance, and the responsiveness of consumers towards ecological concerns, environmental forces and ecologically healthy products, such as healthy food. Responsible businesses and organizations play their outstanding role through producing, improving, packaging and delivering products in a way that does not harm humans and the natural environment (Smith & Paladino, 2010) . The factors determining ecological behavior of consumers can be as follows: 1) Environmental knowledge 2) Healthy food and 3) healthy lifestyle (Fryxel, 2003)

Green purchasing refers to the purchase of environmentally friendly products and avoiding products that harm the environment. (Chan R. Y., 2001) Green purchasing is most often measured as green purchase intention and behavior. Green purchase intention is related to an individual's inclination to buy and use products with eco-friendly features when purchase considerations are based on the product features and source country of the product (Joshi & Rahman, 2015) Green purchase behavior represents a complex form of ethical decision-making behavior and is considered a type of socially responsible behavior. As a socially responsible consumer, the green consumer "takes into account the public consequences of his or her private consumption and attempts to use his or her purchasing power to bring about social change" (Mostafa, 2007).

Environmental pollution resulting from human production and human consumption is one of the issues that has been widely reported by active organizations in this area as a threat to humankind. In this regard, some industries have taken measures to reduce the final impacts they might have on the environmental. Like many countries in the world, Iran also suffers from high levels of air pollution, low water quality, high levels of traffic-based noise pollution, high rates of non-recoverable waste and rapid reduction of energy supplies. Environmental problems are mainly caused by maladaptive consumption and unstable activities. Changing one's lifestyle and consumption habits, one can participate in the elimination of this issue. The Iranian government can adopt different strategies to encourage sustainable consumption and develop green behavior. Given the increasing environmental issues and the adverse effects of consumerism on the physical and mental health of humans, it is inevitable to consider green products (Hamdi & Karim , 1390)

The young generation has a considerably different concept and attitude comparing to other generations. They tend to react more flexibly than others, and enjoy collaboration

and innovation fosters their consideration of society. Young buyers tend to search for more information before making an actual purchase. Moreover, they do not only consider the present, but are also concerned about the future effect of their present actions, preferring to become lifelong customers of the green market (Kanchanapibul, Lacka, Wang, & Chan, 2014) As such, the aim of this study is to investigate the determinants and consequences of ecological behaviors of young Iranian consumers.

Literature review

Ecological behavior

Green marketing is defined as "the effort by a company to design, promote, price and distribute products in a manner which promotes environmental protection" (Suki, Suki, & Azman, 2016). The literature contains numerous proposed definitions for green marketing, the most widely-used one being suggested by Peattie (1995), who defines it as "the holistic management process responsible for identifying, anticipating and satisfying the needs of customers and society, in a profitable and sustainable way". This new way of understanding marketing implies incorporating environmental aspects into proposals and decisions related with the product design and production process, pricing, the type of communication conducted in relation with these products, and distribution policies in the target markets (Wells, 2012) The purchase of green products is one of the items in the environmentally friendly behavior scale. However, researchers have not yet ascertained how environmentally friendly behavior could be related to the purchase behavior. Practically, if people behave more environmentally friendly, they should buy more environmentally friendly products as well (Liobikiene, Grincevičienė, & Bernatoniene, 2017) Ecological Behavior is defined as "actions which contribute towards environmental preservation and/or conservation" (Chan, Hon, Chan, & Okumus, 2014)

From early 1990s, the ecological marketing research – reflecting the mounting of public concerns – began to expand (Schlegelmilch, Bohlen, & Diamantopoulos, 1996). During the 1970s, pro-environmental consumers were being understood as ecologically concerned consumers while in the 1990s they were renamed to ecologically conscious (not just concerned) consumers. After 2000, the main research direction was to examine not only concerns but actual behaviors, mostly pro-environmental purchasing behavior. In fact, there are very few researchers, who investigated other behaviors besides green buying, for example, non-purchasing behaviors (Tilikidou & Delistavrou, 2008). The analysis of the ecological behavior concept includes different approaches. Some researchers studied it as the level of environmental responsibility (Stavros P, Michael, Robert, & Markos H., 1999) and as the level of ecological awareness. Likewise, more recent studies have analysed the consumers' environmental commitment degree considering their active or passive contribution to the environmental improvement. Moreover, some other works assess the consumer's commitment through their active and positive attitude towards recycling and towards the purchase of less polluting products (Fraj-Andrés & Martínez-Salinas, 2007)

Among the determinants of ecological behavior of consumers three factors can be referred: 1) Environmental knowledge; 2) Healthy food and 3) Healthy lifestyle (Fryxell, 2003). Each one of these factors will be described in continue.

Environment knowledge

Environmental knowledge has become one of the most important intangible assets for organizations in the current competitive environment. Environmental knowledge can be defined as the degree to which an individual or organization becomes aware of and concerned with ecological issues (Martinez-Martinez & Cegarra-Navarro, 2015). Environmental knowledge is defined as "a general knowledge of facts, concepts and relationships concerning the natural environment and its major ecosystems" (Fryxel, 2003). It represents the state of knowledge or what customers know about the environment, awareness of the environment problems, emotional involvement in environmental issues, and consequences of human actions on the environment. Additionally, it involves customers' holistic views of the ecological system as well as awareness of responsibilities towards sustainable environmental development (Goh & Balaji, 2016). Today, environmental knowledge is not only an ideology but also an important issue in market competition which influences consumer behavior (Nakhaei & Khayeri, 2012). Previous Studies in this area have examined different factors that influence one's ecological behavior, such as environmental knowledge. In this regard, Kaplan (1991) Argued that the state of one's knowledge about an issue influences one's decision making significantly. Generally, People tend to keep away from situations where there is not enough knowledge to guide their behavior, and situations where the possibility of uncertainty is greater. Amyx et al. (1994) Stated that people who are extremely knowledgeable about environmental issues are more eager to pay extra money to buy environmentally friendly products (Chan, Hon, Chan, & Okumus, 2014). Existing research studies suggest that environmental knowledge plays a key role in the customers' decision to purchase green products. This has been supported by (Mostafa, 2007) and (Bamberg & Möser, 2007), who emphasized the role of knowledge in determining the customers' attitude and intentions towards organic Products and pro-environmental behaviors. (Smith & Paladino, 2010) found that environmental knowledge will enhance the customers' positive attitudes and intentions towards organic produce. (Paul & Rana, 2012). demonstrated that demographics, health benefits, and availability increase the ecological awareness of customers, which in turn positively influence the purchase intentions and satisfaction from organic food. (Suki N. M., 2013). concluded that environmental knowledge significantly impacted young customers' ecological behaviors such as recycling and purchasing organic food. More recently, (Chang & Wu, 2015) showed that environmental knowledge impacts the message framing of the green advertisements in influencing the customers' pro-environmental behaviors. These studies indicate that customers' environmental knowledge enables them to differentiate the attributes of environmentally friendly products from conventional products and this leads to the formation of positive, favorable attitudes towards the green products (Goh & Balaji, 2016). Recent decades have witnessed a dramatic increase in environmental awareness around the world, and behavioral literature suggests that there is a positive relationship between knowledge and behavior (Chan R. Y., 2001). In addition, many studies have shown that environmental awareness and knowledge is directly related to many consumer behaviors (Barber, Taylor, & Strick, 2009). Increased environmental awareness has a profound effect on consumer behavior and the expansion of the green products market (Schlegelmilch , Bohlen, & Diamantopoulos , 1996). A large number of customers show their increased environmental awareness and their preferences for green company products through their

willingness for green purchase intention and paying more for environmentally friendly products and services (Kamalipourazad, Sharifi, Maivan, Behmanesh, & Chashmi, 2016). Additionally, existing theories in this regard show that consumers who are aware of environmental problems are more likely to have intention for green purchase (D'Souza, Taghian, & Khosla, 2007). Thus, the first hypothesis is as follows:

H1: Environmental knowledge affects young consumer ecological behaviors.

Healthy food

Healthy food normalizes the biological body, physiological functions or maintains the well-being of human bodies (Suki N. M., 2013). Inappropriate nutrition plays an important role in the development of non-communicable diseases (Variyan JN, 1998). As has been shown, some dietary patterns are associated with 4 out of 10 death causes (cardiovascular disease, certain types of cancers, stroke, and type 2 diabetes). A healthy diet plays an important role in reducing the risk factors of non-communicable diseases such as obesity, hypertension and hypercholesterolemia (Mirmiran, Azadbakht, & Esmailzadeh, 2004). Ahmad and Juhdi (2008) noted that perception towards organic food affects consumers' pro-environmental behavior (Suki N. M., 2013). Thus, the second hypothesis is as follows:

H2: Healthy food affects young consumers' ecological behaviors.

Healthy lifestyle

Lifestyle can be interpreted as a set of behaviors that one uses to not only take into account his current needs, but also envisage the particular narrative he chooses for his personal identity (Rahmat Abadi & Aghabakhshi, 2006). Lifestyle as an important component is closely related to different aspects of health, including quality of life (Feizi, Aliyari, & Roohafza, 2012); so that, marketing people's way of life, their individual and social successes can be evaluated in their lives (Cockerham, 2005). Way of life has two positive and negative aspects (healthy and risky aspects). Many studies have shown that those who choose a healthy way of life have less risky behaviors. Cockerham defines a healthy way of life as follows: way of life refers to collective patterns of healthy behaviors which are based on people's choices and according to their position of life. Activities such as alcohol use, smoking, fasten seat belts, etc. can strengthen or weaken the position of a person's life. In other words, a healthy way of life is a collection of choices by people that fit their positions of life. These choices affect health-related behaviors (Cockerham W. C., 1997). Previous research (Wertenbroch, 1998) noted that restrained eaters make a choice to purchase small packaged foods at a premium price to help them reduce caloric intake in order to have a healthy way of life. Catoi et al. (2010) confirmed that price fairness in business practices has a direct influence on perceived value and on buying intentions (Suki N. M., 2013). Thus, the third hypothesis is as follows:

H3: A healthy way of life affects young consumers' ecological behaviors.

Green purchase behavior

Green purchase behavior of consumer refers to a behavior by which the consumer is looking for products that do not have a detrimental effect on the health of the environment and society and the materials used in the production of these products are environmentally friendly. Consumers with environmental concerns purchase products and services they think have a positive (or less negative) effect on the environment. Green purchase behavior involves endeavor to save energy and refuse to buy products with inappropriate packaging. These behaviors include buying standard sprays, purchasing drinks in biodegradable containers, purchasing and consuming products made from recyclable plastic and paper, energy-efficient light bulbs and detergents made of eco-friendly materials (Maroofi, Sadeghi, & Mojoodi, 2011). Other green behaviors include the purchase of products made of or packed with recyclable materials and the purchase of products with refillable packaging (Mohammadian & Khataei, 2011). Green purchase behavior refers to products that are environmentally friendly, useful, recyclable or protected, and responsive and sensitive to environmental concerns (Mostafa, 2007). In a study, Boztepe (2012) concluded that environmental awareness, green product features, green promotion, and green price have a positive impact on consumer purchase behavior. In an attempt to explain consumer green purchase behavior, previous studies have focused on describing the underlying values, attitude and behavioral intentions toward environmentally friendly products (Davies, Foxall, & Pallister, 2002); (Vermeir & Verbeke, 2006); (Wheale & Hinton, 2007); (Joshi & Rahman, 2015)). (Mas'od & Chin, 2014) concluded in their research that consumer ecological behaviors have a positive impact on the behavior of purchasing green products. Thus, the fourth hypothesis is as follows:

H4: Consumer ecological behaviors affect the behavior of purchasing green products.

Green purchase intention

Consumers choose products based on a combination of product features that best meet their needs in terms of value, cost, and satisfaction. It is important for green customers that their money does not boost, promote, or support a normal and non-green product; doing so, they protect the environment and develop renewable resources. Green purchase intention has been defined in different ways. Green purchase intention refers to the desire of a person to prefer a product with favorable environmental characteristics to an ordinary product. In purchasing based on the theory of rational action, the only major factor before a real behavior is the intention or willingness of an individual to perform a job or behavior through which it is possible to predict real behavior at a very high level (Abbasi, Enayati, & Leadership, 2011). (Rashid, Jusoff, & Kassim, 2009) defined green purchase intention as the probability and the willingness of individuals in their purchase consideration to give preference to green products compared to conventional products. The green purchase intention is described as a distinct kind of environmentally friendly behavior that individuals perform to express their concern to the environment. Furthermore, green purchase intention is confirmed as a proxy for the actual green purchase behavior and an accurate measure of future sales compared to other sales forecasting tools. Thus, since purchase intention finally leads to purchase behavior, Follows and Jobber (2000) have recommended it as a main predictive component (Chekima, Wafa,

Igau, Chekima, & Sondoh, 2016) A green consumer is individual consumer who links their purchasing behavior towards acts that will preserve Mother Nature. Green purchase intention refers to consumers' willingness to purchase green products; intentions capture the motivational factors that influence green purchase behavior of consumers (Joshi & Rahman, 2015). However, majority of the studies observed a weak relationship between the expressed positive attitude of consumers toward purchasing green products and their actual purchase behavior, generally referred to as the attitude–behavior gap (Tanner & Wölting Kast, 2003); (Vermeir & Verbeke, Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values., 2008); (Webster Jr, 1975); (Wheale & Hinton, 2007); (Joshi & Rahman, 2015)). (Smith & Paladino, 2010) concluded that not only the individual effects of a product, but also environmental outcomes of it, are effective in the prediction of purchasing green products. (Hamdi, K; Ghafarirs, A, 1390) concluded in their study that green products are more prevalent among young Tehrani consumers. They showed that factors such as social effects, environmental attitude, environmental concern, understanding the importance of environmental issues, individuals' perception of social responsibility, understanding the effectiveness of environmental behavior, and individuals' concerns about personal perception have effect on the green purchase intention of young people. (Mas'od & Chin, 2014) concluded in their research that consumer ecological behaviors had an impact on the intention of purchasing green products. Thus, the fifth hypothesis is as follows:

H5: Consumer ecological behaviors affect the intention of purchasing green products.

Given the effect of the variables of environmental knowledge, healthy food, and healthy way of life on informed environmental consumer behavior and the effect of this variable on GPB and GPI, the model of the current research, based on the research of (Suki N. M., 2013) and (Mas'od & Chin, 2014), is illustrated below. Figure 1 shows the conceptual model of the research.

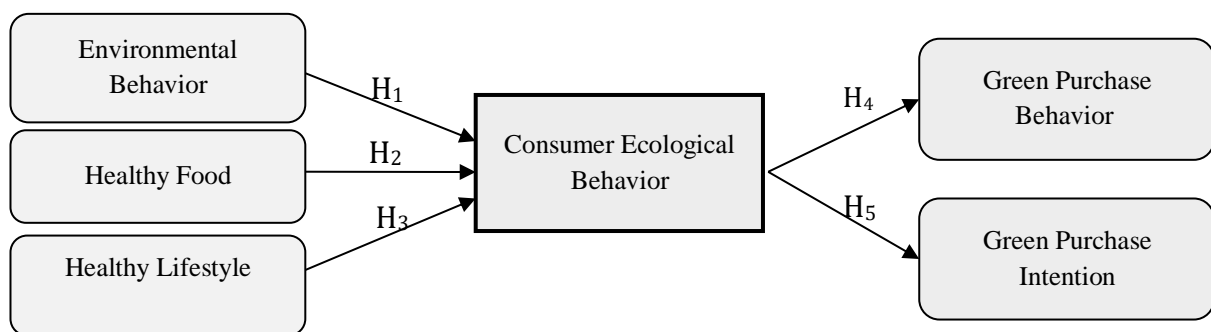


Figure 1. Conceptual Model of the Research (Suki N. M., 2013); (Mas'od & Chin, 2014))

Methodology

Since this research describes and studies what is present, it is a descriptive-survey research. In other words, in this research the researcher tries to analyze events and occurrences as they are, without any interference or conclusion. Moreover, since the

present research is aimed at solving a problem and its results can be used practically, it is an applied one.

Population and sampling

The statistical population of this research consisted of young consumers in Ardabil city as one of the metropolises in Iran. Studies show that young people often reflect their powerful consumer innovations on others. Moreover, consumer innovation, in addition to education, age, and income, is also related to factors such as culture, values, and customer personality (Lao, 2014). Students of the main universities of Ardabil including University of Mohaghegh Ardabili, Islamic Azad University of Ardabil, Ardabil New non-profit institution of higher education and Moghaddas Ardabili University were used as the sample of the study. It should be noted that a large number of the young population of Ardebil are studying at these universities and thus they are a good place for the easy access to young people. The sample size was determined using the Morgan table. When it is impossible to use statistical formulas to estimate sample size, the Morgan table is used to determine the maximum number of a sample. In addition, when the variance of the statistical population is not clear, this table can be used to estimate the sample size (Krejcie & Morgan, 1970). Given that the total number of students at the mentioned universities was approximately 30,000 (15,000 from Islamic Azad University of Ardabil, 10,000 from University of Mohaghegh Ardabili, 2000 from Moghaddas Ardabili University and 3000 from Ardabil New non-profit institution of higher education), using Morgan's table, the sample size was finally determined to be 379 subjects. Convenience sampling method was used to select the respondents. This means that through several visits to different faculties of selected universities in the city of Ardabil, a team of researchers asked students who were available and willing to cooperate in the study to answer the questions of the questionnaire. Accordingly, 379 questionnaires were distributed.

Variables measurement

In this research, data collection was done using library and field methods. In the first step, library method was used to study the theoretical literature and experimental background of the research; that is, referring to scientific resources, especially international databases, studies related to the subject of the research were identified and theoretical and empirical framework of the research was formulated. In the second step, to complete the questionnaires to collect the required data, field method was used.

The questionnaire used in this research had three parts. The first part contained some of the most important demographic characteristics of age, gender, marital status, educational level and income; the second part included 2 questions to measure environmental knowledge using the standard questionnaires of (Suki N. M., 2013), 5 questions to measure healthy food using the standard questionnaires of (Suki N. M., 2013), 4 questions to measure healthy ways of life using the standard questionnaires of (Suki N. M., 2013), 3 questions for measuring the goal of purchasing green products using the standard questionnaire of (Chan R. Y., 2001), 3 questions for measuring the behavior of purchasing green products using the standard questionnaire of (Chan R. Y., 2001), 29 questions for measuring conscious consumer behavior using the standard questionnaire

of (Straughan & Roberts, 1999). All the variables were in the domain of "totally agree," "agree," "no idea," "disagree," "totally disagree". As such, respondents were asked to answer the questionnaire questions by selecting one of five-point Likert scale options. Table 1 shows the combination of questions and the resources used for developing a standard questionnaire.

Table 1. Combination of the questions and resources of the questionnaire

Variable	Number of questions	Resource
Environmental knowledge	2	(Suki N. M., 2013))
Healthy food	5	(Suki N. M., 2013))
Healthy way of life	4	(Suki N. M., 2013))
Green purchasing intention	3	(Chan R. Y., 2001)
Green purchasing behavior	3	(Chan R. Y., 2001)
Environmental conscious behavior of consumer	29	(Straughan & Roberts, 1999)

Data analysis methods

For data analysis, in the first step, normal distribution of data was examined based on Kolmogorov-Smirnov test (Bruce, Green, & Georgeson, 2003) Kolmogorov-Smirnov test is non-parametric statistical tests. Moreover, for the conformation of the distribution, the Kolmogorov-Smirnov test compares the cumulative probabilities of the values in the data set with the cumulative probabilities of the same values in a given theoretical distribution. If the difference between them is large enough, this test will show that the data is not consistent with one of the intended theoretical distributions. In this test, if the decision criterion (significance level) is less than 0.5 the null hypothesis is rejected; that is, the data cannot follow a particular distribution, such as normal, Poisson, exponential, or uniform (Hassani & Silva, 2015).

After determining the distribution of data, in order to test the conceptual model for testing the research model, Partial Least Squares (PLS) and Smart PLS software were used. This method is used for univariate and multivariate regressions. Therefore, it may have several dependent variables. To create a relationship between dependent and independent variables, PLS creates new explanatory (independent) variables. Unlike the covariance-based structural equation modeling, Partial Least Squares (PLS) focus on the highest variance of dependent variables explained by independent variables instead of the re-production of the empirical covariance matrix. Similar to any structural equation modeling, Partial Least Squares model has been composed of a structural part which shows the relationship between the latent variables and a measurement component that reflects how the latent variables are related with their markers. There are various methods for examining the fit of the measurement model; however, the method used in this study

for examining the fit of the measurement model includes three criteria of construct validity, discriminant validity and convergent validity, as well as reliability. Construct validity is a complex concept which requires multi-stage investigation and is evaluated using criterion validity including concurrent validity, predictive validity, distinction validity, and convergence validity. Construct validity refers to the degree of the scale accuracy in measuring the theoretical construct or the intended feature (Ghahramani, Mohammadbeigi, & Mohammadsalehi, 2006). To verify the construct validity of the questionnaire, confirmatory factor analysis was used. To evaluate discriminant validity, discriminant function analysis was used. In this method, there is a primary grouping of subjects, and the purpose of this analysis is to confirm the primary grouping on the basis of other data (Mesrabadi, Jafariyan, & Ostovar, 2013). Finally, convergent validity is a relatively strong correlation between the question and the main variable, and the acceptable value for it should be considered a greater than 0.4 Pearson correlation coefficient (Ghahramani, Mohammadbeigi, & Mohammadsalehi, 2006). After ensuring the proper fit for the measurement model, in the next step, the structural model for examining the relationships between the variables based on the research model and finally the conclusion about confirming or rejecting the hypotheses will be investigated using the partial least squares (PLS) and Smart PLS software.

Results

Demographic characteristics of the respondents

The results of examining the demographic characteristics of the sample members are shown in Table 2.

Table 2. Demographic characteristics of the sample members

Demographic characteristics	Classes	No.	%
Gender	Male	167	43.9
	Female	213	56.1
Marital status	Single	257	67.6
	Married	123	32.4
Age	18 to 22	222	58.4
	22 to 27	87	22.9
	27 to 30	37	9.7
	Above 30	34	8.9
Income level	Under 100\$	35	9.2
	100 to 300\$	210	55.3
	300 to 500\$	99	26.1
	More than 500\$	36	9.5
Education level	Associate degree	104	27.4
	Bachelor's degree	206	54.2
	Master's degree	48	12.6
	Ph.D degree	22	5.8

As Table 2 shows, 77% of the respondents are female and 23% are male. Age of 10% of the respondents is under 30 years old, 48% are between 30 to 40, 35% are between 40 to 50 and 7% are above than 50. In terms of experience, 11% of the respondents have less than 5 years of experience, 32% have between 5 to 10 years of experience, 17% between 10 to 15, and 40% have more than 15 years of experience. In terms of education level, 6% of the respondents have school diplomas, 18% associate degree, 46% bachelor's degree and 30% master's degree and higher.

Then, in order to test the research hypotheses, first, using the Kolmogorov-Smirnov test, the normal distribution of the data was examined. The hypotheses of the research were tested using the structural equation modeling and, finally, the fit index of the whole conceptual model of the research was estimated.

Kolmogorov-Smirnov test

With regard to the claims for data distribution of a quantitative variable, the Kolmogorov-Smirnov test was used. In this test, null hypothesis represents the claim that the data distribution has been normal. Table 3 shows the results of this test.

Table 3. Kolmogorov-Smirnov test

Variable	Mean	Standard deviation	Significance level
Environmental knowledge	3.4013	0.93742	0.000
Healthy food	3.6871	0.72955	0.009
Healthy way of life	3.8816	0.69425	0.000
Green purchase intention	3.6965	0.77277	0.001
Green purchase behavior	3.3671	0.84027	0.000
Environmental Conscious behavior of consumer	3.6821	0.54108	0.288

The results in table 3 show that all variables, except environmental conscious behavior, do not follow the normal distribution; because, the significance level of these variables is less than 5% and the null hypothesis is rejected for them. Therefore, nonparametric methods will be used for data analysis.

Evaluation of construct, discriminant and convergent validities, and reliability

The complete structural equation modeling consists of two components of the measurement model and the structural model. Before entering the test phase of the conceptual model of the research, first, it is necessary to ensure the accuracy of the

measurement model. In the measurement model, the relationship between the latent and observed variables is investigated. There are several methods for checking the fit of the measurement model. But the method that examines the fit of the model of measurement comprehensively involves the use of partial least squares method in which three criteria of construct validity, discriminant validity and convergent validity as well as reliability are used to examine the fit of the measurement. Construct validity refers to the measurability of the research variables by means of the questionnaire's questions, and is tested using confirmatory factor analysis method. In addition to construct validity, the discriminant validity has also been investigated. Discriminant validity means that the items of each construct become appropriately discriminated from other constructs of the model in terms of measurement. This validity is measured using the average variance extracted. The average variance extracted shows the correlation of a construct with its indices and the greater the correlation, the better will be the fit of the model. In addition, reliability was also measured using Cronbach's alpha coefficient. The partial least squares method, compared with the Cronbach's alpha coefficient, offers a more modern criterion called composite reliability, that is, the reliability of the construct is not calculated in absolute terms but in relation to the correlation of constructs with each other. In this research, for the evaluation of the convergent validity, composite reliability index was used (Davari & Rezazadeh, 2013). The results of the evaluation of different variables of validity and reliability are shown in Table 4.

Table 4. The results of construct validity, discriminant validity, convergent validity, and reliability

Latent variable	Observed variable/ question	Factor loadings	t-value	p-value	Average variance extracted (AVE)	Composite reliability (CR)	Cronbach's alpha coefficients
Environmental knowledge	I always update my knowledge about green products.	0.9301	89.4681	<0.05	0.8608	0.9252	0.8383
	I am very interested to know how green products work.	0.9255	75.4551	<0.05			
Healthy food	I control the salt intake.	0.647	15.4197	<0.05	0.5778	0.8203	0.7272
	I try not to eat fast food.	0.7459	24.3057	<0.05			
	I try to use foods without preservatives.	0.6934	18.7677	<0.05			
	I use red meat very moderately.	0.6912	18.5445	<0.05			
	I check my health voluntarily.	0.6747	18.8351	<0.05			

Latent variable	Observed variable/ question	Factor loadings	t-value	p-value	Average variance extracted (AVE)	Composite reliability (CR)	Cronbach's alpha coefficients
Healthy way of life	I try to reduce my stress.	0.7135	19.0697	<0.05	0.5944	0.7957	0.7098
	I often go to the dentist.	0.6277	12.0506	<0.05			
	I try to have a regular and normal life.	0.757	196901	<0.05			
	I try to make a balance between my work and life.	0.7081	16.9748	<0.05			
Green purchase intention	I purchase green products because they have less pollution.	0.8296	38.4525	<0.05	0.7146	0.8825	0.8001
	I prefer green products to other products for ecological (environmental) reasons.	0.8653	42.9605	<0.05			
	When purchasing I give priority to green products.	0.8407	36.5555	<0.05			
Green purchase behavior	I've used green products many times in the past.	0.7876	24.3407	<0.05	0.6718	0.8598	0.7556
	To buy green products, I am ready to pay a large amount.	0.821	30.5562	<0.05			
	Using green products is one of my main priorities.	0.849	45.8742	<0.05			
Environmental Conscious behavior of consumer	I usually purchase products made from recycled materials.	0.5601	12.5204	<0.05	0.5069	0.9261	0.9172
	I usually purchase products made	0.5412	12.5475	<0.05			

Latent variable	Observed variable/ question	Factor loadings	t-value	p-value	Average variance extracted (AVE)	Composite reliability (CR)	Cronbach's alpha coefficients
	from waste paper.						
	To save energy, I try to use my car as less as possible.	0.5383	13.4163	<0.05			
	Because of the lack of confidence in the gasoline produced outside my country, I use my car less.	0.5345	13.2195	<0.05			
	I use recyclable products most of the time.	0.6424	18.0403	<0.05			
	I always try to buy products made from recycled materials.	0.6212	17.5191	<0.05			
	I use low phosphate detergents to wash my clothes.	0.54	12.0484	<0.05			
	I convinced my family members that they would not buy products that are harmful to the environment.	0.5361	13.2106	<0.05			
	Whenever it happens, I buy the products packaged in reusable containers.	0.5158	10.453	<0.05			
	I try to buy only the products that can be recycled.	0.5799	16.7524	<0.05			
	I usually try to decrease my use	0.5803	15.3443	<0.05			

Latent variable	Observed variable/ question	Factor loadings	t-value	p-value	Average variance extracted (AVE)	Composite reliability (CR)	Cronbach's alpha coefficients
	of products made from scarce resources.						
	I do not buy products that have extra packing.	0.5836	19.0581	<0.05			
	I always choose products to buy that have less pollution.	0.5789	16.3858	<0.05			
	If I know about possible damage to the environment that some products can cause, I will not buy those products.	0.5216	13.9587	<0.05			
	Because of some ecological reasons, I have changed my idea about buying previous products.	0.6002	15.219	<0.05			
	I purchase green products as they are less polluting to the environment.	0.5823	18.0607	<0.05			
	Buying products, I always try to buy those products that have less pollution than others.	0.614	16.9112	<0.05			
	I do not buy products in spray containers.	0.5581	14.9673	<0.05			
	When I choose between two similar products, I	0.5925	17.411	<0.05			

Latent variable	Observed variable/ question	Factor loadings	t-value	p-value	Average variance extracted (AVE)	Composite reliability (CR)	Cronbach's alpha coefficients
	always buy the one that is less harmful to the environment.						
	I usually do not buy products of companies that are not responsible for the society.	0.512	12.5715	<0.05			
	I usually buy products with the lowest prices, regardless of their impact on the society.	0.1318	2.0878	<0.05			
	I do not buy household appliances that are harmful to the environment.	0/5023	11/5027	<0.05			
	I try to buy energy-efficient appliances.	0/5787	13/2609	<0.05			
	I usually try not to use electrical appliances (dishwashers, etc.) at peak times.	0/5166	12/0625	<0.05			
	I try to reduce the amount of electricity I use.	0/5803	15/1732	<0.05			
	I buy energy efficient bulbs to save energy.	0/5694	12/3135	<0.05			
	I buy appliances that consume less electricity than other brands.	0/6263	19/07	<0.05			
	I buy bulbs that are more expensive but save more energy.	0/5333	14/3521	<0.05			

Latent variable	Observed variable/ question	Factor loadings	t-value	p-value	Average variance extracted (AVE)	Composite reliability (CR)	Cronbach's alpha coefficients
	I have replaced the house lamps with energy-efficient ones.	0/4947	11/2751	<0.05			

Factor loadings coefficients indicate that the variance between the construct and its indices is greater than the variance of the measurement error of that construct and the reliability of the measurement model is acceptable (Davari & Rezazadeh, 2013). Two values of 0.4 (Hulland, 1999) and 0.5 (Rivard & Huff, 1988) are considered for the acceptance of factor loading. In this study, the standard value for factor loading is considered to be 0.5. The results of Table 3 show that, for all items, the factor loadings values are greater than the standard level of 0.5 and the values of the Student's t-test, at confidence level of 95%, are obtained to be greater than 1.96. Therefore, according to the reported values, the appropriateness of the questions and their ability to measure the variables of the research is confirmed, and it can be claimed that the questions in the research questionnaire have construct validity.

The discriminant validity will be established if the mean value of the variance extracted is greater than the critical value of 0.5. There are also three necessary conditions for the realization of convergent validity which are as follows: 1) the composite reliability value is greater than 0.7; 2) the value of the average variance extracted is greater than 0.5; 3) the composite reliability value is greater than the average variance extracted. If the composite reliability value for each construct is higher than 0.7, it indicates the internal stability for the measurement models, and a value of 0.6 is indicative of the lack of reliability. Finally, experts have considered that the standard value for Cronbach's alpha coefficient is 0.7 (Davari & Rezazadeh, 2013). Thus, according to Table 5 and the standard values for the intended indices, it can be concluded that discriminant validity, convergent validity and reliability there exist for the all variables of environmental knowledge, healthy foods, healthy way of life, green purchase intention, green purchase behavior and environmental conscious behavior of consumer. In general, research measurement models are in a desirable and appropriate situation.

Estimation the conceptual model

Testing the research model was performed using the partial least squares method. Figures 2 and 3 show the research model with the latent and observed variables in the form of reflective measurement models. In this model, the variables of green purchase intention and green purchase behavior are only in the role of dependent variables, environmental conscious behavior of consumer in the role of independent-dependent variable, and the variables of environmental knowledge, healthy food and healthy way of life only as independent variables.

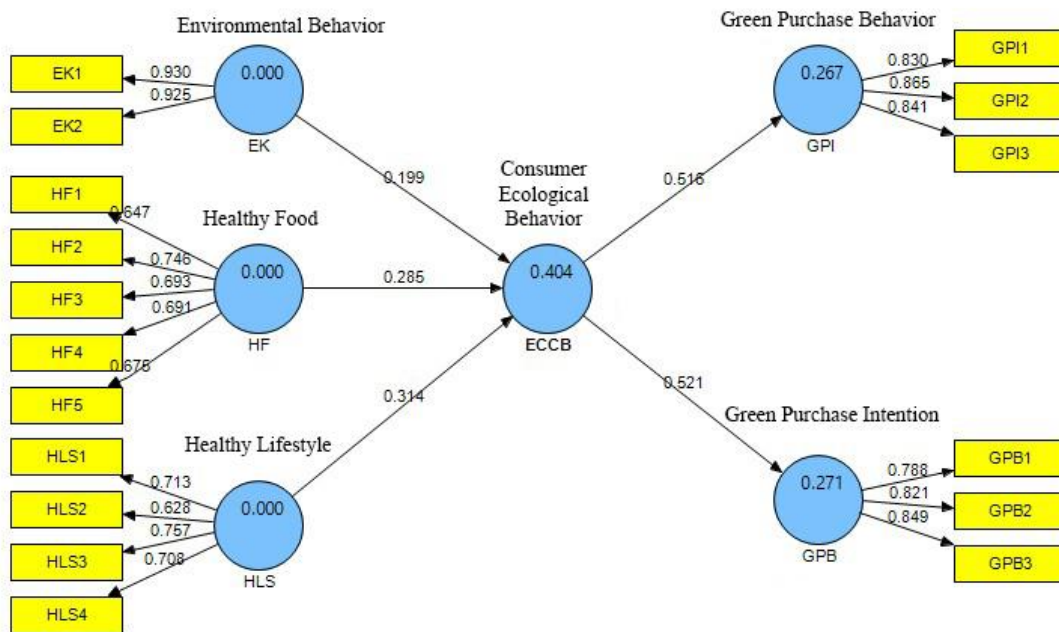


Fig. 2. Path coefficients and the values of the R²

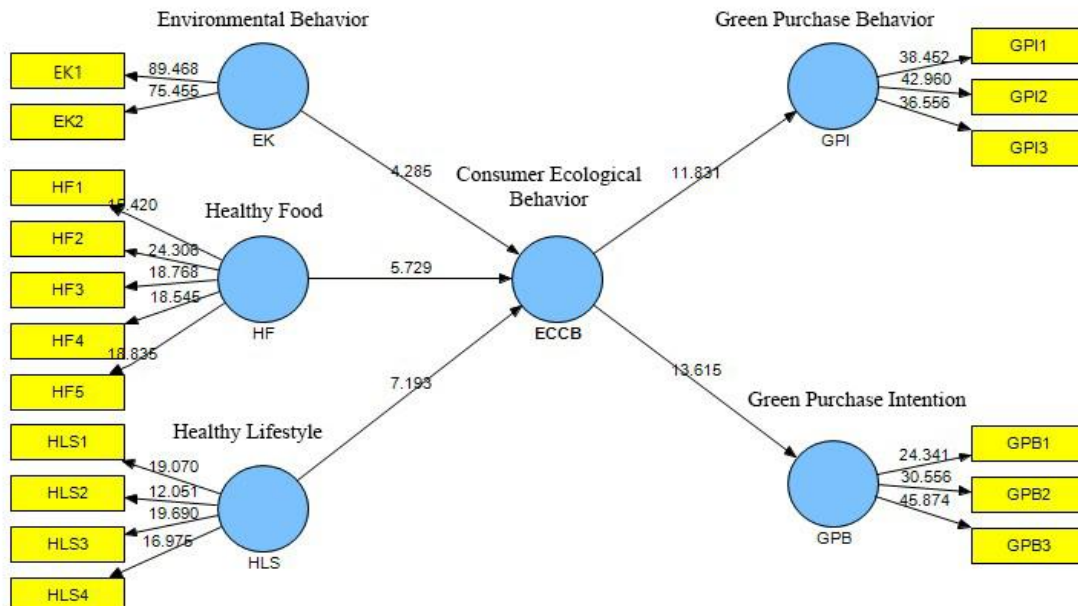


Fig. 3. T values

In the partial least squares method, after examining the fit of the measurement models, the fit of the structural model is examined in the next step. One of the most important criteria for examining the fit of the structural model is the coefficient of determination criterion (R^2). R^2 is a criterion that shows the effect of an exogenous variable on an endogenous one and its value is calculated only for the endogenous constructs of the model. In the case of exogenous constructs, the value of this criterion is zero. Three values of 0.19, 0.33 and 0.67 are considered as the criterion value for weak, moderate and strong R^2 (Gye-Soo, 2016). According to Fig. 1, the value of R^2 for the endogenous variables of the model including green purchase behavior, green purchase intention, environmentally conscious behavior of consumer, environmental knowledge, healthy food, and healthy way of life is equal to 0.217, 0.267, 0.404, 0.0, 0.0 and 0.0 respectively. Therefore, with respect to the criterion values, the model has a relatively good structural fit. Accordingly, 21.7% of green purchase behavior is explained by environmentally conscious behaviors. The variable of environmentally conscious behaviors explains 26.7% of the change in green purchase intention. 40.4% of the variables of environmentally conscious behaviors are related to environmental knowledge, healthy food and healthy way of life. The results of the path coefficients along with the values of the Student's t-value and the significance level are shown in Table 5.

Table 5. The path coefficients of the research model

Hypothesis	Independent variable	Dependent variable	Path coefficient	S.E	t-value	Sig
H1	Environmental knowledge	Environmentally conscious behavior	0/1993	0/0465	4/2855	< 0.05
H2	Healthy food	Environmentally conscious behavior	0/2853	0/0498	5/7288	< 0.05
H3	Healthy way of life	Environmentally conscious behavior	0/3142	0/0437	7/1933	< 0.05
H4	Environmentally conscious behavior	Green purchase behavior	0/5207	0/0382	13/615	< 0.05
H5	Environmentally conscious behavior	Green purchase intention	0/5163	0/0436	11/8308	< 0.05

The results show that environmental knowledge, with the standard error of 0.1993, has a positive and significant effect on the environmentally conscious behavior. Thus, the first hypothesis was confirmed. Healthy food, with the standard error of 0.2853, has a positive and significant effect on the environmentally conscious behavior. Therefore, the second hypothesis was confirmed. Healthy way of life, with the standard error of 0.3142, has a positive and significant effect on the environmentally conscious behavior. Therefore, the third hypothesis was confirmed. Environmentally conscious behavior, with the standard error of 0.5207, has a positive and significant effect on green purchase behavior. Therefore, the fourth hypothesis is confirmed. Moreover, environmentally

conscious behavior, with the standard error of 0.5163, has a positive and significant effect on green purchase intention. Therefore, the fifth hypothesis is confirmed. In a nutshell, based on the results of Table 5, all research hypotheses were approved.

Conclusion, Recommendations, and Limitations

This study aimed at investigating the determinants and consequences of ecological behaviors of young Iranian consumers. In recent years, environmental degradation has raised awareness in society about environmental protection and conservation. Consequently, the concept of "ecological consumers" has appeared along with the need for a clear understanding of the antecedents for their responsible behavior (López-Miguens, González-Vázquez, García-Rodríguez, & Álvarez-González, 2014). Green marketing is part of the key movements in modern business sustainability though their primary concern has always been revenues and profits. Companies focusing on the natural ecological balance in their entire operation are more environmentally friendly while maximizing profits; they reduce environmental pollution, conserve natural resources and protect the environment. (Suki, Suki, & Azman, 2016). A green product is one which satisfies consumers' needs without damaging the environment and contributes towards a more sustainable world. These products are environmentally superior and have low environmental impact. Green products use material safer to the environment, are recyclable and require less packaging (Joshi & Rahman, 2015). Similarly, Bamberg (2003) demonstrated that customers with high environmental concerns are likely to engage in environmental behaviors because of their favorable evaluation and beliefs towards green behaviors. It was observed that customers with high environmental concern were better informed about the green products and green technology, highly conscious about purchasing bad environmental products, and better informed about the reliability and security of green products. Moreover, they exhibited high levels of behavioral beliefs, which have a significant influence on attitude towards environmentally friendly behaviors. Barber, Taylor, and Strick (2009) provide empirical evidence for the mediating role of environmental knowledge (Goh & Balaji, 2016).

Today, environmental knowledge is not only an ideology but also an important issue in market competition, which affects consumer behavior. Environmental knowledge is defined as general knowledge about the facts, concepts and relationships of the natural environment and its ecosystems (Mostafa, 2007). Among the most important variables for predicting human behavior is the individual's knowledge of environmental issues. Knowledge is considered a necessity for the successful pursuit of activities. Knowledge is, in fact, used as a tool to overcome psychological barriers such as ignorance or misinformation. Although knowledge does not always have a direct impact on behavior, it reinforces other mechanisms that facilitate the change of behavior (Fryxel, 2003). Green purchase intention refers to the desire or intention of a person to prefer a product with favorable environmental characteristics to an ordinary product (Abbasi, Enayati, & Leadership, 2011). According to Morison and Netimger (2012), green purchase intention refers to the intention of a buyer for a particular product that is the result of his environmental needs. (Chenl, Woolleyl, Forghamz, & Jones, 2012). Young people will be an imperative target group for each and every industry and in order for every organization to sustain a competitive advantage. This young generation has become a

challenge for businesses because they have greater disposable income and can consider spending it on a variety of products. They are a large powerful target customer group with complex behavioral intentions, outstanding lifestyles and sensational practices for disposable purchases. Furthermore, they are mostly educated and informed well-versed in a sustainable approach. Arguably, there is a strong association between the young generation and their intention to purchase green products (Kanchanapibul, Lacka, Wang, & Chan, 2014).

Therefore, this research investigates the determinants and consequences of ecological behaviors of young Iranian consumers. The analysis of the first hypothesis of the research shows that the values of the path coefficient and t have been 0.1993 and 4.2855 respectively. Therefore, it can be stated that the environmental knowledge variable has a positive effect on the ecological behavior variable. These results are consistent with the results of (Kaplan, 1991); (Schlegelmilch, Bohlen, & Diamantopoulos, 1996), (Mostafa, 2007), (D'Souza, Taghian, & Khosla, 2007), (Barber, Taylor, & Strick, 2009) (Smith & Paladino, 2010), (Suki N. M., 2013), (Chang & Wu, 2015) (Goh & Balaji, 2016) The analysis of the second hypothesis of the research shows that the values of the path coefficient and t have been 0.2853 and 5.7288 respectively. Therefore, it can be said that healthy food variable has a positive effect on the variable of ecological behaviors. These results are in line with the results obtained by (Ahmad & Juhdi, N, 2008), and (Suki N. M., 2013) The analysis of the third hypothesis of the research shows that the values of the path coefficient and t have been 0.3142 and 7.1933 respectively. Therefore, it can be stated that healthy way of life has a positive effect on the variable of ecological behaviors. These results are in line with the research findings of Cocker (Hamdi, K; Ghafarirs, A, 1390), and (Suki N. M., 2013) The analysis of the fourth hypothesis of the research shows that the values of the path coefficient and t have been 0.5207 and 13.615 respectively. Therefore, it can be concluded that the variable of ecological behaviors has a positive effect on the green purchase behavior. These results are in line with the results obtained by (Boztepe, 2012) and (Fryxel, 2003) and (Vermeir & Verbeke, Sustainable food consumption: Exploring the consumer "attitude-behavioral intention" gap, 2006) and (Watson, et al., 2009) and (Joshi & Rahman, 2015) and (Mas'od & Chin, 2014) The analysis of the fifth hypothesis of the research shows that the values of the path coefficient and t have been 0.5163 and 11.8308 respectively. Therefore, it can be said that the environmentally conscious behavior variable has a positive effect on the green purchase intention. These results are consistent with the results of (Mas'od & Chin, 2014). (2009), (Hamdi, K; Ghafarirs, A, 1390).

The demand for ecological products and sustainable business activities has been determined by increasing awareness of consumers about environmental issues and by declaring more stringent laws by national governments, especially in developed industrial countries. On the other hand, various environmental groups, such as the media, monitor the company's compliance with ecological principles closely. Another pressure and awareness in the business environment with regard to the environmental issues is the issue of green marketing. Based on the results of this research, it is suggested that by holding training classes in schools, informing the public in public media, setting up placards with proper slogans about the environment on public roads and creating campaigns will increase the environmental knowledge of individuals. Schools are encouraged to promote the use of healthy diets, as education, through parents and schools, and the content of the

classes, can have a very positive impact on this issue. The officials of the related institutes such as the Physical Education, broadcasting, and healthcare network are recommended to try their best in providing a healthier lifestyle. Manufacturers are encouraged to produce high-quality green products which can compete with ordinary products. Legislators and authorities have to work out programs to maintain natural resources and reduce the environmental consequences of the products which do not comply with the environmental. It is suggested to marketers that through advertising or labeling their products, try to reinforce the issue that the environmental behavior of individuals together with their green purchases is a positive step towards protecting and conserving the environment. Governments, businesses and environmental groups need to demonstrate that environmental problems can be controlled by changes in consumer purchase behavior.

It is suggested to future researchers that the research model used in this research be used in other classes of society, such as employees. It is suggested that a similar research be conducted in other cities to ensure the generalization of the results. It is also suggested that this research be carried out in longer periods of time and also a higher sample size in order to increase the validity of the research results. It is suggested that other dimensions and variables such as the impact of cultural factors, the effect of education and general information, the impact of the culture of the cities be examined.

One of the main limitations of the research was the lack of enough studies at the national and international levels. Another limitation was the low motivation of some respondents in answering the questions. Among other limitations of the research mention may be made of the use of the questionnaire as the only tool for collecting information and not return of all questionnaires, low access to library resources because of limited resources in the university's repositories, the limited scope of the research, which only included the students of the Ardabil city, and the lack of detailed and accurate information of some respondents about green products in answering questions of the questionnaire.

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