Role of information and Awareness in Environmental Conservation: An Empirical Investigation of Islamabad Consumer's Green Bag Adoption Behavior

Dr. Ayaz Ahmad

(Supervisor)

By

Abdul Subhan

(PIDE2018FMPHILBE16)

MASTER OF PHILOSPHY IN BUSINESS ECONOMICS

Department of Business Studies

PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS ISLAMABAD

2020

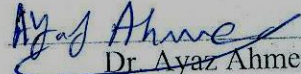# Pakistan Institute of Development Economics

CERTIFICATE

This is to certify that this thesis entitled: **"Role of Information and Awareness in Environmental Conservation: An Empirical Investigation of Islamabad Consumer's Green Bag Adoption Behavior"** submitted by Mr. Abdul Subhan is accepted in its present form by the Department of Business Studies, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Philosophy in Business Economics**.
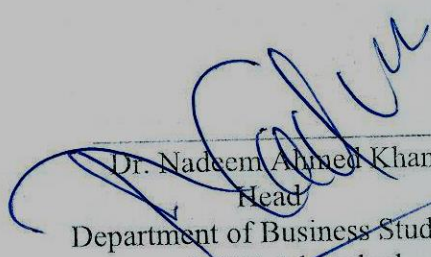
External Examiner:

Dr. Fuwad Bashir Awan
Associate Professor
SZABIST, Islamabad

Supervisor:

Dr. Ayaz Ahmed
Senior Research Economist
PIDE, Islamabad

Head, Department of Business Studies:

Dr. Nadeem Ahmed Khan
Head
Department of Business Studies
PIDE, Islamabad

Table of Contents

List of Tables

List of Figures

1. Introduction

"Plastic Age" is said to be the era of today's technological world (Thompson et al., 2009b). Widespread of plastic across the globe has been since decades and today researches reveal that it reached 350 million tons per year. Plastic is integral part of today's society and its reasons are being cheap, durable, and beneficial of plastic. The increasing multiple and extensive usage and consequently dumping It may pose serious adverse effects to society and endanger the ecosystem (Bläsing and Ambling, 2018; Horton et al., 2017), and therefore it becomes a threat to planetary body. (Galloway and Lewis, 2016; Rockström et al., 2009). It is predicted that almost 250,000 tons of plastic in sea is floating (Erikson et al., 2014), consequently affecting marine life directly and humans indirectly, by penetrating into food chain. Moreover, the agriculture sector has been postulated as a consistent source of soil degradation by adding micro plastics (i.e., plastic particles smaller than 5 mm) in soil (Liu et al., 2014; Steinmetz et al., 2016). As most of the gases are prone to producing greenhouse gases when sunlight hits them severely according to the lab experiments. (Royer et al., 2018). Therefore, plastic imposes hazardous multiple impacts on the environment. Usage of plastic can pose serious threat to health and survival of human species, as plastic additives are used in them. (Hodson et al., 2017; Rist et al., 2018; Smith et al., 2018). Unprecedent poison production is another constituent of plastic particles (Peng et al., 2017). Microplastic or plastic engulfed by humans through food are serious causes of danger for human health (Rist et al., 2018).

However, it is crucial to sort out possible solution to the burgeoning problems of excessive plastic production and solution. Various social stakeholders (e.g., consumers, producers, policymakers, industries) must make sure of their participation in this project (Löhr et al., 2017). However technical panacea to replace plastic with alternatives has been ruled out to cope with

the problem (e.g., the production of biodegradable plastic or appropriate recycling procedures). There are two serious problems there in this process. Firstly, as there is not any short term process, therefore, technical solution is not a thorough overhaul. Secondly, technical panacea is often ineffective in face of psychological problems like excessive accumulation of biodegradable elements. (Haider et al., 2018). However, potential techniques (e.g., recycling) may result in preserving the resources and diverting the mindset of people from excessive usage of plastic. Besides this, such type of technical strategies demands equal participation of people, as they are equal stakeholders in this all project. Therefore, in this whole project of lessening usage and effects of plastic, an cumulative approach added by share of people's effort is crucial.

The possible replacement to plastics is usage of Green bags, which are at the same time unlike plastic bags in being hazardous to people and friendly to the environment. The bags are made of cloth and are products of plant, which can be reused by the consumer's time and again and are biodegradable at the same time. The bags are more durable than plastics and are available in varieties of size, color, and shapes, which are up to the demands of people according to their lifestyle. Besides being used for shopping purposes, they have variety of items. Green products of markets are provided greater weightage by the organizations (Kumar et al, 2017; Moser 2016). In the organization of the European Union, 'sometimes' selling of 54 percent while 'usual 'selling of 26 percent to customers has been noted. Initiatives of introducing green products and service design have been taken in response (Danjelico and Pujari, 2010; Chan et al., 2013), chain management of green supply (Tseng et al. 2013a; Wang and Chan, 2013), and innovative practices (Chen et al., 2006; Lin et al., 2013; Tseng et al., 2013b). Though heavy advertisements are undertaken to catch attention of the consumers towards purchasing them, such tactics are not enough to make them purchase. This emphasizes how consumers have formed a relationship

between the attributes of products and the environment. They are more concerned with green consumption than attractive advertising (Schuhwerk and Lefkoff-Hagius, 1995). However, environment friendly are not mere choice of fewer environment conscious customers but they have even entered the mainstream. It is very significant to understand the psyche, needs, concerns of people regarding purchasing pattern and consequently to sort out solutions for the environment. Therefore, the severe environmental issues like global warming and climate change which spring out of unsustainable patterns of consumption across world lead to change in lifestyles of people. However, it is quite evident that the consumers pick services and goods which retain effects on them and their environment (Gruber & Schlegelmilch, 2014). On the other side, consumers volunteer to step further in purchasing products with premium price and consequently reach green consumerism when marketing plans and concepts are sustainable and efficient. (Polonsky & Rosenberger, 2001). Ritter et al. (2015). To boast selling products of green services, further studies and research should be done on how and what influences people and their attitude. It is better to stress on the attention catching strategies which influence their behaviors, thoughts, ideals instead of policies, projects and activities of the organization. Cheung and To, 2016; Heinonen and Strandvik, 2015)

Various studies have analysed and explored the previous examples of concerns for environment, purchase of green and information regarding green products. (Papadas et al., 2017, Esmaeilpour and Bahmiary, 2017). Concerns for environment have highly influenced the environment conscious people which have led to spike in supply of green products. This swift transformation in behavior of such people for using green products has achieved environmental ethics in lifestyles of people. (Jang et al., 2011). However, a little effort has been put in assessing that which conditions check value attaching Yet, far less has been done on conditions or/and

mechanisms that influence how consumers place value on the environment and which ultimately affects consumption behavior. As there are internal and external that impacts the relation between purchasing of green products and going green, current researches have focused on conditions which compel consumers to purchase. Few internal features of the green services and products are namely the levy towards going el of quality, d aesthetics considerable degree, and a number of functions. Having information about such attributes, it is quite easy for the researchers to know response of costumers towards green products and how to persuade them towards purchasing such products. A significant study was undertaken by (Zahid et al. (2018) where they stressed on the theories of planned behavior to state that consumers' consciousness for the environment put an indirect impact on purchase of green product intention through concern for environmental aftermaths, and such elements were capable to moderate relation between the purchase intention of consumers and environmental impacts.

The undertaken study conceptualizes consumers' value, which means how their being environment conscious conditions their attitude towards production of less waste and conserving environment to its best. Information about green products is also included (i.e. knowledge about green products) which is an extra feature to persuade consumers consider green products of great value (Barber et al., 2009; Kumar and Ghodeswar, 2015; Zhao et al., 2014-1). Bee et al. (2016) it is focused that the availability of transparent product information results into higher acceptance of green products. Surely, (Lin and Huang (2012) It is assessed that psychological beneficial things, a stronger urge of knowledge, and high novelty pursuing are essential elements of consumer choice behavior related to green products. It is also proposed quality of green product would moderate the attitude-behavior relationship. Researchers (Mancini et al., 2017) suggested that environment friendly product quality represents the willingness of firm to add value to green

products. The customers who are environment conscious and know the beneficial and adverse effects of using green products and plastics respectively, they pour their maximum confidents in purchasing green products. Interest of the consumers can be won with better quality green products, which cause minimum packaging wastes and chemical production and ultimately are in favor of environment. Lastly, better quality green items have features which help consumers to employ on screening green information for green products.

S.R.O. (I) 2019, In exercise of the powers conferred by section 33 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), the Pakistan Environmental Protection Agency, with the approval of the Federal Government, is pleased to make the following regulations, namely. (1) These regulations shall be called the Pakistan Environmental Protection Agency Ban on (Manufacturing, Import, Sale, Purchase, Storage and Usage) Polythene Bags Regulations, 2019. The polythene bags shall be banned in ICT as per following timelines, namely (a) all manufacturing, import and wholesale trading of polythene bags shall be banned from commencement of these regulations; and (b) all sale, purchase, supply, trade, storage, distribution and use of polythene bags other than those specified in clause (a) shall be banned from the 14th August, 2019 (http://www.mocc.gov.pk/)

1.1 Research Gap

The problem of this study is regarding the usage of plastic bags and their worst impacts on the environment as extreme plastic manufacturing and consumption have serious environmental and human health consequences. Thus plastic reduction has become a major global challenge because technological solutions may be inadequate to curb the issue. A context of this research is regarding the highlighting of the human actions impact. People recognize and routinely use plastic, despite the awareness regarding the worst problems caused by this.

Pakistan will become the most recent country to ban single-use plastic bag.(United Nation Report, 2018) claimed that every year, the nation uses 55 billion bags, and many end up blocking rivers and littering the land. Some 127 countries had already adopted policies banning plastic bags by July 2018.

Islamabad has become the latest region in Pakistan to ban plastic bags, as the country is struggling to reduce single-use plastics that harm the environment. (Gupta and Ogden 2009) suggested for further research a longitudinal study should be utilized to test the proposed research model and recommended to explore other forms of environmental attitudes, such as environmental concerns of reference groups, hence suggested that opinions of the reference groups strongly influence green purchasing. It is suggested to test other conditions for instance personality, which may affect environmental attitudes and green purchasing behaviors of consumers. (Lu et al. (2015) Found consumer's personality traits may moderate the effects of environmental behavior on green purchasing behavior as individuals with greater self-efficacy tend to be environmentally concerned where (Hirsch, 2010) found that interest will increase the trust of consumers in protecting the environment by saving energy and reducing waste, which will enhance to their transition to green goods. Green bag applies to consumers concerned with the environment, including lower plastic use, green buying and less emissions (Hoffmann & Schlicht, 2013; Lin & Hsu, 2015). In the eyes of environmentalists, such consumers have the so-called 'pro-social' consumer behavior and are socially aware of and responsible for environmental protection. (Wells, Ponting, & Peattie, 2011) observed that from the social marketing perspective, green bag reflects the motivational tendency of individual consumers (Moisander, 2007) found social dilemma an integral factor which individual, societal, and environmental interests are at odds (Gupta & Ogden, 2009; Schuitema & de Groot, 2015).

Research has further found that green consumers compared with non-green consumers have a higher intention to "go green" when they have a greater concern for environmental protection (Park, KO, & Kim, 2010).

For this research structural equation modeling has used in which studied the several variables that influences green bag adoption behavior such as the green information on awareness from environmental issues and green bag usage b environment conservation. This study is the first one to examine the consumer environmental value influenced green purchase behavior through awareness from environmental issues also consumer attitude towards the awareness from the environmental issues and attitude towards green information had been strongly influenced by the green bags.

Their exist a gap between the high value that people place on the environment and the low level of action they take to address environmental issues. Unless we have a better understanding of the reasons for people's environmental considerations we will not be able to translate their environmental concerns into intensive environmental protection and sustainable development. It is therefore, crucial to pay attention to the source of personal responses as well as the level of judgment of consumers when responding to the initiation of green bag usage (Wei et al., 2018).

1.2 Research Problem

Various empirical investigations have concluded that ecological and behavioral practices are being encouraged by academics and practitioners (Austin, 2007). Evidence shows a close relationship between both variables in terms of a correlated consequence. However, as Sih et al. (2004) illustrate, "behavioral syndromes" are another significant indicator to understand the relationship between the human and environmental dimension. Emotion plays an important role in revealing individuals' correlated behavior in each situation, and it seems that aggressive

behavior dominates their involvement in ecological and environmental activities. Given a high desire to protect the environment, consumers who have favorable attitude towards environmental issues may be more alert to the proportion of green ingredients and that influence their confidence in purchasing green bag. However, green bag produce less packaging waste and use fewer chemicals in production, this may further strengthen consumers' favorable attitude towards eco-social benefits on purchasing green products.

By developing an understanding of consumers' green buying behaviors and factors affecting them, companies can develop sustainable marketing strategies targeting this important consumer group. For businesses that are keen to sharp the market, ultimately, the commitment of the green revolution needs to be strengthened with an understanding of consumers' behavior. Communicating with this substantial group of consumers and fulfilling their needs may be the edge of market positioning in this century. The major problem for organizations is how they can make their consumer more loyal by providing them the information about green products and convince them to pay more for green products as compared to other products. Moreover, how much companies have to get in for making consumers more aware of environmental issues or consumers also have awareness of environmental issues. Green information is the only variable that affects both green bag usage and environment conservation or there is any other variable, which can affect this. This study examines how organizations can make a plan for getting out of this situation by undertaking both the perspective, their consumers and the environment as well and how they respond to it. Most importantly, Islamabad people, who constitutes a first group for the consumption of green bag, have rarely been examined.

1.3 Research Significance

It also participates in policymaking for the government to make their policies aligned with the specific attribute of environmental-related projects. This study helps the organization to make its products and processes more environmental sustainable and to generate awareness from environmental issues among the consumers. Organizations also play their role in making society and environment healthy and by this, they con tribute huge amounts in developing and representing cooperate social responsibility. As the main aim of the organization is to become cost-efficient but in green concern, it always be the costly one as compared to non-environmental products if they make their green procedure more representative and put their effort in making society more aware from the environmental issue they surely get those results that organizations want to get. This study not only benefits the organization but also make the environment healthier by realizing, that the economic benefit is not just only key for success but the contribution of an organization as well as consumers towards environmental concerns are also a revolution in the world because now a day's environmental issue is a major concern globally. As this research would be the new source of innovation for setting market trends.

1.4 Research Objectives

This research reviewed the existing literature that helped to develop the hypotheses. Next, it explained the adopted research methods, particularly about how to conduct the statistical analysis, and how to present the findings of the data analysis. In the last, research covered practical implications and environment friendly policies.

The main objectives of this research

- To find key factors that influence consumers' green bag adoption behavior.

- To investigate what extent do consumers' environmental conservation exert an impact on green bag adoption behavior

- To examine what extent do consumers' green attitude (behavioral belief, green bag knowledge) influence the relationship between value (environmental conservation) and green bag adoption behavior.

- To develop an appropriate strategy and practical policy planning to sustain the environment.

The purpose of this research is to empirically investigate whether environmental knowledge and personal affective responses are factors that influence Islamabad consumers' behavior to engage with environmental issues. For a better understanding, the conceptual framework of the study presented in Fig 1.
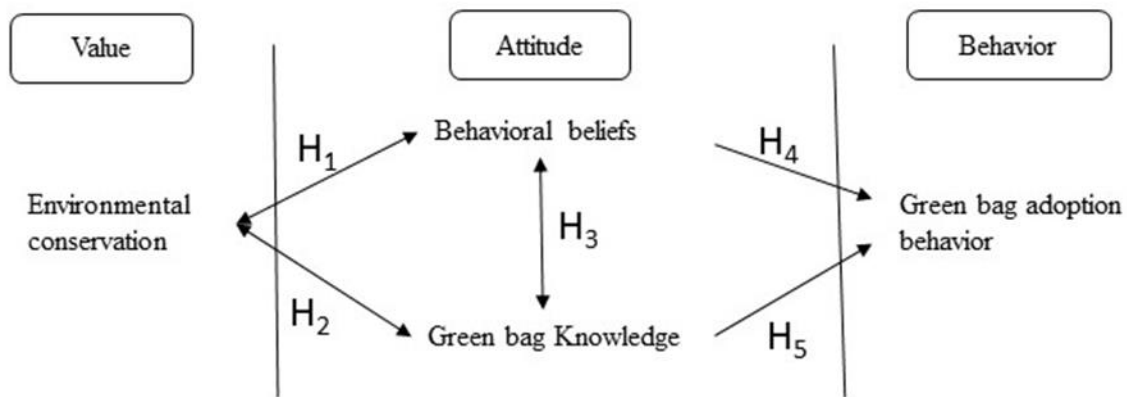
Figure 1. Constructs relationship

1.5 Research Questions

The title of this proposal expresses the fundamental questions being addressed are:

- What are the important factors which affect green bag adoption behavior?

- What is the link among value, attitude and green bag adoption behavior in extended model?

- How does the degree of value and attitude of the Islamabad consumers' influence their behavior to purchase green bag?

- How can practitioners develop superior green bag policy that reduce hurdles in the success of the environmental policy and drive for ecological friendly behavior.

2. Literature review

Current Industrial-led human development has brought two antagonists states at the same page. On one side it has enhanced living standard and provided better life style to the common people. On the contrary, it has created immense issues for humans and has made their survival on stack. Among such issues, global warming is also one. However, global warming or environmental problem is the gift of current Industrial led-human development. By dint of environment issue, new debate has been started among different segments of society.

It is of great importance to understand that the current environment issue is not simple it is complex and having multiple dimensions. Nevertheless, because of the complexity of issue huge literature has been produced in order to understand and solve it. Among such studies this study is also one. In this study one dimension of the issue has been discussed under which the green bag adaptation behaviour has been given much importance. Howbeit, in order to clearly understand the environmental problem, it has been tried to cite the whole literature on the concerned dimension which has been discussed below.

2.1 Green bag adoption behavior

It is important to understand that use of plastic bag is significantly contributing in the environmental degradation. This is the reason that environmentalists are launching campaign against the use of plastic bag and in the replacement of this; green bags are suggested by them. Hence, in this section it has been discussed about the green bag adaptation behavior.

In this context, it has been observed that several environmental organizations are constantly launching different campaigns in order to aware the people about the environmental threats. The main purpose of movements in Islamabad was to enhance awareness in the consumers about the use of plastic bag because this has significantly contributed in the environment degradation. In

this regard the purpose of this study is to investigate the perception of consumer situated in Islamabad regarding the use of eco-friendly shopping bags.

However, the results were interesting that the consumer had full awareness about the usage of bag. According to results they were ready to welcome any kind of decision about the ban of plastic bags. Howbeit, they were facing problems regarding the substitutability of the plastic bags with other because of some problems. Such as the cost and availability of substitute. Where the cost was the main problem regarding this issue because of high cost they were unable to carry or afford that bag.

Withal, the community of Islamabad was found well aware about the environmental issues. This is the reason they showed their serious concern about this issue by understanding its severity. This attention is emanating in term of adapting environmental friendly lifestyle and the purchase of the goods which are not harmful such as green products. Nevertheless, it is also important to understand that the price of any commodity is important factor influencing the consumer preference and the demand orientation.

Additionally, according to the economic theory the demand and price are negatively correlated means increase in one variable cause declines in other. Similarly, the same phenomenon has been analyzed in term of green products. Where the prices of these bags remained high relative to other substitutable commodities. Nonetheless, the consumers of green bags responded oppositely than the normal consumers where they enhanced the demand of the green products whence their price enhanced. The reason which was found was interesting that the consumer perceived that the high prices are the symbol of more environmental friendly commodity. This whole

phenomenon showed the high awareness level of consumer about the environmental threat (Wang et al 2019).

Moreover, it was also observed that much cautiousness has been found among the general public about the formation of green bags. The main reason was that the people were less aware about the formation and ingredients of the green products. However, the green bags are not having much unique and different kind of shape; these are like the common plastic bags and the trash bags, gas and oil sachets, bin liner, packaging films, wrapping covers, aprons and laundry bags which are used for shopping.

Unlike plastic bags, green bags are made with the help of different ingredients which does not include plastic (Expert Skip Hire 2017, sustainability outlook 2016). Therefore, in the production of such products the non-toxic environmental material is used which consists on the vegetable oil derivatives, natural starch, vegetable vast additionally animal and plants are also used. Moreover, it is also a number of products which is used in production of green bag in order to meet its needs. In addition, patented technology is also used in the production of the green bags. There are major 12 ingredients on which this technology contains. Which includes tapioca, potatoes, natural starch, corn, banana, vegetable oil, flower oil etc. the process of production is much complex and passes through multiple stages. Even the paint which is used for the painting of the green bags is also made with the natural ingredients (Sustainability outlook 2016).

These bags are also easily dissolved able. As it has been discussed that the green bags are made of those products which does not contain any kind of plastic particle. This is the reason these are easily dissolve able, even these can dissolve within 180 days naturally and can be reduced it to a

single day by putting human effort. Further this can be dissolved within 15 seconds if we boil the water (Sustainability outlook 2016, Expert Skip Hire 2017).

Resultantly, these bags do not create the environmental problem and not cause of baggage and other dust. Howbeit, because of their natural production these bags do not create any kind of problems for animals (Sustainability outlook 2016). Because of the technology bags are composed of different deceptive electric characteristics in this results these bags become suitable for the electric distorted falsify garble. Additionally, these bases also resist against the grease or oil (Business line 2016).

In a nutshell, the bags are entirely different from the plastic bags. Unlike these bags green bags are cent percent recyclable, biodegradable in addition organic. Nevertheless, the production cost of the bag is higher than the ordinary plastic bags but on the contrary lass then the cloth bag. According to the estimates plastic bag are 35% cheaper and the clothe bags are 500% expensive than the green bags.

This is the reason that the environmentalists are much focusing on the use of green bags and this is why they are representing it on every platform. Such as they are launching campaign through the social media under this they are using WhatsApp, Facebook, twitter YouTube etc. and they are also arranging some kind of seminars on different places in order to aware the people about this issue and the use of green bags so that they may get successful making Pakistan as a nation which is plastic free.

2.2 Green bag.

In order to grab complete knowledge about the green bag it is also important to look insight into the historical evolution of the green bags. Story starts from the 1871 where the scientist Margret

Knight made the machine through which different kind of shopping bag could be produced but these bags had one bad feature that these were not stand able. In this context slight development was made during the 1883 by another scientist Charles Stillwell. Where he patents the machine which was able to produce brown paper bag which were having pleated sides. However, the modified forms of those bags are being used in the markets today.

Similarly, Minnesota Grocer Walter H. Deubner in 1912 invented the first paper tote bag in the history. While sending the bags he observed that the many customers are not attracting because of these bags were not convenient to carry. This is the reason he decided to add the handles and the cords so that he may attract the consumers. More interestingly, because of the less price Deubner was able to capture the market with in less time. Statistics showed that the price of the bag on the retail price was similar to wholesale price of the different bags on that epoch.

Withal, during that epoch the approximately all bags were made of paper material. This process continues till 1960. But in the period of 1960 the tragedy happened when the T shirt type plastic bag was invented by the Swedish company in the period of 1960. This invention prelude to the continues use of the plastic bags which is now creating the huge environment threat. the reason of the fast adaptation of the bag was the low cost of the production. This is the reason that the people start adapting abruptly the plastic bags.

Later, when these bags started creating eco-social problems, different companies started focusing on the recyclable material by means of this they could benefit the consumer and indirectly the whole society. In this regard the green bags are solely best substitute of the plastic bags. The main reason is this which has also been discussed above that these are eco-friendly which cannot harmful for the environment. Furthermore, these bags are made up of cloths as well as green

products. Resultantly, this bag can be used many times. These are having different shapes and styles which are commonly available in the market.

2.3 Green bag knowledge

The knowledge decides each pan, action, method, strategy etc. same is the situation with the environment and the green products. The knowledge of the environmental degradation increases the cautiousness about the environmental issue which leads the people find the better and the new ways about the use of eco-friendly products. in this situation the knowledge of green bag solves this problem. For this purpose, the eco-label may be used.

In this regards many researchers have been conducted their research where the wrote about the eco-labels for the information of the green bags. Rex and Baumann (2007) conducted his study where the main objective of that study was to highlight the importance of the eco-label. According to his study these labels can play vital role in the changing of the consumer perception about the use of the plastic bag and the green bag maybe made his preference by realizing him that this may be safer than other products for the environment.

Similarly, Loir and Thidell (2005) also conducted their study on the same issue where they discussed the importance of the eco-label in term of the green bag sale. In this study they explained that, by these labels consumer purchase decision may be influenced. Moreover, in order to expand information different sources can be used. Such as media print or electronics. Social media and other platforms.

By displaying information such kind picture colors and displays should be used by means of which people can be convinced to focus on the environmental issue. Even this activity can influence the consumer behavior where he can purchase expensive green goods. This was also

confirmed by the (Biswas and Roy 2015, Rockicka 2002) where they conducted the study on the same issue and their findings were quite interesting. Their results suggest that the environmental knowledge made people able to select those kind of good which are good for environment.

The producers of green products are producing multiple products which are having multiple styles and kinds in order to capture a wide range of market share. The producers are also trying to construct a public opinion for the purchase and use of the green products for this purpose they are using the media on larger level. Along with this, other standardized marketing methods have also been applied in order to enhance the awareness about the environmental issues and the public health. This strategy has brought two effects on one page.

On one side it has increased the consciousness among the people about their health and the global environmental threat and on the other side it has raised the sale and purchase of the green products. In other words, it also may be stated that the consumer behavior shifted and many people switched toward the green products. Howbeit, in order to enhance the people's knowledge about the green product both accidental and purposeful strategies have been used. The results of both strategies have been found positively significant (Wang et al 2019).

The positivity of the green products about the environmental issues are having universal recognition. This is the reason the public organization are also advertising the green products in order to enhance the trade of the green products. Under this situation they are using approximately all kind of advertisement resources where the product can be promoted. Where the major source which is being used is the media.

It is of great importance to understand that the knowledge has two dimensions subjective and the objective. It is huge debate which has been found in the domain of social philosophy about the

actual source of the knowledge and the reality of knowledge. Nevertheless, the consumer behavior is having the subjective dimension. The reason is this it is linked with the perception which is based on subjectivity. In this context consumer tries to analyze the whole impact of the green and non-green product on the environment and then the causal effect on the consumer himself.

Where the information is slightly refining form of the data which has great influence in the subjective knowledge. This significantly helps the consumer to decide and evaluate the existing knowledge in order to understand and take the right decision. This can also be said that the higher understanding of the environmental issues leads to the higher consciousness and causes purchase of more green goods. Resultantly, this whole process of information transformation cause in the change of the consumers believes which eminent in the behavior of purchase. Consequently, consumer move toward the green products, this indicates that he have realized that the even individual perception also effects the environment (Wang et al 2019).

This whole phenomenon compels the consumer to participate in the environmental activities where he self-participated in the campaign and tries to control it. In this context (Hong et al 2019) conducted his study where his objective was to analyze the impact of the consumer behavior on the green products in term of environmental issues. The author focused on the American consumer preference. The results indicate that the huge amount of the consumer were focused on the environmental issues where the statistics showed 90% additionally 75% consumer thinks on the environmental problem while purchasing any kind of product.

2.4 Awareness of environmental issues (behavioral beliefs)
As Kant said that there are two kind of knowledge's a priori and posteriori. Similarly, other scholars have also discussed about different dimensions. It has also said that people have their

pre knowledge before having any knowledge from society which he obtained from the basic institution. The basic institution from where the person obtains the knowledge is family. But the issue is this family or home is not isolated from the rest of society.

It is not only port of the society but also influenced by it. This is the reason if the common social perception about the environment is positive the consumer has the positive image and if the perception is negative and the so does consumer. Moreover, if the society is not organized the different people have different level of knowledge and understanding. This leads to the different consumer having different perception about the market.

This whole phenomenon generates the different commitment level of the consumer regarding the environmental problems and the purchase of the good related to that. However, these commitments can be classified into main domains. For this purpose, three main domains are considered. These three domains are concerns with the conceptualization, awareness and protection of the environment. Though these all dimensions seem to be different and as these are in term of theorization but the outcome of all the dimensions are entirely different (Schwartz and Miller 1991, Chang 2011, Mohr et al 1998, Shrum et al 1995).

It is also a fundamental notion to understand, which has also been discussed above the several times is that the knowledge is the fundamental point which influence the consumer behavior in addition the knowledge is also not an independent thing it is derived from the typical information which is given to the consumer. But, it is also important to know that the information cannot obtain without participation in the activity. Hence the involvement is the mandatory element in order to obtain knowledge (Petty and Cacioppo 1986).

Thus the knowledge has the multiple dimensions and the environment is also one. In this domain it aware the consumer about the environmental issue and his purchase behavior on this. More importantly it also aware that how the industrial production is destroying the whole environment. So in this regard these all kind of activities may influence the consumer activity and narrow down toward the purchase of the green products (Cheam and Pham 2011).

This whole process makes the consumer environment conscious and compels him to reduce or shift the whole non green products. Therefore, in order to confirm this concept number of studies have been conducted on this dimension. As (Hines et al 1987, Kotchen and Reiling 2000) conducted their study and derived the results that the environmental knowledge is the key deriving factor of the consumer behavior regarding this. Similarly, Lin and Haung 2012 in addition Kumar et al 2017 found that it all about the consumer perception what does he thinks about the environmental issue. If he has more knowledge he would be more conscious and purchase more green goods.

Kim and Chung also did his study on the same issue where he tried to discuss the relationship between environmental issue, consumer behavior and the purchase of the green products where the consumer awareness was the key factor of the study. In the study he derived the same results where he discussed that the information about the green products and the environment problem play the significant role in the purchase of the green products.

However, among the most recent studies (Mondal and Maiti 2019, Murali et al 2018) claimed that the trend toward the environmental consciousness has much increased and the purchase of the green products is positive sign. (Zhang et al 2018) also said that the environmental knowledge has increased much awareness about the green products which has increased its

efficiency. (Hong and Guo 2019) found the same results in which the consumer perception is the important factors of the purchase of the green products.

On the other side, (Liu et al 2012), conducted very interesting study where they discussed the increase of the trade of the green products on different side where he said that the supply chains members also played very important role in the expansion of the green products. Where he discussed if the manufacturer and the retailer will have complete knowledge of these products this may increase competition among them and cause to generate the environment where the consumer will compel to purchase the goods. On the other side, if the supply chain members are not actively participating in the supply of eco-friendly products than the awareness of the consumer may compel to bring those goods in the market and may generate competition among them.

Similarly, Wang and You (2015) conducted their study on the role of the supply chain members (producer and retailer) in the awareness of the consumer about the environmental issues. In the production, consumption and sale of these products all the parties are better off. This realization to the supply chain members compel to bring these products in the markets and sell them.

Conclusively, it can be stated that the concept of environmental issue is not new it is as old as this problem is. But the formal debate on the issue is new which can be seen in the decade of 1960s (Roth 1992). Thence from the researchers took much interest in this dimension and they have produced much literature yet. Nevertheless, this literature has many gaps and problems. One of this is the definition of the issue. Though many definitions have been given about the issue but these are still incomplete and this is the reason there is lack of consensus among the researchers on this.

But whole the debate can be divided into two segments. First one concern with the sets of believes which is based on the information. This creates relationship between the environmental problem and the human behavior (kollmuss and Agyman 2002, Zsoka 2008). Second one is about the integration of the whole knowledge which is produced in this dimension and the linking it with the problem to aware the people more specifically consumers (Kikuchi-Uehara et al 2016).

Finally, it can be stated that the environmental awareness is not as simple as it seems. It is multi-dimensional phenomenon. Moreover, this whole structure based on three major pillars. These pillars are first effectiveness which deals attitude of the consumers. Second cognitive this deals with the knowledge and third and last one is conative this discuss about the behavioral intention of the consumer (Kollmuss and Agyeman 2002 and Zsoka 2008).

2.5 Environmental conservation

It is much important to spread information and awareness not only about environmental issue but also environmental conservation. The reason is this information on both the dimension will not only increase the conscious level of the consumer but it will also help the consumer to make the strategy to overcome this issue. Nonetheless, in order to do this different source should be used and focused on the sources which are more effective.

In this context, the media conventional and social both can play significant role. Moreover, social media may play much important role to enhance awareness among the youngsters and the adults. Therefore, the use of social media tools such as YouTube, Facebook, etc. should be made organized and systematic so that it may influence larger segment of society (Smith et al 2011). This whole campaign may have other advantage which may increase the sale of the green product. This can also be said that the killing of two birds with one stone.

In this dimension Kim and Choi (2005) conducted his study where he discussed his perception with the evidence that the since few decades the people's perception of the environment has been changing because of the awareness. Similarly, (Hueber 1991) conducted his study on the American behavior about the environmental issue. his results indicate that the 70% of the American found in the favor and protection of environment in addition 49% American showed their perception on the market where they told that they avoid to produce those goods which are anti-environment.

So the environment issue and its control depend on the persons as well the belief of the society or group with which the person is connected. Because both are interlinked and interdependent. Individual has social influence and society also influence the individual perception (Schultz 2000, Stern et al 1995). In the extension and confirmation of this idea (Kim and Choi 2005) explained that the different people have different perceptions, but these are not entirely different and isolated. Moreover, the whole conceptual understanding depends on the social norms, culture etc. this is the reason that it is not simple. This whole process is complex and dynamic (Cross and Madson 1997).

Similarly, Stern and Dietz (1994) argued that the social structure has deep influenced in the individual's perception. This structure is having three parts. This whole structure based on the value based theory. He further elaborated that the whole personal environmental values are not determined in isolation but by their environmental attitude. Furthermore, Duckit and Cameron (2006) found that the because of the cultural differences of the Asian and European their attitude towards environmental problem is different.

This is the basic notion which is taken as the base to construction the theoretical foundation of the current study. Because as it has been discussed above that the culture has a great influence on the individual perception but even this there are many individuals which are different in the same culture. This is the reason it will support to argue that the are factors which make an individual different from its culture.

This is also the basic concept in which it is discussed that the awareness environmental issue is not new it has obtained in the inheritance. Because it is linked with the survival of the human. In order to confirm this this is the common statement which can be observed in the different cultures that the nature should not be harmed because it is the part of human and human is the part of nature. The huge of amount of literature has also been produced in this dimension (Schultz and Delany 1999).

On the other side, there is another school of thought which concern with the environmental issue. This is known as the egoistic view of the environmental issue. Under this school of thought the self-transcendence is more effective tool to enhance public awareness in order to control environmental threat rather than the self-enhancement (Schultz 2001). This attitude is based on the altruistic behavior. The reason is this, it based on the behavior where the person is more concerned with the benefit for humanity. By means of this, environmental protection may be enhanced because under this attitude any man will more concerned with the human consequences of the environmental degradation which will have to face the upcoming generations (Kim and Choi 2005).

## 3. Research Methodology

3.1. Theoretical background

We applied the conceptual framework of the value-attitude-behaviour relationship. Value–Attitude–Behaviour proposed by Hierarchy Model Homer and Kahle's (1988). This model integrates the interrelationships between values, attitudes, and behaviours by positing a hierarchical influence of cognitions in which the influence theoretically flows from more abstract cognitions (i.e., values) to mid-range cognitions (i.e., attitudes) to specific behaviours. Hence, the model implies a major flow of causation from values to attitudes to behavior, so that the strongest causal effects are between values and attitudes, and between attitudes and behavior. Hence, the model can be visually depicted as a causal sequence: value → attitude → behaviour. The model also assumes that values can influence behaviour's both directly and indirectly through attitudes.

3.2. Research strategy

For this study, the survey strategy adopted by this the data and information collected through questioners. It allows the researcher to study multiple variables at one time. Qualitative analytical techniques used for drawing interference for existing relationships. By our research objectives, we have to investigate the relationship between Green Bag adoption behaviour to that of Green knowledge, awareness from environmental issues (behavioural beliefs) and Environmental Conservation.

3.3. Conceptual framework

In this research, Green bag adoption behaviour as a dependent variable and awareness from Environmental Issue (Behavioural beliefs), Green bag knowledge, Environmental conservation is an independent variable depicted in Fig. 2.
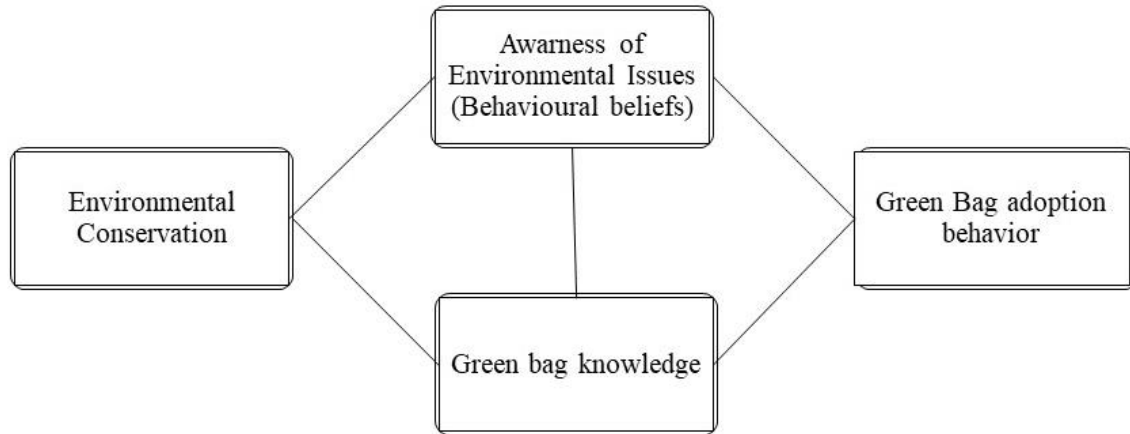
Figure 2 Conceptual framework

3.4. Empirical framework

SEM is divided into measurement equation and structural equation (Jöreskog, 1967). The measurement equation is constructed to test the relationships between latent variables and their corresponding observed variables, including the independent latent variable equation (1) and the dependent latent variable equation (2). The structural equation is employed to test the causal relationships between the independent latent variables and the dependent latent variables, which is also known as path analysis, in equation (3).

$$X = \Lambda_x \xi + \delta \qquad 1$$
$$Y = \Lambda_y \eta + \varepsilon \qquad 2$$
$$\eta = B\eta + \Gamma\xi + \zeta \qquad 3$$

Where X represents the independent variable, which reflects the indices of awareness from Environmental Issue (Behavioural beliefs), Green bag knowledge, Environmental conservation; ξ represents the independent observed variables, referring to their awareness from Environmental

27

Issue (Behavioural beliefs), Green bag knowledge, Environmental conservation ; Y represents the dependent variable, which reflects the indices of green bag adoption behavior ; η represents the dependent observed variable, referring to their behavior ; and Λx Λy represent the correlation coefficient matrices between the independent latent variables, the dependent latent variables and their corresponding observed variables, respectively; δ and represent the measuring error vectors of the exogenous ε observed variables and the dependent observed variables, respectively; B represents the coefficient matrix between some dependent latent variables and other dependent latent variables, reflecting the mutual influences among the endogenous latent variables; represents Γ the structural coefficient matrix between the dependent and the independent latent variables, reflecting the path coefficients of the independent latent variable X on the dependent latent variable Y; ζ represents the random error term of the structural equation.

3.5. Proposed hypotheses

As discussed in the literature review and for the understanding of research, literature proposed some hypotheses which define the study dimension and gives provision to a theoretical framework. Following hypothesis generated for the justification of our study:

H_1: Consumers environmental conservation values have a positive correlation with behavioural beliefs (awareness from environmental issue).

H_2: Consumers environmental conservation values have a positive correlation with green bag knowledge.

H_3: Consumers green bag knowledge have a positive correlation with behavioural beliefs (awareness from environmental issue)

H_4: Consumers behavioural beliefs have a positive effect on green bag adoption behaviour.

H_5 : Consumers green bag knowledge have a positive effect on green bag adoption behaviour.

3.6. Sample selection

Following the data collection method proposed by (Hair et al.2014) that "the number of variables multiplies by twenty and then double it." As for concern, our study has four variables. By following this rule, we got $(4\ x\ 20 =\ 80, 80 + 80)\ 160$ respondents. But for minimizing any uncertainty problem, we collected data 250 questionnaires. To get the final results, a sample of 168 was obtained after eliminating questionnaires with incomplete or inconsistent key information.

3.7. Population frame

The population frame of our research to fill questionnaires is the public located in Islamabad, for example, employees, businessperson's, students, homemakers, shop keepers that are usually considered as general consumers.

3.8. Type of study

For our study, we collected primary data and adopted the structural equation modeling research design model. This model defines the relations between specified variables such as environmental conservation, awareness from the environmental issue (behavioural beliefs) and green bag knowledge and green bag adoption behaviour.

3.9. Sampling technique

We use judgmental and purposive sampling techniques for our research. We collected data to check the relationship of our selected variables through printed research instruments that was in the form of questionnaires. The English language used in questionnaires for responses of the respondents. Moreover, no personal information gave to the third party.

3.10. Research instruments

The instrument for this study not generated but adapted from previously conducted studies. The instrument contains two portions in first part demographic variables that are composed like age, gender, income, education and status. In the next part, questions are included. All these four items (green bag adoption behavior and environmental conservation, awareness from the environmental issue (behavior beliefs), green bag knowledge five) measured by Likert five scale point (1 most negative and 5 most positive). The reliability of the instrument tested by Cronbach alpha. 1) The study used confirmatory factor analysis (CFA) to check the reliability and validity of constructs to get a satisfactory measurement model (MM). 2) This study used a structural model (SM) to check the relationship in the hypothesized constructs.

The instrument is adapted Reliability of the test is 0.70 (Cranach alpha reliability) and 0.79 (Test-retest reliability). Validity of the test is content and faces validity.

3.11.Data analysis techniques and Tools

- AMOS and SPSS software used to estimate model results

- Demographic statistics used to find the frequencies and percentages for demographic variables.

- Reliability analysis used to check the reliability of data.

- Descriptive statistics used to check the normality of data by calculating the mean, standard deviation, skewness and kurtosis.

- Measurement model (MM) and the structural model (SM) used to check the strength and direction of the relationships

In order to derive results we have used maximum likelihood method. This method has been employed to estimate the structural equation modeling along with the latent construct. Moreover,

it has also been performed the summary statistics (descriptive statistics). The reason of performing this was to find out the values of mean, frequencies, percentages in addition standard deviation.

Furthermore, for the examination of the model, two step method has been used which was initially suggested by (Bagheri et al 2019). Where in first step confirmatory factor analysis (CFA) has been used which check the both validity in addition reliability of the results for getting satisfactory measurement model (MM). Nevertheless, in second step structural model has been used to examine the correlation in the hypothesized constructs. It is also important to know that the V represent values (values), ATT shows attitude (behavioral belief), KNO manifest Attitude (Green bag knowledge) finally, BEH immanent Behavior (Green bag adaptation behavior).

Additionally, in order to check the reliability of indicators we used Cronbach's alpha. For examining the validity of the constructs convergent validity has been used (Borges and Lansink 2016). Moreover, the convergent validity is also used to measure the magnitude, significance level in addition the tendency of the standardized factor loadings. Nevertheless, for examining the convergence validity we used standardize factor loading ≥ 0.5, AVE (average variance extracted) ≥ 0.5, CR (composite reliability) ≥ 0.7.

The MM validity (acceptable model fit) of few indices was examine through checking the goodness of fit. In this regard, relative chi-square has the value of <5.0, RMR (root mean square residual) and RMSEA (root mean square error of approximation) < 0.08, additionally, CFI (comparative fit index), GFI (goodness-of-fit index), AGFI (adjusted GFI), in addition, IFI (incremental fit index) > 0.90 (Chen 2016).

Withal, for diagnostic test, modification indices and standardized residuals has been examined. Finally, it was tested SM after obtaining satisfactory measurement model. However, in order to test SM, we begin with estimating multiple regression, then we move toward the magnitudes where we found the relationship nature among the latent constructs. (Hair et al 2012) argued about the suitability of SM. Where he explained that it is the better tool to examine the relation and testing of the hypothesis.

Purposive sampling technique

The purposive sampling technique, also called judgment sampling, is the deliberate choice of an informant due to the qualities the informant possesses. A purposive sample, also referred to as a *judgmental* or *expert sample*, is a type of nonprobability sample. The main objective of a purposive sample is to produce a sample that can be logically assumed to be representative of the population. This is often accomplished by applying expert knowledge of the population to select in a nonrandom manner a sample of elements that represents a cross-section of the population. In probability sampling, each element in the population has a known nonzero chance of being selected through the use of a random selection procedure. In contrast, nonprobability sampling does not involve known nonzero probabilities of selection. Rather, subjective methods are used to decide which elements should be included in the sample.

4. Results

4.1 Descriptive statistics

The 160 respondent from Islamabad Pakistan Data was collected through online Google doc. The Descriptive information about respondents is shown in Table 1. The respondents to the survey consisted of 72.0 present males and 28.0 present of females and are in the age group of respondent were aged less than 18 years (7.1percent), above 18 to 25 years (60.1percent), above 26 to 30 years (19.0percen), and greeter then 30 (13.7 percent). Regarding Marital Status 76.2 single and 23.8 married respondents. Most of the respondents are living urban 69.0and rural 31.0. Respondents monthly family income is less than 30000 (23.2 percent), above 30000 to 40000 (13.7 percent), above 40000 to 50000 (5.4 percent), and greeter then 50000 (6.5 percent). Here the monthly expenditure of respondents are less than 25000 (70.8 percent), above 25000 to 40000 (17.3 percent), above 40000 to 50000 (5.4parcent) and greeter than 50000 (6.5 percent).The respondents can use vehicle,56.0 respondents are used bike, 1.2 percent used local transports, 28.0 percent respondent are used car and 14.5percent respondents no vehicle.50 respondents are market visit every day (29.8percent), 83 respondents are visit market once a week (49.4percent), 9 respondents are market visit once a month (5.4persent), 26 respondent are visit market twice in month (15.5percent).

Table 1. Descriptive information about respondents.

Index	Description	Frequency	Percentage
Age	<18	12	7.1
	18-25	101	60.1
	26-30	32	19.0
	>30	23	13.7
Gender	Male	121	72.0
	Female	47	28.0
Merital Status	Single	128	76.2
	Married	40	23.8
Family average size	≤5	77	45.8

	6-10	82	48.8
	≥11	9	5.4
Resident	Rural	52	31.0
	Urban	116	69.0
Family Income (Monthly)	<30000	39	23.2
	30000-40000	23	13.7
	40000-50000	45	26.8
	>50000	61	36.3
Monthly Expenditure	<25000	119	70.8
	25000-40000	29	17.3
	40000-50000	9	5.4
	>50000	11	6.5
Type of vehicle use	No vehicle	25	14.9
	Bike	94	56.0
	Local Transport	2	1.2
	car	47	28.0
Market visits	Every day	50	29.8
	Once in a week	83	49.4
	Once in a month	9	5.4
	Twice in a month	26	15.5
Index	**Description**	**Mean**	
Distance to market	Km	3.655	-

4.2 Green bag information, perception, and behavior of respondents

Table 2 shows that green bag information, perception, and behavior of respondents. Hare the 95.8 percent respondents know about environmental problem like water pollution, deforestation, air pollution, waste production, climate change etc. Or 69.6 percent respondent knows about green legislation. The 93.5 percent respondent response green bags good initiative. Or 23.2 percent always and 55.4 percent sometime use green bag. Hare the 33.9 percent respondent responses green bag is good or 14.3 percent respondent responses cloth bag is good and 51.8 percent respondent's responses green and cloth both are ok. The 68.5 percent respondent's things shopping behavior changed to green legislation. The 79.8percent respondents have no feel inconvenience by using green bag. The 94.0 percent respondents think it's better the shopkeeper use the green shopping bag.

Table 2. Green bag information, perception, and behavior of respondents

Description	Code	Frequency	Percentage
Do you know about environmental problems (water pollution, deforestation, air pollution, waste production, climate change, etc.)?	No	7	4.2
	Yes	161	95.8
Do you know about green legislation?	No	51	30.4
	Yes	117	69.6
Do you think green bag is good initiative?	No	11	6.5
	Yes	157	93.5
Do you usually use green bag?	Yes, always	39	23.2
	Sometimes	93	55.4
	No	36	21.4
Is green bag good or cloth bag, does it really matter?	Both are ok	87	51.8
	green	57	33.9
	Cloth	24	14.3
Do you think your shopping behavior changed due to green legislation?	No	53	31.5
	Yes	115	68.5
Do you feel inconvenience by using green bag?	No	134	79.8
	Yes	34	20.2
Do you think it's better the shopkeeper use the green shopping bag?	No	10	6.0
	Yes	158	94.0

4.3 Code, item statement, mean, standard deviation of the constructs

Table 3 shows the descriptive statistics of variable which have been used in the study. The total no of observation 160. The instrument to test the green bag adoption behavior measured by Liker five scale point (1 most negative and 5 most positive).we designed construct like Value (environmental conservation(four items), Attitude (Behavioral belief)awareness from environmental issue (seven items), Attitude (green bag knowledge (three items),Behavior (green bag adoption behavior (three items).in the adoption intention part of the questionnaire in accordance with published literature (Maturos Kanchanapibul at all 2013). Column 1 shows the average mean of variable environmental conservation has mean of 4.077, Behavioral belief awareness from environmental issue has mean 3.645. green bag knowledge has mean 3.978 and green bag adoption behavior has mean 2.531 according. Hare the environmental conservation has highest mean 4.077 and lowest mean 2.531 green bag adoption behaviors.

Colum 2 designate the value of standard deviation, environmental conservation has the value of standard deviation is 1.064, awareness from environmental issue 0.997 value of standard deviation, green bag knowledge 0.963and green bag adoption behavior has the value of standard deviation 1.095 respectively. The range of skewness and kurtosis was between −2 and +2 which could be considered as normal univariate distribution (George and Mallery, 2010).

Table 3. Code, item statement, mean, standard deviation of the constructs

| Code	Description	Mean	SD	Skewness	Kurtosis	Constructs
V1	You are concerned about the future of the planet.	4.006	1.064	-1.37	1.556	**Value**
V2	You feel as though you are part of the environment.	4.238	0.986	-1.93	4.027	**(environmental**
V3	You have a conscious of decreasing the amount of plastic waste and the usage of chemicals, water, and energy.	3.958	0.924	-1.57	3.162	**conservation)** Mean 4.077
V4	Humans are really abusing the environment	4.107	0.967	-1.51	2.598	SD 0.985
ATT1	By buying green products, you are contributing to society for the present and future.	3.964	0.847	-1.42	1.267	**Attitude (Behavioral**
ATT2	When buying green products instead of non-green products, you are acting morally.	4.071	0.900	-1.12	.683	**belief)** Mean 3.645
ATT3	By buying green products, you are contributing to new businesses that focus on those products.	3.982	0.837	-1.26	1.196	SD 0.997
ATT4	I avoid buying products which are potentially harmful to the environment	4.179	1.011	-1.49	1.402	
ATT5	I don't believe my behavior has an effect on environment	2.542	1.326	-1.06	.295	
ATT6	I use plastic because it is convenient to carry goods	3.048	1.157	-0.68	-.223	
ATT7	Any changes I make to help the environment need to fit with my lifestyle	3.732	0.899	-0.95	.436	
KNO1	You would like more information about the green bags that are available at the point of sale before buying them.	3.833	0.933	-0.91	-.268	**Attitude (Green bag knowledge)**
KNO2	More information about green bag could help you make decisions about them.	4.167	0.971	-1.03	-.109	Mean 3.978 SD 0.963
KNO3	Characteristics of green bag could help you decide whether to buy them.	3.935	0.986	-0.94	-.208	
BEH1	You ____ buy green bag.	2.815	1.202	0.24	-.967	**Behavior (Green bag adoption**
BEH2	You spend ____ money on green bag.	2.637	1.023	0.19	-.083	**behavior)**
BEH3	Do you think you spend extra time on buying green bag	2.143	1.063			Mean 2.531
				0.51	-.720	SD 1.095

4.4 MM Model

Results of the measurement model (MM) assessment for construct goodness of fit (gof) and validity/reliability are described in Table 4. Measurement validity is according to the conventional rule of thumb, which means the model fit the data well. The outcomes of first-order confirmatory factor analysis (CFA) are statistically significant for all the items of the constructs in the model and the factor loadings had the expected sign and values were also above 0.5. Moreover, CR and AVE values for all mentioned constructs were greater than 0.7 and 0.5, which is presented in Table 4. Goodness-of-fit statistics had a reliable result: such as relative chi-square = 0.86, df = 112, CFI = 095, IFI = 0.95, RMSEA = 0.074, AGFI = 0.81, GFI = 0.86 and RMR =0.70.

Table 4. Results of model and first-order CFA

Code	Construct and description	Item loading
Value (environmental conservation): Cronbach's alpha = 0.82	AVE = 0.74	CR = 0.83
V1	You are concerned about the future of the planet.	0.71
V2	You feel as though you are part of the environment.	0.78
V3	You have a conscious of decreasing the amount of plastic waste and the usage of chemicals, water, and energy.	0.70
V4	Humans are really abusing the environment	0.79
Attitude (Behavioral belief): Cronbach's alpha = 0.94	AVE = 0.70	CR = 0.94
ATT1	By buying green products, you are contributing to society for the present and future.	0.93
ATT2	When buying green products instead of non-green products, you are acting morally.	0.86
ATT3	By buying green products, you are contributing to new businesses that focus on those products.	0.84
ATT4	I avoid buying products which are potentially harmful to the environment	0.84
ATT5	I don't believe my behavior has an effect on environment	0.80
ATT6	I use plastic because it is convenient to carry goods	0.78
ATT7	Any changes I make to help the environment need to fit with my lifestyle	0.81
Attitude (Green bag knowledge): Cronbach's alpha = 0.91	AVE = 0.78	CR = 0.91
KNO1	You would like more information about the green bags that are available at the point of sale before buying them.	0.84
KNO2	More information about green bag could help you make decisions about them.	0.94
KNO3	Characteristics of green bag could help you decide whether to buy them.	0.88
Behavior (Green bag adoption behavior): Cronbach's alpha = 0.78	AVE = 0.57	CR = 0.80
BEH1	You _____ buy green bag.	0.65
BEH2	You spend _____ money on green bag.	0.93
BEH3	Do you think you spend extra time on buying green bag	0.67

MM fit indices: relative Chi-square = 1.90; df = 112; CFI = 0.95; IFI = 0.95; RMSEA = 0.074; AGFI = 0.81; GFI = 0.86; RMR = 0.70.

4.5 SM Model

Results of structural equation modeling reveled that H4 awareness from environmental issue (Attitude) positively influenced green bag adoption behavior (B = 0012, p < 0.001) and H5 green bag knowledge positively influenced green bag adoption behavior (B = 0480, p < 0.001). Hare a covariance's H1 environmental conservation (value) are positive influence. Attitude (B = 0.369 < p 0.001) or H2 value are positive influenced knowledge (B = 0.345 < p 0.001) or H3 knowledge are positively influence attitude (B = 0.777 < p 0.001). In order to confirm the hypotheses, they are first verified through the t-test method. While, a t-test is generally implemented to examine one group of the population, and the results are in line with conventional rule of thumb.
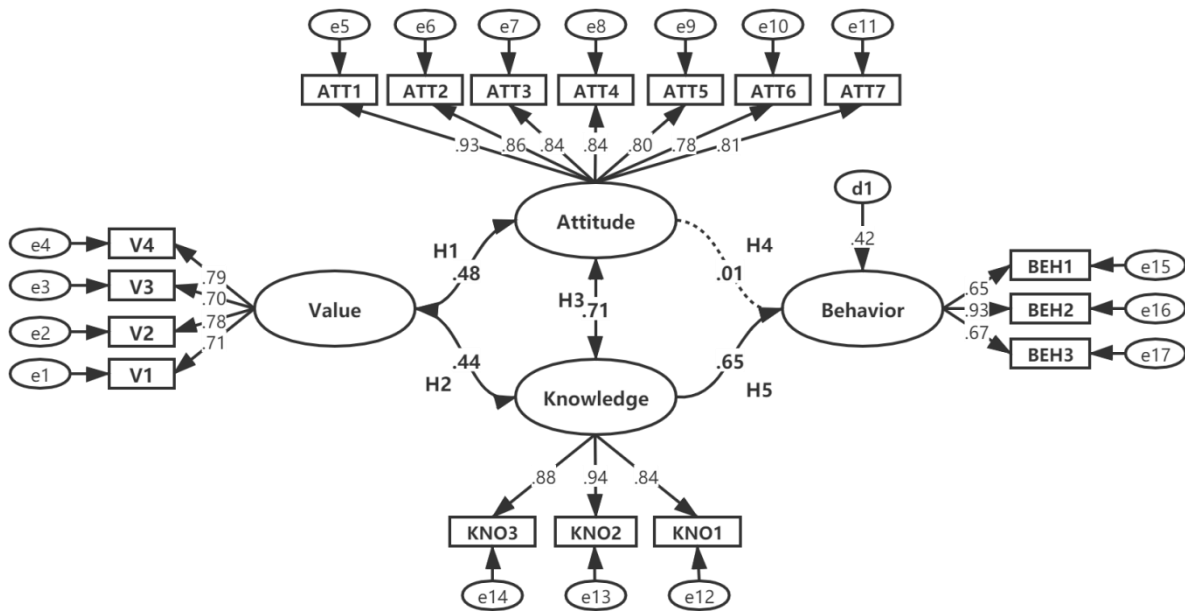
Figure 3. SM Model

As shown in Table 5 each hypothesis was tested with t test statistics, and all of them have been accepted except Attitude → Behavior. In addition, SPSS and AMOS was used to examine the path coefficients of the causal relationships between constructs in our model in order to validate

or invalidate the hypotheses. Due to this, it was possible to investigate whether the consumer behavior to buy are influenced by their attitude, knowledge and values to green issues and whether the behavior to buy lead to actual purchase of green bag.

Table 5. Outcomes of the SM based on standardized path coefficient

Hypothesis	Coefficient	Std. Error	T-value
H4: Attitude → Behavior	$0.012^{n.s}$	0.080	0.153
H5: Knowledge → Behavior	0.480***	0.104	4.59
Covariance's			
H1: Value ↔ Attitude	0.369***	0.081	4.56
H2: Value ↔ Knowledge	0.345***	0.080	4.295
H3: Knowledge ↔ Attitude	0.777***	0.116	6.710

*Note: *** Supported at P < 0.001, ** Supported at P < 0.01, * Supported at P < 0.1*

5. Discussion

The findings of this research have shown that the SEM are appropriate framework and methodology. According to our understanding, a similar approach regarding to green bag driver behavior by using this model has not been reported in the previous literature. The results showed that the MM and SM provided an acceptable fit. In MM, the constructs (V, ATT, KNO and BEH) denoted reliable measurement items, and in SM, these four constructs typically fit and positively influenced the model (Yazdanpanah et al. 2016; Rezaei et al. 2019). We described a strong empirical evidence on the casual relationship among environmental conservation and attitude towards awareness from environmental issue and attitude towards green bag knowledge and those relationships positively influenced on green bag adoption behavior.

The outcome of **H₁** supports the model and is significant. Values positively influenced on attitude. It is much important to spread information and awareness not only about environmental issue but also environmental conservation. The reason is this information on both the dimension will not only increase the conscious level of the consumer but it will also help the consumer make the strategy to overcome this issue However if buyers have a positive ATT towards environmental issues, they will buy more green goods only if such goods are produced in a rigorous standard under a robust eco-certification scheme. Schebesta (2018) also pointed out that consumers depend on certification as one of the primary factors in making green buying decisions. While, our research observes whether the quality of green products exerts any moderating effect on consumers' ATT towards environmental issues.

The outcome of **H₂** supports the model and is also significant. Values are positively influenced on green bag knowledge. Green product information is important, green marketers should include transparent and reliable on-line information to help consumers better understand the

requirements and features of legitimate green products. Since many consumers are young consumers, marketers are advised to share knowledge about green bags via Facebook, WhatsApp and WeChat. Consumers are encouraged to make recommendations on innovative features of desirable green goods. Olli et al. (2001) proposed that the active involvement of customers in an environmental network would promote environmental behavior. Companies may place videos on their websites showing how their environmentally friendly goods are made with renewable ingredients and are bundled with recycled materials. Companies should increase green product portfolio. Once consumers realize that the advantages of green goods are outweight costs in the long run, customers will buy more green products. Huang et al. (2014) stated that information and awareness from consumers could change their current buying behavior towards a greener lifestyle. As Chatterjee (2009) suggests, consumers who use green products by considering the use of such products as a way to improve their social status. Hence, firms are encouraged to design visually attractive green products or provide evidence of how green products outperform non-green ones. Firms should devote more efforts to research and development by adding new features.

Moreover, the outcome of **H₃** support the model and is also significant in our model, knowledge is positively influenced on behavioral beliefs. Finding of this research broadened our understanding of Islamabad consumers towards green bag adoption behavior. Aside from ecological awareness (Chan, 1999), the findings of our research highlighted that consumers who are specialized in green product screening have been promoting green bag adoption behavior in a collectivistic society. Moreover, research findings extended the study of Li (1997) that of the role of demographics and green bag knowledge was found as a significant factor but ignored cognitive factors that determine green bag adoption behavior such as knowledge and attitude of

green product. Thus the knowledge has the multiple dimensions and the environment is also one. In this domain it aware the consumer about the environmental issue and his purchase behavior on this. More importantly it also aware that how the industrial production is destroying the whole environment. So in this regard these all kind of activities may influence the consumer activity and narrow down toward the purchase of the green products (Cheam and Pham 2011).

The outcome of this research shows insignificant **H₄** in model shows that attitude positively influenced green bag adoption behavior. Moreover, attitude toward awareness from environmental issue had a great effect on green bag adoption behavior. Attitude is the most important component to shape the adoption behavior and to deal with a consumer in the context of their environment friendly practices. Concisely, attitude is the response of behavioral belief and outcome valuation (Senger et al., 2017a & 2017b; Despotović et al. 2019), which develop ones' reasonable judgment, results in the shape of favorable intention in the involvement of a specific activity. In fact, precise attitude towards behavior is the best starting point to amend or modify that behavior (Senger et al. 2017b; Borges et al. 2019). The results show H₄ insignificant because consumers are known about awareness for environmental issue but they don't have to spend extra money or time.

The outcome of KNO was also in line with previous study (Rex and Baumann 2007), which had significant **H₅** in model and described that green bag knowledge influenced positively the green bag adoption behavior. The positive effect of reliable and prevailing green bag knowledge on green bag adoption behavior. Our outcome also in line with the findings of Kim and choi (2005) that this important factor of green bag knowledge can be included into model, which can promote consumers towards green bag adoption behavior. Others researchers shed lights on green studies such as Rahimah et al. (2018) by highlighting the contribution to the society i.e.

producing more jobs and increasing new slots of green business. It is concluded that focus on consumers' attitude and knowledge and should morally obligated to buy green products and the quality of these green products should high.

Our finding contributed to the literature of green purchase behavior which is environment friendly and is a kind of environmental considerations. The study found a link through consumers' attitudes towards going green, namely attitude towards environmental issues and behavioral beliefs and value towards environmental conservation. Moreover, we tried to fill the gap in the dearth of research and this study added to the existing literature because no such research has been found with respect to Pakistan consumers regarding green purchase behavior. This study provided a novel indication for better comprehension by providing some insights and theoretical contributions that could be useful for policymakers. Finally, policymakers provided indications to how they can improve superior green product attitudes and attributes of consumers and to drive for ecologically friendly behavior.

6. Conclusion & policy recommendation

The study examines the mechanism and condition of how consumers' environmental value influenced green bag adoption behavior indirectly through environmental attitudes. Consumers' attitude towards environmental issues and attitude towards ecological benefits had stronger influence on green bag adoption behaviour. The study provided a framework of green bag adoption behaviour in which it suggested to see how it influences the consumers and to the environment. It tells marketing managers & practitioners about the key predictors of green consumerism among consumers. However, for green marketing purpose this model helps the organization to respond according to the environmental concern and to how they can get competitive advantage over others. It not only limited to organizations but also a framework for

government to take serious decisions regarding environmental sustainability purpose. Marketing managers should allocate their budget by considering this model for corporate social responsibility to enhance the awareness from environmental issues as this model states the positive mediation of awareness from environmental issues. This model also be adoptable for those organizations who are currently following green marketing approach and wants to maximize their profits. Previously, policy makers relied on incentives and subsidies to encourage green bag usage which led to increased burden on the exchequer. However, the study reveals that it is not only the financial aspects that lead consumers to decide on adoption of green bag; consumers are also driven by emotional and social considerations. Thus, policy makers could formulate green programs and mass messages that appeal to consumers' sense of responsibility to voluntarily adopt green bags. Having learnt and understood consumers' behavior, a sustainable strategy can be developed to take advantage of some useful insights into improving the effectiveness of long-run green appeal.

Limitations

The SEM is a satisfactory framework in the examination of pro environmental issues. While some limitations should be considered: 1st the compulsory development needed in the improvement of constructs for a comprehensive understanding of the actual behavior because of the limited use of SEM in evaluating the behavior. 2nd, this study only used the Islamabad Pakistan as a sample; thus, the results cannot be generalized to different regions, where the structure of the constructs might be different for useful explanation of model.

Appendix

Table 6. Percentage response of respondents in each scale (most negative → most positive)

Code[a]	1	2	3	4	5
V1	5.4	5.4	7.7	46.4	35.1
V2	5.4	1.2	3.6	44.0	45.8
V3	4.8	2.4	8.9	60.1	23.8
V4	4.2	2.4	9.5	46.4	37.5
ATT1	10.7	3.6	5.4	61.9	18.5
ATT2	5.4	7.1	11.9	41.7	33.9
ATT3	7.7	4.2	11.9	52.4	23.8
ATT4	8.9	3.0	6.0	38.1	44.0
ATT5	10.1	5.4	12.5	44.0	28.0
ATT6	7.7	7.1	26.2	32.1	26.8
ATT7	7.7	7.1	19.6	50.0	15.5
KNO1	11.9	10.7	8.3	53.0	16.1
KNO2	9.5	10.1	6.0	36.3	38.1
KNO3	11.9	9.5	7.1	49.4	22.0
BEH1	15.5	32.7	20.8	22.0	8.9
BEH2	16.7	25.0	45.2	8.3	4.8
BEH3	35.1	26.8	25.0	11.3	1.8

[a] V = Value (environmental conservation); ATT = Attitude (Behavioral belief); KNO = Attitude (Green bag knowledge); BEH = Behavior (Green bag adoption behavior)

References

Austin, M., 2007. Species distribution models and ecological theory: a critical assessment and some possible new approaches. Ecol. Model. 200 (1e2), 1e19.

Bagheri A, Bondori A, Allahyari MS, Damalas CA (2019) Modeling farmers' intention to use pesticides: an expanded version of the theory of planned behavior. J Environ Manag 248:109291.

Barber, N., Taylor, C., Strick, S., 2009. Wine consumers' environmental knowledge and attitudes: influence on willingness to purchase. Int. J. Wine Res. 1 (2), 59–72.

Biswas, A., Roy, M., 2015. Leveraging factors for sustained green consumption behavior based on consumption value perceptions: testing the structural model. J. Clean. Prod. 95, 332–340.

Bläsing, M., Amelung, W., 2018. Plastics in soil: analytical methods and possible sources. Science of the Total Environment 612, 422–435.

Borges JAR, de Faria Domingues CH, Caldara FR et al (2019) Identifying the factors impacting on farmers' intention to adopt animal friendly practices. Prev Vet Med 170:104718.

Borges JAR, Lansink AGJMO (2016) Identifying psychological factors that determine cattle farmers' intention to use improved natural grassland. J Environ Psychol 45:89–96.

Business Line. (2016, December). Now comes the turn of edible carry bags. *Business Line.* Retrieved from http://www. thehindubusinessline.com/specials/clean-tech/now-comes-the-turn of-edible-carry bags/article9436528.ece.

Chan, R.Y.K., 1999. Environmental attitudes and behavior of consumers in China: survey findings and implications. J. Int. Consum. Mark. 11 (4), 25–52.

Chatterjee, P., 2009. Green brand extension strategy and online communities. J. Syst. Inf. Technol. 11 (4), 367–384.Senger I, Borges JAR, Machado JAD (2017a) Using the theory of planned behavior to understand the intention of small farmers in diversifying their agricultural production. J Rural Stud 49:32–40.

Chen M-F (2016) Extending the theory of planned behavior model to explain people's energy savings and carbon reduction behavioral intentions to mitigate climate change in Taiwan– moral obligation matters. J Clean Prod 112:1746–1753.

Chen, Y.S., Lai, S.B., Wen, C.T., 2006. The influence of green innovation performance on corporate advantage in Taiwan. J. Bus. Ethics 67 (4), 331e339.

Cheung, M.F.Y., To, W.M., 2016. A customer-dominant logic on service recovery and customer satisfaction. Manag. Decis. 54 (10), 2524–2543.

Cross, S. E., & Madson, L. (1997). Models of the self: Self-construals and gender. Psychological Bulletin, 122(1), 5–37.

Danjelico, R., Pujari, D., 2010. Mainstreaming green product innovation: why and how companies integrate environmental sustainability. J. Bus. Ethics 95 (3), 471e486.

Eriksen, M., Lebreton, L.C.M., Carson, H.S., Thiel, M., Moore, C.J., Borerro, J.C., ... Reisser, J., 2014. Plastic pollution in the world's oceans: more than 5 trillion plastic pieces weighing over 250,000 tons afloat at sea. PLoS ONE 9 (12), 1–15. https://doi.org/ 10.1371/journal.pone.0111913.

Expert Skip Hire. (2017). *Envigreen—the edible 'plastic' carrier bag that isn't plastic*. Retrieved from https://www. expertskiphire.co.uk/envigreen.

Galloway, T.S., Lewis, C.N., 2016. Marine micro plastics spell big problems for future generations. PNAS 113 (9), 2331–2333. https://doi.org/10.1073/pnas.1600715113.

George, D., Mallery, M., 2010. SPSS for Windows Step by Step: A Simple Guide and Reference, 17.0 Update, 10 ed. Pearson, Boston.

Giri, Raghu Nandan, Shyamal Kumar Mondal, and Manoranjan Maiti. 2019. "Government intervention on a competing supply chain with two green manufacturers and a retailer." *Computers & Industrial Engineering* 128: 104 – 121. http://www.sciencedirect.com/science/article/pii/S0360835218306338.

Gruber, V., & Schlegelmilch, B. B. (2014). How techniques of neutralization legitimize norm- and attitude-inconsistent consumer behavior. Journal of Business Ethics, 121(1), 29–45.

Gupta, S., Ogden, D.T., 2009. To buy or not to buy? A social dilemma perspective on green buying. J. Consum. Mark. 26 (6), 376–391.

Haider, T.P., Völker, C., Kramm, J., Landfester, K., Wurm, F.R., 2018. Plastics of the future? The impact of biodegradable polymers on the environment and on society. Angewandte Chemie International Edition 58 (1), 50–62.

Hair Jar, J. F., & Lukas, B. (2014). *Marketing research*. McGraw-Hill Education Australia.

Hair JF, Sarstedt M, Ringle CM, Mena JA (2012) An assessment of the use of partial least squares structural equation modeling in marketing research. J Acad Mark Sci 40:414–433.

Hines, J.M., Hungerford, H.R., Tomera, A.N., 1987. Analysis and synthesis of research on responsible environmental behavior: a meta-analysis. J. Environ. Educ. 18 (2), 1–8.

Hirsch, J.B., 2010. Personality and environmental concern. J. Environ. Psychol. 30, 245–248.

Hodson, M.E., Duffus-Hodson, C.A., Clark, A., Prendergast-Miller, M.T., Thorpe, K.L., 2017. Plastic bag derived-microplastics as a vector for metal exposure in terrestrial invertebrates. Environmental Science and Technology 51 (8), 4714–4721. https://doi.org/ 10.1021/acs.est.7b00635.

Hoffmann, S., & Schlicht, J. (2013). The impact of different types of concernment on the consumption of organic food. International Journal of Consumer Studies, 37(6), 625–633.

Homer, P. M., & Kahle, L. R. (1988). A structural equation test of the value–attitude–behavior hierarchy. *Journal of Personality and Social Psychology*, *54*, 638–646.

Hong, Z, and X Guo. 2019. "Green product supply chain contracts considering environmental responsibilities." *Omega* 83: 155–166.

Huang, Y.C., Yang, M., Wang, Y.C., 2014. Effects of green brand on green purchase intention. Market. Intell. Plann. 32 (3), 250–268.

Hueber, G (1991), "Americans Report High Levels of Environmental Concern," *Gallup Poll Monthly*, 307, 6-12.

Jang, Y., Kim, W., Bonn, M., 2011. Generation Y consumers' selection attributes and behavioral intentions concerning green restuarants. Int. J. Hosp. Manag. 30 (4), 803e811.

Jöreskog, K. G. (1967). Some contributions to maximum likelihood factor analysis. *Psychometrika*, 32(4), 443–482.

Kaiser, F.G., & Gutscher, H. (2003). The proposition of a general version of the theory of planned behavior: predicting ecological behavior. *Journal of Applied Social Psychology*, 33(3), 586–603.

Kikuchi-Uehara, E., Nakatani, J., Hirao, M., 2016. Analysis of factors influencing consumers' proenvironmental behavior based on life cycle thinking. Part I: effect of environmental awareness and trust in environmental information on product choice. *J. Clean Prod.* 117, 10–18.

Kim, H.Y., Chung, J.E., 2011. Consumer purchase intention for organic personal care products. J. Consum. Mark. 28 (1), 40–47.

Kim, Y., Choi, S.M., 2005. Antecedents of green purchase behavior: an examination of collectivism, environmental concern, and PCE. Adv. Consum. Res. 32, 592–599.

Kollmuss, A., Agyeman, J., 2002. Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environ. Educ. Res.* 8(3), 239–260.

Kumar, B., Manrai, A.K., Manrai, L.A., 2017. Purchasing behaviour for environmentally sustainable products: a conceptual framework and empirical study. J. Retail. Consum. Serv. 34, 1–9.

Leire, C., Thidell, A., 2005. Product-related environmental information to guide consumer purchases: a review and analysis of research on perceptions, understanding and use among Nordic consumers. J. Clean. Prod. 13 (10), 61–70.

Li, L.Y., 1997. Effects of collectivist orientation and ecological attitude on actual environmental commitment: the moderating role of consumer demographics and product involvement. J. Int. Consum. Mark. 9, 31–53.

Lin, P.C., Huang, Y.H., 2012. The influence factors on choice behavior regarding green products based on the theory of consumption values. J. Clean. Prod. 22 (1), 11–18.

Liu, E.K., He, W.Q., Yan, C.R., 2014. "White revolution" to "white pollution" – agricultural plastic film mulch in China. Environmental Research Letters 9 (9), 13–16. https://doi.org/10.1088/1748-9326/9/9/091001.

Liu, Z., Trisha D. Anderson, and J. M. Cruz. 2012. "Consumer environmental awareness and 22 competition in two-stage supply chains." *European Journal of Operational Research* 218 (3):602–613.

Löhr, A., Savelli, H., Beunen, R., Kalz, M., Ragas, A., Van Belleghem, F., 2017. Solutions for global marine litter pollution. Current Opinion in Environmental Sustainability 28, 90–99. https://doi.org/10.1016/j.cosust.2017.08.009.

Lu, L.C., Chang, H.H., Chang, A., 2015. Consumer personality and green buying intention: the mediate role of consumer ethical beliefs. J. Bus. Ethics 127 (1), 205–219.

Mancini, P., Marchini, A., Simeone, M., 2017. Which are the sustainable attributes affecting the real consumption behavior? Consumer understanding and choices. Br. Food J. 119 (8), 1839–1853.

Matthes, J., Wonneberger, A., & Schmuck, D. (2014). Consumers' green involvement and the persuasive effects of emotional versus functional ads. *Journal of Business Research*, *67*(9), 1885-1893.

Moisander, J. (2007). Motivational complexity of green consumerism. International Journal of Consumer Studies, 31(4), 404–409.

Murali, K, M K Lim, and N C Petruzzi. 2018. "The effects of ecolabels and environmental regulation on green product development." *Manufacturing & Service Operations Management* 0 (0): null. https://doi.org/10.1287/msom.2017.0703.

Olli, E., Grendstad, G., Wollebaek, D., 2001. Correlates of environmental behavior bring back social context. Environ. Behav. 33 (2), 181–208.

Pang, J., Wang, J., Cai, L., 2017. Current understanding of micro plastics in the environment: occurrence, fate, risks, and what we should do. Integrated Environmental Assessment and Management 13 (3), 476–482. https://doi.org/10.1002/ieam.1912.

Papadas, K., Avlonitis, G., Carrigan, M., 2017. Green marketing orientation: conceptualization, scale development and validation. J. Bus. Res. 80, 236–246

Park, J., KO, E., & Kim, S. (2010). Consumer behavior in green marketing for luxury brand: A cross-cultural study of US, Japan and Korea. Journal of Global Academy of Marketing Science, 20(4), 319–333.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In *Communication and persuasion* (pp. 1-24). Springer, New York, NY.

Plastics Europe, 2018. Plastics - the facts 2018: an analysis of European plastics production, demand and waste data. Retrieved from https://www.plasticseurope. org/download_file/force/2387/319.

Polonsky, M. J., & Rosenberger, P. J., III. (2001). Reevaluating green marketing: A strategic approach. Business Horizons, 44(5), 21–30.

Rahimah, A., Khalil, S., Cheng, M.S., Tran, M.D., Panwar, V., 2018. Understanding green purchase behavior through death anxiety and individual social responsibility. J. Consum. Behav. 17 (5), 477–490.

Rex, E., Baumann, H., 2007. Beyond ecolabels: what green marketing can learn from conventional marketing. J. Clean. Prod. 15, 567–576.

Rist, S., Almroth, B.C., Hartmann, N.B., Karlsson, T.M., 2018. A critical perspective on early communications concerning human health aspects of microplastics. Science of the Total Environment 626, 720–726. https://doi.org/10.1016/j.scitotenv.2018.01.092.

Ritter, A.M., Borchardt, M., Vaccaro, G.L.R., Pereira, G.M., Almeida, F., 2015. Motivations for promoting the consumption of green products in an emerging country: exploring attitudes of Brazilian consumers. J. Clean. Prod. 106, 507–520.

Roberts, J., Mocci, U., Virtamo, J., & Andersen, A. T. (1996). Broadband network teletraffic: final report of action COST 242. In *Broadband Network Teletraffic*. Springer Verlag.

Roth, C.E., 1992. Environmental literacy: Its roots, evolution, and directions in the 1990s. ERIC/CSM Environmental education, Columbus, OH.

Royer, S.-J., Ferrón, S., Wilson, S.T., Karl, D.M., 2018. Production of methane and ethylene from plastic in the environment. PLoS ONE 13 (8), 1–13. https://doi.org/10.1371/ journal.pone.0200574.

Schmuck, D., Matthes, J., Naderer, B., & Beaufort, M. (2018). The effects of environmental brand attributes and nature imagery in green advertising. *Environmental Communication*, *12*(3), 414-429.

Schuhwerk, M., Lefkoff-Hagius, R., 1995. Green or non-green does type of appeal matter when advertising a green product? J. Advertising 24 (2), 45e54.

Schultz, P. Wesley (2000), "Emphasizing with Nature: The Effects of Perspective Taking on Concern for Environmental Issues," *Journal of Social Issues*, 56 (September), 391-402.

Schultz, W. (2001). The structure of environmental concern: For self, other people, and the biosphere. Journal of Environmental Psychology, 21, 327–339.

Schultz, W., & Zelany, L. (1999). Values as predictors of environmental attitudes: Evidence for consistency across 14 countries. Journal of Environmental Psychology, 19, 255–265.

Schwartz, J., & Miller, T. (1991). The earth's best friends. *American demographics*, *13*(2), 26 3 .

Senger I, Borges JAR, Machado JAD (2017b) Using structural equation modeling to identify the psychological factors influencing dairy farmers' intention to diversify agricultural production. Livest Sci 203:97–105.

Sih, A., Bell, A., Johnson, C., 2004. Behavioral syndromes: an ecological and evolutionary overview. Trends Ecol. Evol. 19 (7), 372e378.

Smith, A., Rainie, L., & Zickuhr, K. (2011, July 19). *College students and technology*. Retrieved from: http://www.pewinternet.org/2011/07/19/college-students-and-technology/

Stern, P. C., & Dietz, T. (1994). The value basis of environmental concern. Journal of Social Issues, 50(3), 65–84.

Sustainability Outlook. (2016). *EnviGreen, an Indian company makes edible 100% biodegradable 'plastic' bags.* Retrieved from http://www.sustainabilityoutlook.in/news/envigreen indian-company-makes-edible-100-biodegradable-%E2%80%9Cplastic%E2%80%9D-bags 758033.

The News Minute. (2017). This Bengaluru company is making biodegradable nontoxic plastic using tapioca starch and vegetable waste. Retrieved from https://www.thenewsminute.com/article/bengaluru-company-maSustainability Outlook. (2016).

Thompson, R.C., Moore, C.J., vom Saal, F.S., Swan, S.H., 2009a. Plastics, the environment and human health: current consensus and future trends. Philosophical Transactions of the Royal Society B: Biological Sciences 364 (1526), 2153–2166. https://doi.org/ 10.1098/rstb.2009.0053.

Tseng, M.L., Wang, R., Chiu, A.S.F., Geng, Y., Lin, Y.H., 2013a. Improving performance of green innovation practices in uncertainty. J. Clean. Prod. 40, 71e82.

Wang, H., Ma, B., & Bai, R. (2019). How Does Green Product Knowledge Effectively Promote Green Purchase Intention?. *Sustainability*, *11*(4), 1193.

Wei, S., Ang, T., Jancenelle, V.E., 2018. Willingness to pay more for green products: The interplay of consumer characteristics and customer participation. J. Retail. Consum. Serv. 45, 230–238. https://doi.org/10.1016/j.jretconser.2018.08.015

Wells, V. K., Ponting, C. A., & Peattie, K. (2011). Behavior and climate change: Consumer perceptions of responsibility. Journal of Marketing Management, 27(7-8), 808–833.

Yazdanpanah M, Forouzani M, Abdeshahi A, Jafari A (2016) Investigating the effect of moral norm and self-identity on the intention toward water conservation among Iranian young adults. Water Policy 18:73–90

Zahid, M.M., Ali, B., Ahmad, M.S., Thurasmy, R., Amin, N., 2018. Factors affecting purchase intention and social media publicity of green products: the mediating role of concern for consequences. Corp. Soc. Responsib. Environ. Manag. 25 (3), 225–236.

Zhang, L., J. Wang, and J. You. 2015. "Consumer environmental awareness and channel coordination with two substitutable products." *European Journal of Operational Research* 241(1): 63–73.