

Full length article

Understanding consumers' behavior intentions towards dealing with the plastic waste: Perspective of a developing country

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ARTICLE INFO

Keywords:

Consumer's return/recycling intention
Theory of planned behavior
Plastic waste
Recycling behavior
Reverse logistic

ABSTRACT

Plastic consumption has been increasing globally, creating large amount of litter and posing threat to the environment. The recycling of the plastic waste can help in reducing it and its environmental threat. The purpose of this paper is to identify the factors that influence the consumer's return/recycling intention regarding plastic waste. Moreover, recycling behavior of consumer was explored in detail. The theory of planned behavior was adapted and extended to measure the determinants of recycling behavior. Survey research design was employed whereas data includes valid 243 households, collected through survey questionnaire, by employing purposive sampling. PLS-SEM was applied on the collected data for hypotheses testing. The finding of this study indicates that subjective norms, awareness consequences and convenience are major predictors of return/recycling intention. Whereas, hypothesis for the attitude, perceived behavioral control and moral norms were rejected and they all have insignificant impact on return/recycling intention. Moreover, return intention have positive significant impact on resell, reuse, dispose and donate. Reuse was the most predicted by the return intention. This study enriches the literature of reverse logistics helping to understand the consumers' perspective. Provides the insights that will help government and organizations to understand consumers' return/recycling intention and formulate such strategies that will increase the involvement of consumers in recycling activities.

1. Introduction

In this technologically advancing era, products with the environmental friendly features are rapidly emerging but plastic waste poses challenges to the societies regardless of this advancement (Huysman et al., 2017). Along with the changing lifestyle of consumers, the consumption of plastic have been increasing due to its convenient usage (Alam et al., 2018). Number of products in our daily life are made of plastic. The plastic waste includes most common single use plastic that includes: plastic bags, plastic bottles, disposal coffee/juice cups and lids, straws, plastic cutlery and food packaging (Johnston, 2017). Over the past 65 years, the 8.3 billion metric tons of plastic has been produced. By end of 2015, the consumption of plastic has reached 297.5 million tons globally (<http://plastic-pollution.org>). If this trend continue then it is expected that by 2025, 12 billion tonnes (<https://cosmosmagazine.com>) of plastic will be dumped in landfills and causing the environmental pollution. Moreover it has been pointed out that plastic contain the toxic chemicals such as polychlorinated biphenyls (PCBs), nonylphenol (NP), organic pesticides, such as dichlorodiphenyltrichloroethane (DDT), polycyclic aromatic

hydrocarbons (PAHs), polybrominated diphenyl ethers (PBDEs) and bisphenol A (BPA) (Webb et al., 2012) that cannot be simply dumped in soil. Nevertheless, plastic contain toxic and hazardous chemical that are released in environment if handled carelessly.

In the past few years, the plastic pollution has been the alarming issue. United Nation stated that plastic is one of the substantial environmental threat faced by the world (Gabbatiss, 2018). Natural ecosystem has been negatively influence by plastic, initiating the complications for the human population and wildlife such as harming the plants life and posing danger to animals (Talpur, 2018). Moreover, air and soil are contaminated by toxic chemical that are released when plastic is burnt or buried in soil (Ilyas, 2018). Across the world, impact of plastic pollution in oceans is the developing issue (Laville and Taylor, 2017). Along the Pakistan coast, the plastic pollution is the growing concern and is getting worse due improper waste disposal system (Guriro, 2017). Faced with this grim situation, a proper waste management is required which can be better implemented by the help of reverse logistics. For proper waste management, most of the researchers have focused on recycling of the waste products. The researches have been conducted in different countries such as England (Tonglet et al.,

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2004), Hong Kong (Wan et al., 2014; Kochan et al., 2016), India (Dixit and Badgaiyan, 2016) and Malta (Bezzina and Dimech, 2011).

Pohlen and Farris (1992) defines the reverse logistics as the flow of products from a consumer towards a manufacturer in distribution channel. Moreover, these movements or flows of goods arises due to any of the following: when consumers return defective products or goods are returned for recycling or products recall causes the reverse flow. In general, reverse logistics involves collection of used products from end users, sorting these products, returning to plant and finally reprocessing and redistributing the products (Budijati et al., 2016). Valle et al. (2005) pointed out that reverse logistics is dependent on the consumers to work efficiently as they are first link in reverse logistic channel. The consumer act as supplier in the reverse logistics (Gaur and Mani, 2018). Therefore, for the successful implementation of reverse logistics management it is important to understand the consumers' intention in these take back programs (Budijati et al., 2016). However, when considering reverse logistics, the consumer perspective is given the least importance. Primarily, reverse logistics have focus on the recycling concept from the supplier or manufacturer perspective (Kochan et al., 2016). Furthermore, few numbers of researchers has focused on the consumer return intention and return behavior towards the used products (Jena and Sarmah, 2015; Kianpour et al., 2017). The important role of consumer in the reverse logistics have not be highlighted (Dixit and Badgaiyan, 2016). However, in Pakistan hardly any research have been conducted regarding the consumers return intention. Understanding the consumer perspective in depth is one of major challenge in the reverse logistics. Therefore, the present research attempt to seek consumer's return intentions. From the past literature, it has been identified that literature discussing the reverse logistics from the consumer perspective is scarce. In reverse logistics literature, the consumers are not given the consideration. There is lack of literature regarding the reverse logistics which takes into account the consumer as source of waste product return (Dixit and Badgaiyan, 2016). The linkage between the reverse logistics strategies of the company and consumer behavior has been discussed in only few studies (Bask et al., 2013). Only a few number of researches are available that explain the factor that influence behavior of consumer in take back program (Budijati et al., 2016). A little attention has been given to figure out factors that motivates consumers towards the adoption of exchange practices related to reverse logistics (Yuan et al., 2016). However, in Pakistan hardly any research have been conducted regarding the consumers role in reverse logistics. Understanding the consumer perspective in depth is one of major challenge in the reverse logistics.

Therefore, the current research aims to fill this void by understanding in depth the consumer's perspective in reverse logistics. It intent to understand the consumer behavior related to product return. In addition, it aims to identify factors that motivates consumers to participate more in the returning of waste products to producers. It tries to contribute in the literature of reverse logistics, for the better implementation of reverse logistics. Moreover, research helps to highlight strategies that can be implemented to reduce the environment pollution caused by the plastic waste. Moreover, enabling the government and companies to develop strategies that motivates the consumers to properly handle their plastic waste. With that foresight in mind, this study is undertaken to find out the following:

- 1 What are the factors that influence the consumer's intention towards the return of waste products?
- 2 How consumers deal with their waste products?

It is anticipated that the current study will contribute to literature related to reverse logistics especially in Pakistan as hardly any study has been conducted before. The insights of consumer's perspective in reverse logistics will help the companies to enhance their reverse logistics activities through involvement of consumers. The better understanding of the consumer behavior will enable government to develop and

implement policies related to return of waste products. Moreover, this study enhances the knowledge and understanding of consumer behavior that will lead to enhance the involvement of consumers in waste product return activities through the policies implementation. Furthermore, the study identifies the factors that impact most on the consumer behavior. Keeping these factors in consideration, the government and companies can develop better schemes for the take back programs that will motivate consumers towards return of waste products.

2. Review of related literature

2.1. Theoretical background

It is difficult to understand human behavior and its complexity. To understand the behavior of the human it is important to understand their psychological process. To understand the human behavior the Theory of Planned Behavior (TPB; Ajzen, 1991) is used. This theory have been widely adapted in different researches (Tonglet et al., 2004; Chen and Tung, 2010). The theory propose a model to better understand the human behavior. The variable used in theory includes attitude, subjective norms, perceived behavior, intention and behavior to explain the human behavior. The TPB predicted the three determinants of the intentions. The first is the attitude towards the behavior. Attitude is described as the extent to which a person has a favorable or unfavorable evaluation or appraisal of the behavior. Many researches verify the relationship between the attitude and behavioral intention (Oskamp et al., 1991; Kelly et al., 2006; Ma, Hipel, Hanson, Cai & Liu, 2017). The second determinant being the subjective norms. Subjective norms is described as the degree to which a person felt a social pressure to perform or not perform the behavior. Previously, many studies have used subjective norms as an important factor to study the recycling behavior (Chu and Chiu, 2003; Echegaray & Hansstein, 2016; Sidique et al., 2010). The third element is perceived behavioral control, it refers to the anticipated ease or difficulty while performing the behavior and it expected to mirror previous experiences as well as perceived barriers and obstacles. Perceived behavioral control is used in many recycling researches (Chu and Chiu, 2003; Bezzina and Dimech, 2011; Valle et al., 2005).

For the recycling behavior many researchers have adopted the TPB (Cheung et al., 1999; Chen and Tung, 2010; Park and Ha, 2014; Echegaray and Hansstein, 2016; Ma et al., 2018). However, the TPB, allows the expansion. The additional variables can be incorporated for the better contribution to study the behavior (Ajzen, 1991).

The model of altruistic behavior (Schwartz, 1977) is added in the model. It proposed that behavior should be analyzed in terms of personal norms, social norms when awareness of consequences and ascription of responsibility have been triggered. In the current research, personal norm and consequences have been used to understand the return intention of the consumers towards the product return. The personal norms refers to the feeling of moral obligation to do a right thing. Correctness of the behavior is related to moral norms. In some studies, along with the variables of TPB the moral norms is used (Wan et al., 2014; Dixit and Badgaiyan, 2016; Wan et al., 2012). Whereas, awareness consequences is defined as tendency to become familiar to the possible consequences that arises as a result of individuals act (Schwartz, 1968). Other researches have also consider consequences while studying the recycling intentions and behavior (Wan et al., 2012; Kochan et al., 2016; Park and Ha, 2014).

Whereas, considering the past literature the convenience was added in the model. It is the state that allow to continue something without complication. It is described as the time and ease that individuals have while managing the waste (Tonglet et al., 2004; Kianpour et al., 2017). The degree to which an individual can have time to clean up, sort and store their recyclables (Kochan et al., 2016). Previously, studies have use convenience to predict the recycling intentions of consumers (Wan

et al., 2012; Sidique et al., 2010; Kochan et al., 2016).

Based on previous researches that are conducted on the recycling behavior of consumers, the current research followed and adopted the variables of theory of planned behavior (Ajzen, 1991) and model of altruistic behavior (Schwartz, 1977). The psychological model is used to explain the behavior of consumers regarding the return of products that either have reached their end of life (EOL) or end of use (EOU) for the consumers. Based on the literature review, many researches have interpreted the consumer intention and behavior using the theory of planned behavior (Kianpour et al., 2017; O'Reilly and Kumar, 2016; Cheung et al., 1999). The proposed model contains six variables that might influence the consumer's return intention of end of use (EOU) or end of life (EOL) products. Understanding the consumer intention in depth can help improve the reverse logistics.

2.2. Hypotheses development

The Theory of Planned Behavior (Ajzen, 1991) is most extensively used theory to anticipate the human behavior. TPB proposed a model that contains three variables i.e. attitude, subjective norms and perceived behavioral control. TPB has used these three as determinants of predicting the individual's behavioral intention.

2.2.1. Attitude

The term attitude is defined by Ajzen and Fishbein (1980) as a person's belief and evaluation towards a behavior. The attitude towards a behavior of an individual is formed as a response to a particular judgment (Schwarz, 2006). Many researchers have taken into account the attitude to study the human behavior (Kianpour et al., 2017; O'Reilly and Kumar, 2016). Many researches have reported the positive impact of attitude on individual's behavior (Wang et al., 2016; Wan et al., 2012; Botetzagis et al., 2015). Whereas, insignificant relationship between attitude and return intention has been reported in few researches (Dixit and Badgaiyan, 2016; Lizin et al., 2017; Wan et al., 2014). Nevertheless, influenced by the majority of supporting data, in current research, we propose that attitude towards a behavior will influence the individual's intention to return the waste.

2.2.2. Subjective norms

Subjective norms refer to the social pressure one feels when deciding whether to perform a behavior or not (Ajzen, 1991). The influence of family, friends and people surrounding an individual creates that pressure. A person is most likely to behave in a manner that would be liked by people important to him/her. Subjective norms are used in many researches that study the human behavior (Vining and Ebreo, 1992; Poulter et al., 2008; Mayhew et al., 2009). The significant positive relationship between subjective norms and return intention has been reported in many researches (Chen and Tung, 2010; Wan et al., 2014; Echegaray and Hansstein, 2016; Lizin et al., 2017). Whereas, some of the researches reveal that subjective norms do not have a significant impact on return intention. (Jena and Sarmah, 2015; Tonglet et al., 2004). Based on past researches it is considered that subjective norms are an important determinant while explaining the human behavior.

2.2.3. Perceived behavioral control

Perceived behavioral control is defined as the degree of control an individual has over his/her action. Self-efficacy and perceived controllability are the two factors that are associated with behavioral performance (Ajzen, 1991). While performing a behavior, the ease and difficulty that is associated with the behavior influences the individual's decision. Secondly, the level of control a person has over performing a behavior also influences his/her behavior. Perceived behavioral control has been used in many researches as a determinant of individual intention and behavior (Godin et al., 1992; Chu and Chiu, 2003; Park and Ha, 2014). Numerous studies have found the

significant positive impact of perceived behavioral control over the individual's behavioral intention (Botetzagis et al., 2015; Wan et al., 2014; Chen and Tung, 2010; Lizin et al., 2017). Whereas, in few studies it was found that perceived behavioral control was not a significant determinant of behavioral intention (Chen and Tung, 2010; Ma et al., 2018). Based on the results from the past studies we consider that perceived behavioral control is an important predictor of return intention.

Based on the variables of theory of planned behavior the following hypotheses have been developed:

H1. Attitude has a significant impact on recycling intention.

H2. Subjective norms have a significant impact on recycling intention.

H3. Perceived behavioral control has a significant impact on recycling intention.

2.2.4. Altruistic behavior

The model of altruistic behavior (Schwartz, 1977) proposed that behavior should be analyzed in terms of personal norms, social norms when awareness of consequences and ascription of responsibility have been triggered. In the current model personal norm and consequences have been used to understand the return intention of the consumers towards the product return.

2.2.4.1. Moral norms. The moral norms are defined as the personal concern of an individual regarding moral obligations. The moral obligations are the ethical and social responsibility an individual feels. The moral norm is similar to the concept of personal norms in the model of Altruistic behavior. These moral beliefs are about the appropriateness and inappropriateness beliefs of an individual about performing a behavior. The researchers have used moral norms along with the TPB (Lawton et al., 1997; Wan et al., 2014; Beck and Ajzen, 1991; Kroneberg et al., 2010; Lizin et al., 2017). The positive relationship has been reported between the moral norms and return intention in many researches regarding recycling behavior (Chen and Tung, 2010; Chu and Chiu, 2003; Park and Ha, 2014). Based on the available past researches moral norms are considered the important factor when understanding the individual's intention. Therefore, this study includes moral norms to better explain the consumer intention towards the waste products return.

2.2.4.2. Consequences awareness. The altruistic behavior model includes the awareness of consequences for studying the behavior (Schwartz, 1977). When investigating the consumer intention it is important to consider the outcomes that are generated as a result of performing a particular behavior. If an individual perceives that outcomes/consequences of performing a behavior will be positive it is most likely that he/she will show positive attitude towards that and will repeat it. In this study the consequences are related to environmental consequences that will be there when an individual returns a waste product. Numerous studies have shown the positive impact of consequences awareness on return intention (Kochan et al., 2016; Wang et al., 2016; Wan et al., 2012). Few studies showed that awareness of consequences indirectly affects recycling intention (Park and Ha, 2014). Whereas, Tonglet et al. (2004) reported a negative relationship between consequences awareness and intention. These contradictions from the past literature become the basis for including the awareness of consequences while studying the return intention.

Based on the altruistic behavior model variables following hypothesis were developed:

H4. Moral norms have a significant impact on recycling intention.

H5. Awareness of consequences has a significant impact on recycling intention.

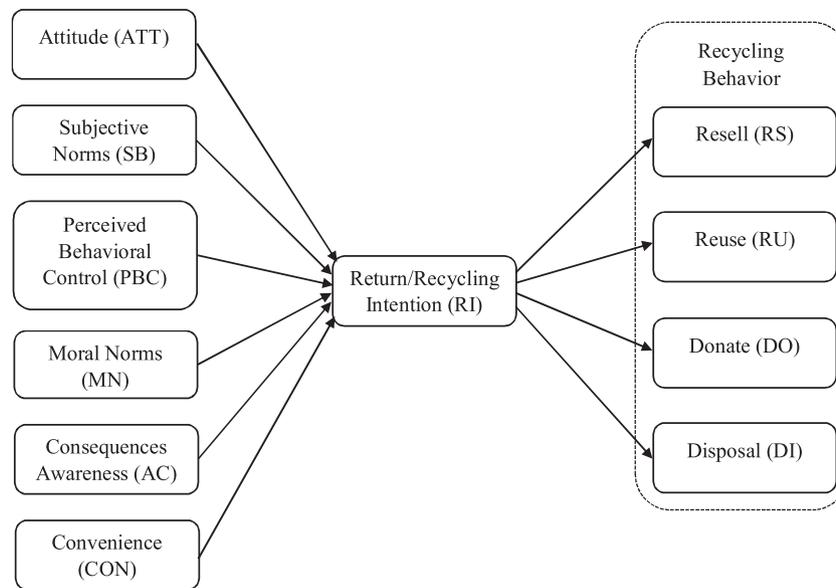


Fig. 1. Proposed Model.

2.2.5. Convenience

Convenience is referred as an ease one faces while doing anything. In the current study, the convenience includes factors such as cost, time and facilities and drop off points to observe consumer recycling intention (Kumar, 2019). Normally the convenience and ease is covered in perceived behavior control precisely in the context of recycling (Kianpour et al., 2017). However, it is different in conceptualization. Perceived behavior control is an individual’s intrinsic whereas convenience is extrinsic by nature. In past literature, it was identified that people are most likely to visit the drop off sites when they find recycling convenient (Sidique et al., 2010). Convenience is considered as an important factor in promoting the recycling behavior (Vining and Ebreo, 1992; Kochan et al., 2016; Chen and Tung, 2010). The increase involvement of the consumer in recycling can result from: least complexity in storage of recyclable items and establishment of more collection points for recyclable products (Kochan et al., 2016). Many researches shows that convenience is significantly related to recycling intention (Wan et al., 2012; Chen and Tung, 2010; Bezzina and Dimech, 2011). Therefore, based on past evidence we include the convenience in our proposed model and following hypothesis is developed:

H6. Convenience has a significant impact on recycling intention.

2.2.6. Recycling behavior

The widely accepted concept of sustainable development, 3R (reuse, recycle, reduce) has taken over the traditional way of disposing the waste (Agamuthu and Fauziah, 2010; Li et al., 2013; Shekdar, 2009). The consumers tend to reuse their product for other purposes. The consumers tend to convert their unwanted waste into something usable. Instead of disposing their waste they consume it for other purposes (Domina and Koch, 1999). When the product is reuse for the other purposes, this tend to increase the product life of that particular product. The relationship between the recycling behavior and reuse has been tested in research (Shim, 1995). However, few items have been taken into consideration for the research. It is important to know that what relationship exist between the consumer intention and reuse of products.

The product become unwanted for the individual when it reaches the stage of ‘end of use’ for that individual. The unwanted product are then dispose-off by different means. Resale being one of that means. The consumer tend to resell the product when it becomes unwanted for him/her. The previous researches have taken in consideration the resale

of the products (Shim, 1995; Joung and Park-Poaps, 2011; Bianchi and Birtwistle, 2010). The relationship between the recycling behavior and resale have been analyzed in the research (Shim, 1995). Nevertheless, this behavior has not been analyzed for many products.

Donating the product has been considered as one of the methods of discarding the products. The consumers usually donate their end of use products to charity and needy people. The researchers have looked into relationship between donating and recycling behavior of consumer (Domina and Koch, 1999; Shim, 1995; Morgan and Birtwistle, 2009; Bianchi et al., 2012). It has been reported that donating to charities and recycling behavior are closely linked (Morgan and Birtwistle, 2009). However, the return intention of consumers towards the plastic product needs to be further explored.

The disposal of the waste product has been an alarming issue. The researchers have tried to find out the factor that will encourage the consumer to recycle their waste product (Park and Ha, 2014; Chu and Chiu, 2003). Different researches have taken into account the consumer’s disposal tendencies of unwanted product (Harrell and McConocha, 1992). However, for the different category the recycling behavior differs. Different products such as paper, aluminum, glass or electronic products all have different method for the disposal (Jacoby et al., 1977). The researchers have tried to determine the consumer behavior towards disposal (Domina and Koch, 1999; Shim, 1995; Birtwistle and Moore, 2007; Joung and Park-Poaps, 2011). However, it is not been revealed that what consumers usually to with their waste product.

Therefore, to observe the reuse and resale of products the following hypothesis has been developed. Moreover, there is urge to test the consumer intentions towards donate and disposal of the products. Therefore, the following hypothesis has been proposed.

H7. Recycling intention is significantly related to resell the waste products.

H8. Recycling intention is significantly related to reuse of the products.

H9. Recycling intention is significantly related to donating the waste products.

H10. Recycling intention is significantly related to disposal of the waste products.

The model proposed to investigate the consumer return intention towards the waste products incorporate an adaption of theory of

Table 1
Instrumentation Source.

Variables	Items	Source
Attitude	5	Tonglet et al. (2004).
Moral Norms	5	Tonglet et al. (2004).
Subjective Norms	5	Tonglet et al. (2004). Knussen and Yule (2008).
Perceived Behavioral Control	5	Tonglet et al. (2004).
Awareness Consequences	5	Davies et al. (2002).
Convenience	5	Tonglet et al., (2004). Wang et al. (2016).
Return Intention	5	Wan et al. (2012).
Resell	5	Domina and Koch (1999).
Reuse	5	Domina and Koch (1999). Shim (1995).
Disposal	5	Shim (1995). Jalil et al. (2016).
Donate	5	Domina and Koch (1999). Shim (1995).

planned behavior and further extension of it, as shown in Fig. 1.

3. Methodology

In this study survey research design was employed. For the said purpose survey questionnaire was developed based on adapted measuring items on a five point Likert scale ranging from Strongly Disagree to Strongly Agree. Table 1 summarized the details of the sources from where the questionnaire was developed. Prior to data collection, the questionnaire was validated by the panel of 5 experts, to ensure the requirements of the face and content validity. Prior to data collection, the questionnaire was also evaluated by results from pilot testing. Thus after meeting the reliability requirements, the questionnaire was addressed to the targeted sample for data collection.

Since the present study is focused on plastic recycling intentions and behavior by households, therefore purposive sampling technique was employed because it helps in generalizability of the results where data was collected by the sample that are the true representation of the population. Therefore, the questionnaires were circulated among the households of Karachi, which is one the most densely populated metropolitan city in the world, thus having densely consumption levels as well. The sample comprised of 243 valid respondents, demographic profiles of which are summarized in Table 2.

4. Data analysis

As per objective of this research and proposed model, data analysis is being done by employing PLS-SEM using Smart PLS 3.2.7. As per the guidelines provided by Hair et al., (2011), the data was first put through evaluating the outer and inner measurement and then the hypotheses testing was done.

4.1. Outer model measurement

The outer model measurement involves evaluating the reliability and validity of the data. The reliability measures the internal consistency of the variables, whereas validity includes evaluating convergent and discriminant validity.

4.1.1. Reliability testing

Reliability is referred to the consistency (Neuman, 2007). The reliability was measured using composite reliability. Instead of Cronbach’s alpha, it provides better measure of internal consistency (Hair et al., 2014). The CR value for all latent variable is shown in Table 3. The composite reliability for all variable was > 0.7 (Hair et al., 2011).

Table 2
Descriptive statistics (N = 243).

	Demographics	Frequency	Percent
Gender	Female	121	49.8
	Male	122	50.2
Age	Below 20	12	4.9
	20 – 30	195	80.2
	31 – 40	30	12.3
	41 – 50	4	1.6
Qualification	Above 50	2	0.8
	Intermediate	19	7.8
	Bachelors	122	50.8
Income	Masters	97	39.9
	Others	5	2.1
	Below 15000	75	30.9
	15000 – 35000	88	36.2
	35001 – 55000	41	16.9
Profession	55001 – 75000	23	9.5
	75001 – 95000	7	2.9
	Above 950001	9	3.7
	Student	103	42.4
	Service Industry	57	23.5
	Manufacturing Industry	18	7.4
	Academician	9	3.7
Business	16	6.6	
Others	40	16.5	

4.1.2. Convergent validity

It refers to the extent to which the measures of construct are correlated (Neuman, 2007). The average variance extracted (AVE) is used to measure the convergent validity (Hair et al., 2011). The threshold for the AVE should be 0.5 or greater and factor loadings for convergent validity should be above 0.7 (Hair et al., 2014). The Table 3 shows the results of AVE where all the values are higher than 0.5. Whereas, Table 3 also shows the loadings of variable. Most of them are above 0.7 except for two loadings in return intention. However, most of the loadings return intention were greater than 0.7 and AVE was good so items of return intention were not removed.

4.1.3. Discriminant validity

Discriminant validity measures the degree to which a construct is different from the other constructs (Hair et al., 2014). It is important to establish discriminant validity in order to ensure that result is certain and there are no statistical discrepancies in results (Henseler et al., 2015). Discriminant validity is determined by Fornell and Larcker criterion, Heterotrait-Monotrait ratio and crossing loading between the items (Hair et al., 2014; Henseler et al., 2015). The Fornell and Larcker criterion suggested that particular variable should show more variance with its own items rather than with the other variables (Hair et al., 2014). For this, as shown in Table 4, the values in diagonal i.e. square root of AVE should be greater in than inter-construct correlation (Hair et al., 2011). The Table 4 shows the correlation matrix, thus confirming the discriminant validity.

Nevertheless, some researches propose that Fornell and Larcker is not effective to measure discriminant validity in certain circumstances. For this issue, Henseler et al. (2015) suggested the new way i.e. Heterotrait-Monotrait ratio of correlations (HTMT) for assuring discriminant validity of data. The discriminant validity is established if the value of HTMT is less than 0.9 (Henseler et al., 2015). The Table 5 shows the results of HTMT confirming discriminant validity.

Another approach to confirm discriminant validity is checking the cross loadings of items. The cross loading of each items in its own construct should be greater than cross loadings on other construct (Hair et al., 2011; Hair et al., 2014). Gefen and Straub (2005) suggested that there should be difference 0.1 between the cross loadings on its respective construct and loadings on other construct. Table 6 shows the cross loadings of all variables.

Table 3
Reliability Testing and Convergent Validity.

Construct	Items	Loadings	P values	CR	AVE
ATT	ATT1	0.772	0.000	0.883	0.602
	ATT2	0.765	0.000		
	ATT3	0.804	0.000		
	ATT4	0.728	0.000		
	ATT5	0.809	0.000		
SB	SB1	0.794	0.000	0.861	0.608
	SB2	0.791	0.000		
	SB3	0.726	0.000		
	SB4	0.807	0.000		
PBC	PBC1	0.825	0.000	0.921	0.699
	PBC2	0.859	0.000		
	PBC3	0.750	0.000		
	PBC4	0.881	0.000		
	PBC5	0.859	0.000		
MN	MN2	0.664	0.000	0.850	0.588
	MN3	0.822	0.000		
	MN4	0.795	0.000		
	MN5	0.777	0.000		
	MN5	0.777	0.000		
AC	AC1	0.797	0.000	0.905	0.705
	AC2	0.884	0.000		
	AC3	0.853	0.000		
	AC4	0.824	0.000		
CON	CON2	0.884	0.000	0.883	0.717
	CON3	0.872	0.000		
	CON4	0.779	0.000		
	CON4	0.779	0.000		
RI	RI1	0.741	0.000	0.855	0.542
	RI2	0.807	0.000		
	RI3	0.762	0.000		
	RI4	0.695	0.000		
	RI5	0.666	0.000		
RS	RS1	0.842	0.000	0.930	0.725
	RS2	0.850	0.000		
	RS3	0.854	0.000		
	RS4	0.866	0.000		
	RS5	0.845	0.000		
RU	RU1	0.843	0.000	0.925	0.712
	RU2	0.871	0.000		
	RU3	0.836	0.000		
	RU4	0.845	0.000		
	RU5	0.824	0.000		
DI	DI1	0.814	0.000	0.887	0.664
	DI2	0.845	0.000		
	DI3	0.826	0.000		
	DI4	0.772	0.000		
DO	DO1	0.886	0.000	0.932	0.733
	DO2	0.902	0.000		
	DO3	0.847	0.000		
	DO4	0.876	0.000		
	DO5	0.762	0.000		

4.2. Inner model measurement and hypotheses testing

Once the outer model measurement is evaluated, the data is analyzed for the inner model measurement (Henseler et al., 2009; Hair et al., 2011). The Partial Least Square (PLS) is used to test the

Table 4
Correlations of Discriminant Validity.

	AC	ATT	CON	DI	DO	MN	PBC	RI	RS	RU	SB
AC	0.840										
ATT	0.416	0.776									
CON	0.131	0.248	0.847								
DI	0.186	0.085	0.239	0.815							
DO	0.288	0.237	0.335	0.223	0.856						
MN	0.526	0.559	0.386	0.165	0.291	0.767					
PBC	0.202	0.101	0.554	0.264	0.401	0.329	0.836				
RI	0.447	0.337	0.539	0.331	0.396	0.516	0.420	0.736			
RS	0.178	0.129	0.479	0.206	0.435	0.317	0.485	0.419	0.852		
RU	0.430	0.402	0.400	0.184	0.410	0.460	0.323	0.514	0.457	0.844	
SB	0.484	0.387	0.492	0.202	0.386	0.663	0.539	0.627	0.415	0.505	0.780

hypotheses by employing the bootstrapping (Haenlein and Kaplan, 2004). A larger number of sub sample (usually 5000 or more) are drawn from the original data using this resampling technique (Hair et al., 2014).

4.2.1. Predictive relevance of the model

The inner model quality is dependent upon its capability to predict the endogenous construct (Hair et al., 2014). For the assessment of inner model, the primary criterion is examining the coefficient of determination (R^2) and cross-validated redundancy (Q^2) (Hair et al., 2011, 2014; Henseler et al., 2009). Model predictive accuracy is measured by R square (R^2). R^2 represents the overall impact of exogenous (independent) variable on the endogenous (dependent) variable (Hair et al., 2014). Sanchez (2013) classified R square in three categories that are high, moderate and low. If the R^2 is greater than 0.6 then it is considered high, R^2 is moderate if the value is within 0.3 to 0.6 whereas it is low if the R^2 value is below 0.3 (p. 68). Table 7 shows the R^2 values showing the model fit.

Cross-validated redundancy (Q^2) is another option for checking the model accuracy. Q^2 assess the predictive relevance of inner model (Hair et al., 2014). Blindfolding method is used to measure the Q square. The value of Q square should be greater than zero. The Table 7 shows the vales of Q^2 , hence confirming the model fitness as all value are greater than zero.

4.2.2. Hypotheses testing

In the current study, there are ten hypotheses. These were examined through the structural equation modeling (SEM). The Table 8 show the result of tested hypotheses (Fig. 2).

The results show that subjective norms ($\beta = 0.316, p < 0.01$), awareness consequences ($\beta = 0.214, p < 0.01$) and convenience ($\beta = 0.327, p < 0.01$) have the significant impact on the return/recycling intention. Hence, confirming the H2, H5 and H6. The convenience being the major predictor of return/recycling intention with the beta value 0.327. All the three results were in accordance with the previous researches (Wan et al., 2012; Chu and Chiu, 2003; Kochan et al., 2016). The subjective norms is the significant predictor of return/recycling intention has been in accordance with the previous study (Wan et al., 2012; Chen and Tung, 2010; Echegaray and Hansstein, 2016). The previous studies also reveals that awareness consequences have the significant relationship with the return/recycling intention (Tonglet et al., 2004; Wan et al., 2014; Bezzina and Dimech, 2011; Kochan et al., 2016). In addition, regarding the convenience this research finding is consistent with previous literature (Wang et al., 2016; Kochan et al., 2016; Wan et al., 2012).

Whereas, attitude ($\beta = 0.010, p > 0.1$), perceived behavioral control ($\beta = 0.004, p > 0.1$) and moral norms ($\beta = 0.061, p > 0.1$) have the insignificant relation with the return/recycling intention. Therefore, H1, H3 and H4 are rejected. The previous studies also show that attitude have the insignificant impact on recycling intention (Dixit and Badgaiyan, 2016; Wan et al., 2014). Moreover, moral norms also

Table 5
Heterotrait-Monotrait Ratio (HTMT) Results.

	AC	ATT	CON	DI	DO	MN	PBC	RI	RS	RU	SB
AC											
ATT	0.494										
CON	0.155	0.262									
DI	0.217	0.145	0.297								
DO	0.327	0.256	0.394	0.256							
MN	0.665	0.676	0.481	0.202	0.347						
PBC	0.227	0.134	0.660	0.309	0.446	0.379					
RI	0.552	0.385	0.663	0.404	0.465	0.663	0.482				
RS	0.198	0.144	0.566	0.240	0.477	0.372	0.541	0.487			
RU	0.487	0.454	0.470	0.211	0.458	0.558	0.357	0.614	0.503		
SB	0.588	0.441	0.620	0.251	0.458	0.852	0.639	0.794	0.488	0.602	

have an insignificant relation with the return/recycling intention. Tonglet et al. (2004) have reported this relation. The perceived behavioral control is also insignificant predictor of return/recycling intention and that result was in accord with the previous study (Chen and Tung, 2010).

Moreover, the reuse, resell, dispose and donate were having significantly relationship with the return intention. The return intention have significant impact on the resell ($\beta = 0.419$), reuse ($\beta = 0.514$), dispose ($\beta = 0.331$) and donate ($\beta = 0.396$). Hence, the result confirm H7, H8, H9 and H10.

Table 6
Factor Analysis.

	AC	ATT	CON	DI	DO	MN	PBC	RI	RS	RU	SB
AC1	0.797	0.298	0.098	0.154	0.217	0.391	0.169	0.356	0.154	0.293	0.359
AC2	0.884	0.321	0.088	0.180	0.227	0.454	0.158	0.409	0.194	0.412	0.394
AC3	0.853	0.429	0.079	0.152	0.231	0.497	0.163	0.320	0.121	0.361	0.421
AC4	0.824	0.360	0.169	0.138	0.288	0.430	0.186	0.403	0.125	0.372	0.449
ATT1	0.382	0.772	0.070	-0.044	0.126	0.356	-0.061	0.182	0.023	0.277	0.220
ATT2	0.344	0.765	0.067	-0.081	0.102	0.359	-0.018	0.165	0.049	0.255	0.203
ATT3	0.299	0.804	0.190	0.110	0.228	0.442	0.051	0.248	0.110	0.315	0.253
ATT4	0.247	0.728	0.227	0.066	0.203	0.418	0.109	0.248	0.207	0.395	0.319
ATT5	0.356	0.809	0.291	0.157	0.209	0.518	0.190	0.368	0.085	0.302	0.408
CON2	0.123	0.258	0.884	0.170	0.305	0.346	0.413	0.491	0.369	0.372	0.436
CON3	0.104	0.179	0.872	0.225	0.200	0.334	0.457	0.444	0.396	0.317	0.415
CON4	0.106	0.188	0.779	0.215	0.347	0.298	0.548	0.429	0.457	0.323	0.397
DI1	0.130	0.060	0.168	0.814	0.207	0.122	0.238	0.269	0.126	0.117	0.160
DI2	0.123	0.039	0.238	0.845	0.180	0.147	0.271	0.253	0.174	0.162	0.174
DI3	0.129	0.045	0.237	0.826	0.175	0.111	0.233	0.264	0.255	0.152	0.190
DI4	0.218	0.125	0.141	0.772	0.165	0.156	0.127	0.286	0.120	0.168	0.136
DO1	0.221	0.229	0.318	0.172	0.886	0.247	0.387	0.324	0.435	0.372	0.348
DO2	0.244	0.155	0.278	0.212	0.902	0.233	0.357	0.377	0.375	0.293	0.332
DO3	0.200	0.198	0.292	0.196	0.847	0.231	0.319	0.346	0.366	0.349	0.324
DO4	0.242	0.250	0.311	0.208	0.876	0.291	0.349	0.333	0.390	0.345	0.362
DO5	0.334	0.190	0.235	0.163	0.762	0.250	0.301	0.309	0.296	0.409	0.287
MN2	0.523	0.467	0.131	0.071	0.141	0.664	0.079	0.323	0.137	0.336	0.403
MN3	0.329	0.404	0.391	0.146	0.207	0.822	0.336	0.432	0.263	0.351	0.544
MN4	0.503	0.494	0.219	0.185	0.248	0.795	0.259	0.417	0.244	0.420	0.514
MN5	0.291	0.365	0.411	0.093	0.286	0.777	0.301	0.402	0.310	0.307	0.560
PCB1	0.130	0.074	0.474	0.237	0.297	0.268	0.825	0.358	0.395	0.243	0.464
PCB2	0.117	0.077	0.527	0.214	0.304	0.269	0.859	0.343	0.401	0.231	0.452
PCB3	0.320	0.171	0.384	0.154	0.305	0.359	0.750	0.370	0.361	0.357	0.503
PCB4	0.121	0.040	0.479	0.269	0.397	0.256	0.881	0.384	0.451	0.262	0.418
PCB5	0.142	0.052	0.445	0.228	0.370	0.200	0.859	0.270	0.412	0.242	0.398
RI1	0.254	0.202	0.542	0.230	0.362	0.394	0.419	0.741	0.407	0.352	0.504
RI2	0.275	0.277	0.452	0.295	0.281	0.399	0.393	0.807	0.345	0.358	0.506
RI3	0.198	0.238	0.461	0.311	0.259	0.343	0.328	0.762	0.275	0.403	0.455
RI4	0.493	0.290	0.239	0.168	0.276	0.348	0.164	0.695	0.244	0.360	0.393
RI5	0.464	0.244	0.243	0.201	0.270	0.415	0.203	0.666	0.248	0.426	0.436
RS1	0.085	0.105	0.400	0.179	0.368	0.247	0.457	0.362	0.842	0.348	0.398
RS2	0.134	0.035	0.430	0.191	0.359	0.254	0.421	0.363	0.850	0.351	0.316
RS3	0.134	0.075	0.418	0.209	0.305	0.223	0.454	0.302	0.854	0.357	0.289
RS4	0.187	0.118	0.390	0.195	0.423	0.269	0.379	0.375	0.866	0.435	0.347
RS5	0.213	0.209	0.403	0.110	0.385	0.345	0.362	0.373	0.845	0.448	0.405
RU1	0.374	0.359	0.385	0.148	0.410	0.404	0.319	0.448	0.492	0.843	0.450
RU2	0.348	0.334	0.342	0.225	0.294	0.335	0.252	0.455	0.377	0.871	0.396
RU3	0.328	0.268	0.281	0.159	0.293	0.357	0.273	0.427	0.364	0.836	0.420
RU4	0.360	0.331	0.353	0.131	0.365	0.423	0.285	0.412	0.315	0.845	0.446
RU5	0.408	0.404	0.325	0.109	0.369	0.428	0.233	0.425	0.374	0.824	0.423
SB1	0.294	0.299	0.397	0.190	0.236	0.549	0.416	0.493	0.286	0.335	0.794
SB2	0.321	0.302	0.424	0.127	0.260	0.476	0.367	0.479	0.301	0.427	0.791
SB3	0.484	0.274	0.298	0.142	0.325	0.513	0.403	0.485	0.285	0.352	0.726
SB4	0.409	0.332	0.413	0.171	0.382	0.528	0.494	0.497	0.420	0.462	0.807

Table 7
Predictive power of construct.

Constructs	R Square	Q Square
RI	0.506	0.251
RS	0.176	0.117
RU	0.265	0.175
DO	0.157	0.105
DI	0.109	0.066

Table 8
Hypotheses testing.

No	Hypothesis	Estimates	S.E	T Statistics	P Values
H1	ATT - > RI	0.010	0.059	0.172	0.863
H2	SB - > RI	0.316	0.078	4.025	0.000
H3	PBC - > RI	0.004	0.062	0.064	0.949
H4	MN - > RI	0.061	0.098	0.631	0.528
H5	AC - > RI	0.214	0.071	3.004	0.003
H6	CON - > RI	0.327	0.061	5.374	0.000
H7	RI - > RS	0.419	0.056	7.442	0.000
H8	RI - > RU	0.514	0.054	9.612	0.000
H9	RI - > DI	0.331	0.070	4.708	0.000
H10	RI - > DO	0.396	0.069	5.767	0.000

5. Discussion, conclusion and recommendations

Recycling is the most suitable way of dealing with the waste products. Worldwide the recycling activities are been encouraged. The consumers are motivated to participate in these activities through different schemes. However, in Pakistan the recycling activities are not been encouraged at the greater extend. This study aims to explore the consumer’s perspective regarding return/recycling of the plastic waste. This study contribute in both managerially and theoretically in

understanding the consumer’s perspective. From the theoretical point of view, the study shows the factors that influence the consumer return/recycling intention. Whereas, managerially the study will help the companies and Governmental authorities to design schemes that promote recycling activities.

The three constructs that significantly influence the consumer intention were subjective norms, awareness consequences and convenience. The subjective norms is the significant predictor of return/recycling intention. The results revealed that individual are more likely to participate in recycling activities if most of the people that are important to them promotes and encourage them to do recycling.

Moreover, awareness consequences is a contributing factor in promoting the recycling intention. When the individuals are aware of the environmental impacts that are caused by recycling they tend to participate more in these activities. The greater involvement towards recycling is shown by the individual to protect the environment from the hazardous effects of waste.

In addition, the convenience is the most important predictor of the return/recycling intention. When the individual find the recycling is comfortable, they tend to participate actively in recycling. The ease of recycling is an important influencer for more involvement of the consumer in these recycling practices.

Nevertheless, in this study the attitude, perceived behavioral control and moral norms turn out to be insignificant predictors of recycling. This can be due to fact that despite the awareness, consumers are not discretionally participating in recycling activities. This is quite interesting in the context of Pakistan which is a developing country where standard of living is different from those of developed countries. Here people may seek some financial rewards for active participation in recycling. They show less intention towards recycling as they do not get any personal advantage by recycling.

Similarly, considering the relationship between moral norms and recycling, people are aware of the significance of recycling and the

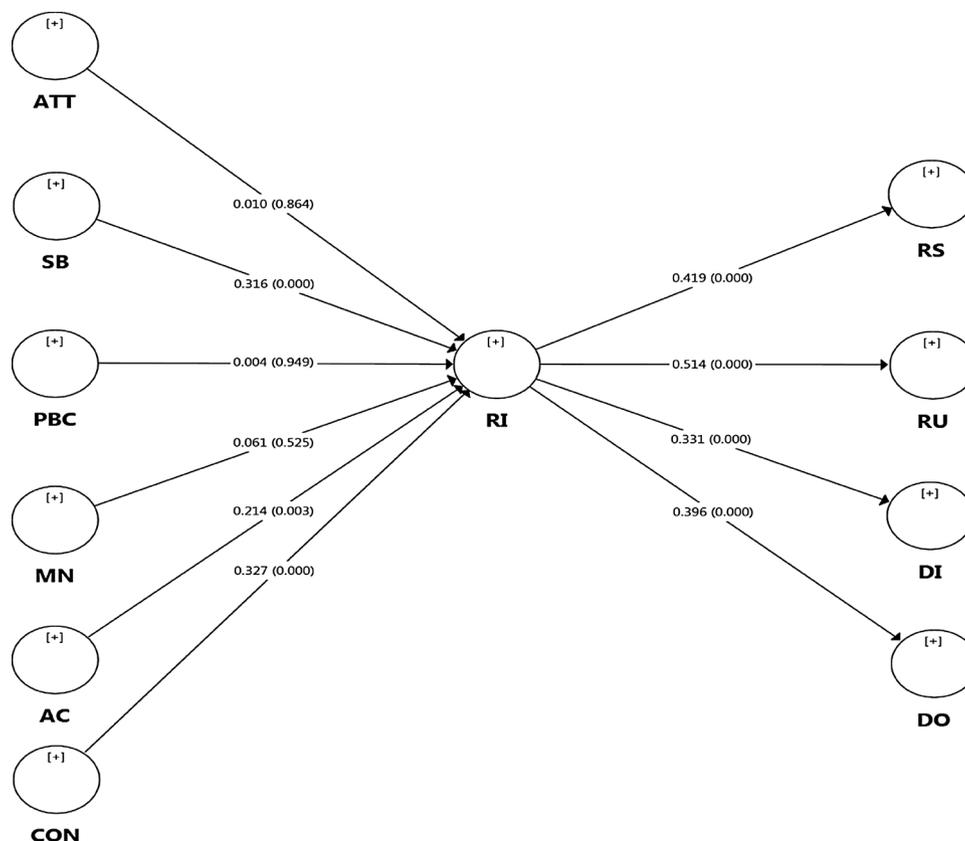


Fig. 2. Hypotheses Testing.

potential threats of plastic to the environment. However since it is an expense oriented activity, where if proper recycling activities are not done by the concerned authorities, then households need to incur some expenditure for disposing. Therefore, the relationship was found to be insignificant.

The perceived behavioral control is also insignificant predictor of return/recycling intention. Self-efficacy and opportunities available are the two factors that forms the perceived behavioral control. Considering the result of this study, it can be assumed that individual do not intend to participate in the recycling due to the shortage of the infrastructure, facilities and resources. As there are hardly any collection points for recyclable in Pakistan the consumers find it difficult to recycle and this hinder their participation in recycling activities.

The impact of return intention on the different recycling behavior was significant. The recycling intention for resell, reuse, dispose and donate was significant. The reuse is most predicted by the return/recycling intention. This implies that people tends to reuse their products for other purposes rather than just throwing it away after using once. Return intention least predicted the disposal behavior.

5.1. Implications

There are multiple implications that may be applied practically based upon the result of research. Firstly, establishment and improvement of laws and regulations by the Government can strengthen the waste management system. Proper enforcement of these laws would possibly improve the current disposal system. For the better implementation of laws and regulation, responsibilities must be assigned to relevant authorities.

Secondly, educating the consumers regarding the recycling and its benefits. The knowledge and understanding regarding recycling may be enhanced through the educational and promotional programs. Awareness must be provided about the advantages of recycling as well as that it is not for their own benefit but it is beneficial for the whole society.

Thirdly, the Government and educational institutional should educate children, students and adults about the recycling and its environmental impact. The public should be kept informed about the effects of waste management. Conveying awareness regarding the environmental protection to public via media and designing campaigns can help educate public how to recycle.

In order to create an awareness which transforms an individual behavior towards recycling, apart from traditional marketing campaigns, deploying creative and innovative strategies, will create the difference. Precisely, endorsement of recycling activities by the celebrities can be a promotional strategy for increasing recycling practices among public. As an increase in recycling is observed among the public when the associated group encourage them towards recycling. Using a celebrity as the role model can help in improving the recycling practices. In addition, advertisements, promotional campaigns and social media can be availed to enhance the knowledge and encourage individuals to involve in recycling.

For making recycling more convenient the government and organizations should provide a number of collection points for recyclable items. Establishing the drop off facilities will help in increasing the involvement of people in recycling. In addition, the companies should actively accept the recyclables and build their own channels for collection of recyclable waste.

Moreover, Government and organizations must introduce such scheme that promote recycling. Organization should develop certain strategies that favor recycling. They should introduce such products that are environmental friendly in nature. Government and authorities should work together for the betterment of environment and support the recycling activities.

5.2. Future recommendation

In the current research the household consumers were the focal point, however there are groups that contribute to large amount of plastic waste such as hotels, educational institutions, hospitals. These groups can be explores for the future research. Moreover, the organizations and intermediaries view can be examine for the successful implications of recycling schemes. The current research take into account only the plastic waste, the future research can explore different recycling materials such as newspaper, glass bottles, aluminum cans, and card-board containers.

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