



Extrinsic Regulations and Basic Psychological Needs: Drivers of Self-Determined Motivation towards Recycling Intention

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Abstract

Recent climate crises have taken the world by storm. Ongoing environmental degradation has raised several questions about human activities that would be effective to protect the ecosystem. Following the climate catastrophe, now a day's businesses are transitioning towards green marketing practices focusing on pro-environmental behaviors of consumers i.e., green purchases, recycling behavior and conservation of energy. This study emphasizes the recycling domain of pro-environmental behaviors. According to a study Pakistan is the 5th most vulnerable country to get affected from climate related crisis. This could only be curtailed if consumers favor 'sustainable consumption' for the use and reuse of products. In this regard this study proposes a comprehensive framework that would investigate what are the motivational drivers that have an impact on 'Consumer Recycling Intention of Pakistani household'. For this purpose, in-depth analysis of recycling motivation and Intention has been conducted for the identification of key motivational factors and drivers that may shape their intentions to recycle in their routine life. Quantitative data has been collected from 303 respondents through structured online questionnaire and was analyzed using SMART PLS(SEM). Findings reveal the significant impact of Basic Psychological needs and Extrinsic Regulations on Extrinsic and Intrinsic motivational factors respectively. Whereas these regulations proved to be significant drivers of self-determined motivation towards recycling Intention. Based on empirical evidence, study has proposed a model, it includes suggested motivational initiatives that businesses may incorporate into their marketing practices and Policy makers may enact laws while keeping determinants of the model in consideration.

Keywords: Extrinsic Regulations, Self-Determined Motivation, Basic Psychological Needs, Self Determination Theory; Recycling Intention.

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Introduction

Prevalent climate catastrophe and incessantly changing environmental pattern has caused climate emergency to ponder upon. Following the intensity of environmental degradation United Nation has placed climate change as one of the top pressing issues the planet is facing at present, and it needs urgent attention (UN, 2022). From the last few decades, natural disasters have been occurring at an alarming rate, this indicates that humans' actions have not done enough to protect the environment. Considering the climate conditions there has been growing debate over climate emergency in international political arena. At present, world leaders are conducting annual climate conferences to discuss and implement pro-environmental policies (UNFCCC, 2021). Therefore, businesses and companies have started to move away from traditional to more sustainable businesses practices.

Rooted back in 1990's, 'Green Marketing' avenue led researchers to explore and address the concerns of environmentally conscious consumers and the type of behavior they share with their environment. Till date, there has plenty of studies been conducted covering dynamics of several pro-environmental intentions and behaviors. These pro-environmental consumer behaviors include recycling behavior, green purchases, and conservation of energy (Khan et al., 2019, Ofstad et al., 2014; Loo et al., 2013; Wang et al., 2018). The research in this domain has been addressing the concerns of several consumers from around the globe. In developed countries the research realm has reached the maturity stage. However, developing countries are still far away in this domain, where the concept of pro-environmental behavior is still being in infancy stage. According to the Global Climate Risk Index (AQI, 2021) some of the cities having worst air quality index (AQI) in the world are from Asia pacific, specifically from India, China, Bangladesh, and Pakistan. It is pertinent to explore the root cause of the issue that can be solved by devising and adapting strategies. This will further help reducing the vulnerability the entire region is facing, it will adjust and bring changes in natural and human systems.

Facts reveals that Pakistan has growing concerns over its solid waste management systems, it has been stated that the country generates over 30 million tons of solid waste annually, of which about 10% is plastic, this makes it the second biggest producer of plastic in south Asia with a growth of 15% pa (Dawn, 2021). Having these facts in consideration it is safe to assert that there is a dire need of businesses, policy makers, environmentalists, and marketers to work in collaboration and devise pro-environmental strategies to curb the environmental danger. However, this could only be attained if consumers favor 'sustainable consumption' for the use and reuse of products more productively over their entire consumption life cycle. Specifically, the way to sort and manage the waste material after their consumption. Whereas, in Pakistan, there is no such formal recycling facility as required. It has also been evident that if the country adopts recycling as a formal industry, it will generate revenues of Rs. 530 million (8.8 million US dollars) per year (Majeed & Batool, 2007).

One of the reasons of this intense environmental degradation is apparent as households in Pakistan do not segregate waste material, because of lack of awareness amongst masses. They rarely separate waste, with inorganic and organic materials mixed in together. They do not even have an awareness about where the trash goes once it leaves their house (Pak-EPA, 2019). Because of the Research and Development gap there is less knowledge about the factors that influence any individual's recycling intention. According to Shrum et al., (1994) viable alternative to manage



solid waste and disposal is ‘Recycling’ of the material after their use. However, Pakistan’s Research and Development capacity is limited, there are only a few researchers who have studied the recycling domain, but are related to healthcare sector, supply chain and solid waste management aspects of Recycling behavior. (Khan et al., 2019; Mujeeb et al., 2003; Abbasi et al.,2010). Domestically, there is no such published research in the domain of ‘Motivations impacting Consumers’ Recycling Intention’. Internationally, Complex nature of multiple dispositions of Recycling intentions and behavior caused conflicts and contradictions at several ends. (Valle et al, 2005: De Groot & Thogerson, 2012: Chen and Tung,2010).

For effective and Sustainable consumption patterns of Pakistani consumers, there must be a comprehensive research study of Consumers’ deep rooted behavioral regulations, basic psychological needs and motivational factors that shape their perceptions to intend in a certain way. Thus, present study is one of the first trails to identify the determinants that could be significant in designing a comprehensive recycling motivation and Intention framework. Hence, it seeks to introduce a rigorous framework that would explain the theoretical and practical implication of motivational determinants and will have a profound impact on Consumers’ Self Determined Motivation to opt for recycling intention in the context of Pakistani households.

Literature Review

2.1 Self-Determination Theory (SDT)

Self Determination theory (SDT) is a psychological needs-based motivational theory was proposed by Deci & Ryan (1985). SDT links human motivation, personality, and their optimal functioning. Theory further explains that there are two main types of motivation; these are extrinsic and intrinsic in nature, and both are quite compelling in formation of an individual’s self-determined motivational behavior (Deci & Ryan, 2019). Further, it has been mentioned by Osbaldiston & Sheldon (2003) that SDT influences peoples’ intention, that are well known to influence the behavior. This mentioned intention-behavior link is based on TRA (Fishben and Ajzen, 1975) and TPB (Ajzen, 1991). TBP has been employed in several pro-environmental behaviors, yet it is not free from criticism because it fails to account for self-determined motives of individuals that influence them for performance of a certain behavior (Bagozzi, 1982). The importance of using motivational theories and processes to study pro-environmental behavior has been noted by Ryan &Deci (2000) and De Young (2000). They stressed on the notion that incorporation of motivational variables into the explanation of pro-environmental behaviors could increase the understanding of such behaviors and improve the prevalent inconsistencies in the literature.

Subsequently, based upon these arguments, several additions were made to TPB e.g., Hagger et al. (2002) added STD constructs, as they conceptualized that an individual construct their intentions to act out on a set of motives. These motives are instigated by psychological needs of an individual for their self-determination. It has been found that some individuals who enthusiastically correspond to socially shared perception are moved by both types of desires; to achieve a positive self-image (Intrinsic) and achieve others respect (Extrinsic). Elaborating this with STD Ryan & Deci (2000) mentioned that individuals may began an activity when they perceive it as positive or because of an external obligation. This self-determined behavior is represented by intrinsic and extrinsic motivational dimensions. In the domain of Pro-



environmental behaviors, De Young (1996) reported Intrinsic and Extrinsic motivations as significant predictors. Thus, considering these arguments this study tends to elaborate the motivational complexity of consumers' recycling intention by using 'Motivation, its two antecedents (Extrinsic and Intrinsic factors), and extrinsic & psychological regulations establishing them from the core.

2.2. Self-Determined Motivation and Recycling Intention

According to the textbook literature of consumer behavior:

‘‘The study of consumers' motivation addresses question of how consumption related behaviors get started, sustained, directed and stopped’’ (Solomon,2006). As present study tends to explore self-determined motivation and its impact on recycling intention of consumers'. In this research stream, Osbaldiston & Sheldon (2003) proved the significant impact of self-determined motivations on an individual's intentions. An approach elaborated by Deci & Ryan (1985) stated that individuals may intend towards a particular behavior based on their general motives. This approach is based upon the Theory of self-determination.

Likewise, Chatzisarantis et al. (1997) conducted their research on performance of physical activity of leisure time, they demonstrated that intentions of leisure time physical activity are formed on the bases of self-determined motives of psychological needs. Their study conceptualized the observance of higher correlation between motivations and intentions. In another study, Osbaldiston & Sheldon (2003) specified a direct path of self-determined motivations towards future intentions of individuals to pursue environmental goals. Study results supported the notion that self-determined motivation had a profound impact on sustained environmental behavior change. Furthermore, Sheldon & Houser, (2001) in their research stated that respondents who believed were self- determined in their motivations seem to go through an upward spiral of intentions. On the other hand, all those who lack in self-determined motivation demonstrated little movement towards environmental responsible behavior.

Several other studies found self - determined motivation as a significant predictor of behavior (Rigby et al. 2006; Moller et al., 2006; Hagger & chatzisarantis,2008); whereas there is also significant evidence that self-determined motivation has an indirect impact on behavior through mediating role of intentions. (Standage et al., 2003; Hagger et al., 2002; Hagger & Chatzisarantis, 2008). Likewise, in study conducted by D Webb et al. (2013), they reported self-determined motivation as a significant predictor of energy conservation intentions and behavior. Moreover, relevant research literature indicates numerous relationships as Significant predictors of conservation behavior. Among these variables, motives towards recycling and re-use reported to be significant determinants. They further explained that both extrinsic as well as intrinsic rewards play their part in explanation of this kind of behavior. (Luyben & Cummings, 1982; Needleman & Geller,1991; De Young,1986). While explaining the impact of motives on intentions Sheeran & Orbell (1999) tested the hypothesis of intentions that reflect motives to engage in a certain behavior. They claimed that intentions represent personal motives towards engaging in the behavior; in their study they conceptualized motives as antecedents of attitudes shaping physical activity of children. Hence, for present study it can be hypothesized that:



H1: Self determined motivation has a significant and positive impact on recycling intention.

2.3 Antecedents of Self-Determined Motivation

2.3.1 Intrinsic Factors

It has been observed that there is great resistance faced by consumers to adopt environmentally responsible lifestyles. For this reason, De Young argued that an individual will adopt such behavior when they obtain tangible rewards. He further stresses upon the notion by citing Clive Seligan that: "Unless businesses make money from selling pro-environmental products or politicians win their elections over environmental concerns or people base their lifestyles and get satisfaction at personal level by experiencing environmental issues. However, an individual and organizations will just do what it requires to compete environmentalism if they see the payoff as greater". (De Young, 1996). For this purpose, this research stream got attention from various researchers. It has been observed that this perception is based upon the observations of people deriving enjoyment from conventional behaviors. These behaviors can be a source of satisfaction at personal level. Subsequently, arguments paved way for research towards the 'concept of motivation'. Studies show that a good set of behavior has been best explained in terms of rewards and goals and that arise because of an individual's participation in an activity (Van den Broeck et al.,2021; Csikszentmihalyi, 1978; Eckblad,1981).

In continuation, exploring the dimensions of stated notion, study by Grouzet et al., (2004) has found that internal factors drive consumers to perform a particular behavior for pleasure or satisfaction rather than its rewards. It has also been established that Intrinsic factors encourage an individual to do some activity, because doing that is interesting, satisfying, and enjoyable for them. (Deci et al.,2017; Vining & Ebreo, 1989; Needleman & Geller,1992; De Young, 1986). Additionally, they have further explained that intrinsic motivation comes from several factors and these factors can be nourished and developed over time. (Vining and Ebreo. 1989). Various authors demonstrated several dimensions of individual's behavior in this regard; some established that people care for others, thus, behave in a pro-social way. (Benabou & Tirole,2006; Andreoni, 1989,1990). In this way, people try to behave altruistically for social wellbeing. However, De young (1996) reported it from the perspective of self-interest; he further states that an individual may obtain personal satisfaction by being engaged in a particular activity, irrespective of his/her intentions for social well-being. However, literature on the role of motivations in relation to recycling behavior is quite rich and have been conducted in greater length. Typically, an Individual's action of recycling requires efforts and opportunity costs. Considering the situation only monetary rewards would yield too low results in guaranteeing increased recycling efforts by people. Some authors found that intrinsic factors matter to recycling motivations in a way that these are more inclined to economic incentives (Kinnaman, 2006). Furthermore, Pardini & Katzev (1984) in their study on behavioral change stated that people were let to discover motivations for them recycling, rather than inducement from external factors. They further elaborated that in this way people tend to continue to perform their behaviors on their own. In the same lines, Oskamp et al. (1991) showed that internal incentives for instance satisfaction after conservation and prudent consumption patterns positively influence recycling behavior. Similarly, it has been shown by De Young (1986) found that internal incentives such as feeling good about doing better for social wellbeing significantly influence the recycling behavior. Subsequently, this study intends to



conceptualize intrinsic incentives as a significant antecedent of self-determined motivation towards consumers' recycling intention. Hence, it can be hypothesized that:

H2: Intrinsic factors have a significant impact on Self-Determined Motivation.

2.3.2 Extrinsic Factors

There has been a possibility to examine the sources and categories that initiate a human behavior. In this regard, De Young (1993) has elaborated that there are three such sources; first, from others, second; from broadly defined environment and third is from the individual him/her own self (this mainly includes intrinsic factors of motivation). The first source involves behaviors that are initiated by some external source and directed by the incentives/rewards offered by them. According to him the source is more linked to 'pro-self' theme that takes humans as a rational actor and make them sensitive to extrinsic cues. Furthermore, upon stressing the notion, Low & Heinen (1993) stated: "If human beings are evolved to use resources in a selfish way, then the most successful conversation strategies can be made, this might include incentives that are social or economic and present short-term benefits to individuals, their friends, and families. In this way policy makers, organizations, and governments may bring in the systems of incentives and monetary rewards for shaping conversation behavior. More immediate the benefit is, more successful the outcome be."

Second approach includes techniques which bring the use of monetary incentives; for example, saving costs from buying in bulk, getting compensated for reduced consumption of water and energy (De Young, 1993). Focusing on the notion several studies initiated their efforts to find out how these motives impact and form a consumer's behavior. They elaborated that extrinsic factor of motivation include the pleasure and satisfaction that consumer feel after performance of certain behavior because they receive tangible rewards for that activity. (Grouzet et al., 2004). As it has been stated earlier that those monetary rewards are successful for activation of desired behavior, but there are some limitations to this technique; that desired behavior usually lasts if incentives last. One of the early types of research in this domain was found by Reid et al., (1976); in his study he found out that those who recycle have reported financial rewards as their primary motivation. It has been observed that when these rewards ended, recycling practice also stopped. Thus, studies concluded that relying solely on economic basis to promote long term behavioral change may be ineffective. Keeping this long-term behavioral gap in consideration other dimensions were set to explore.

This search landed the pro-environmental behavior research stream to extrinsic factors of motivation. Extrinsic incentives include social inducements that have a significant impact on a consumer, for example, recognition from one's social circle and community. On the same line, the role of social norms in promoting conservation behavior has also been explored by Vining & Ebreo (1992) and Stern et al., (1993). They predicted these norms as a substantial predictor of conservation behavior.

If one explores further, it has been presented in several studies that significance of extrinsic incentives on self-determined behavior cannot be ignored. As Gilli et al. (2018) states that motivations that are related to individual's need to gain extrinsic rewards are the extrinsic factors



of motivation. These might include economic, social, and cultural dynamics that have significant impact on consumers' decision making for performance of a behavior. This is especially the case in determining pro-environmental behaviors (Choi et al., 2011) such as recycling for monetary benefits (Kollmuss & Agyeman, 2002; Needleman and Geller, 1992; Vining & Ebreao, 1989; De Young, 1986). Quested et al., (2013) and Halloran et al., (2014) have supported this argument and further asserted that household motivations towards reduction of waste can be related to monetary rewards. According to them, even within extrinsic motivation there is distinction of definitions. As Ewing (2001) explained that to be a recycler, social wellbeing may play a minor role, however what matters more is the perceptions and behaviors of all members of households and their behavioral characteristics. This tends towards both narrow natures of extrinsic (monetary rewards) and broader nature of extrinsic (e.g., social approval). This stance has gotten a support by Abbott et al. (2013), he indicates that peer-pressure is positively correlated with recycling activities where economic incentives are not. D'Amato et al., (2016) reported that recycling practice is greatly influenced by extrinsic rewards of social norms. Barr (2017) further upheld his notion and stated that recycling is a behavior based on normative beliefs. Elsewhere, social influence also impacts the way family, friends and relevant others behave on not to recycle. It has been reported by Sia et al., (1985, 1986) that commitment to recycling proved to be strongly and significantly gets affected by the commitment to recycle among friends, family, and neighbors. Thus, there is a sound support in literature showing both economic and non-economic extrinsic incentives. Hence, present study intends to conceptualize extrinsic factors as a significant antecedent of self-determined motivation towards consumers' recycling intentions and behavior. Hence, for present study it can be hypothesized that:

H3: Extrinsic factors have a significant impact on Self-Determined Motivation.

2.4 Basic Psychological Needs

The SDT has been constantly evolving from past three decades (Deci, 1975, Deci & Ryan, 1985, 2000). It has been discussed in research stream that psychological need concept has become of significant importance as it discusses that all human beings feel the need of experiencing basic notion of autonomy, competence and relatedness for maximization and enhancement of their positive motivation. **Autonomy:** Refers to the feeling that an individual may choose and do what they enjoy doing or what they believe in. **Competence:** Refers to the notion that individuals feel competent at what they are doing or at least have a belief that they can be good at something. **Relatedness:** Refers to the feeling that an individual can meaningfully relate to others, that is connecting well with other individuals.

Intrinsic motivational factors explain purely self-determined motivation and explains how an individual driven by intrinsic motivation finds the behavior interesting and enjoys it performing. Intrinsic motivation does not require external regulation (Howard et al., 2020; Deci et al. 1999; 2001). Promotion of intrinsic motivation leads to optimal functioning and manifests intra and inter-functional growth that develops one's well-being, attitudes, and behavior (Ryan et al., 2019; Broeck et al., 2019).

Basic Psychological Needs and Intrinsic Factors:



Research studies have described that social context internalizes individual's thought process and allows behaviors to become more self-determined (Deci & Ryan 2000). According to the SDT literature, basic psychological needs of an individual namely, Autonomy, competence, and relatedness support self-determined motivation (Darner,2009; Reis et al.,2000; Sheldon et al.,2001; Sheldon & Elliot,1999). Fulfillment of individual's basic psychological needs aids in enhanced self-determined behaviors through integrated motivation (Reis et al.,2000; Ryan &Deci, 2000b,2000c, 2002). It has also been discussed in research that the perception of need satisfaction within an individual varies across situations and social context. An individual may be satisfied on different levels of psychological needs in relationships; however, same individual might not feel satisfied in his/her career. Hence, there is a factor of intrinsic and enhanced motivation in relationship, simultaneously, there is less or no motivation for one's career (Darner,2009). This implies that it cannot be argued as a rule that general scale of need fulfillment will give miraculous rise to self-determined motivation, rather, this states that three basic psychologic needs must be fulfilled in specific and a contextualized way so that it can increase the probability of self-determined motivation towards pro-environmental behaviors. Hence, it has been hypothesized that:

H4: Basic Psychological needs have a significant impact on Intrinsic Factors of motivation.

2.5 Extrinsic Regulations

Late 1980's researchers focused expanded to study extrinsic factors of motivation. This includes activities that can be undertaken to perform certain action, not the action itself (Ryan & Connell,1989). Some of the recent studies highlighting that extrinsic motivation is not detrimental necessarily, however, there has been proposition that these have been internalized considering what rationale and value a person sees behind a certain act or behavior. In this way Individual feel that the behavior is their own choice, whether one enjoys it or not, that is not detrimental based upon the extrinsic pressures and circumstances (Sheldon & Krieger,2004). If an individual feel that external pressure dictates and control the way they act or behave then extrinsic motivation may have detrimental impact (Ryan & Deci,2000). Based on that, SDT explained basic extrinsic motivation regulations, includes identified regulation, interjected regulation, extremal and Integrated regulation (Ryan & Deci,2000). These regulatory styles comprise upon the degree of internalization perceive by the individual. Often individuals perform certain action as a form of compliance based on the degree of internalization and regulation of the desired outcome. All these types of regulations vary in the extent to which the individual internalize them, therefore said to be self-determined (Howard et al.,2020).

External Regulation:

External regulation comprises of externally regulated motivation that deals with the compliance that an individual puts effort just to meet one's expectations and to conform with others' demands. An individual then complies in a certain way because their cooperative behavior helps them in gaining external approval, appreciation and to avoid criticism (Vansteenskiste et al.,2018).

Introjected Regulation:

Second form of extrinsic motivation constitutes Interjected regulation where an individual may put pressure on oneself by enhanced activities to avoid feeling of shame, and guilt (Assor et.



al,2009). The term Introjection has been originated from the Latin word ‘Intro’ and ‘Jacere’ which means ‘Inside’ and ‘Throw’ (Vansteenskiste et al.2010). Based on that, it has been established that the reason for performance of an activity of an individual is no longer an outside activity, However, has been ‘thrown inside’. Thus, it is not fully accepted but still is at individual’s discretion to shape their behavior to avoid the feeling of guilt. For that reason, Interjected and External regulation considered a controlled motivation in plenty of empirical research studies (Ratelle et al., 2007; Haerens et al., 2010;)

Identified Regulation:

Identified Regulation is considered as volitional regulation form; it occurs when an individual identifies the significance of the activity to self. According to the study, it occurs when an individual learns and accepts the personal relevance of a particular act that they eventually ‘own’ their behavior. It has also been stated earlier that when an individual internalizes the reason of engaging in the activities, they put more efforts and willingly perform the behavior to comply with expectations (Vansteenskiste et al.,2018)

Integrated Regulation:

Integrated regulation has been explained as an activity that is not just personally meaningful, but it requires self-understanding, considerable amount of awareness and brings in harmony and deeply rooted values (Sheldon & Kasser,2001). In this way an individual experiences high value of personal endorsement of that activity because they see it as an expression of self or more specifically, expression of their own identity, personal aspirations, and goals (Kroger & Marcia,2011).

Extrinsic Regulations and Extrinsic Factors

Extrinsic factors of motivation comprise of variety of instrumental behaviors refer to an individual’s engagement over a process to an end. Four types of Extrinsic motivation have been categorized from least to most self-determined (Ryan & Deci,2000). Previous research studies have asked respondents about their reasons of engagement in variety of activities. A significant method that has been used to quantify the impact of these behavioral factors is the Relative Autonomy Index (RAI) (Blais et al. 1990; Vallerand & Bissonnette, 1992). Various domains have been covered in numerous studies e.g., sports, politics, academics etc. have used RAI to confirm the proposition of SDT that is: autonomous regulations are more associated with more adaptive and healthier behaviors as well as emotions. Self-regulation research shows consistency across various domain including pro-environmental behaviors, it states that individuals who are more autonomous are more likely to portray positive affect as compared to negative affect (Villacorta et al., 2003; Blais et al., 1990; Vallerand et al., 1997). Thus, based on these arguments, present study intends to find out the impact and variance of stated Extrinsic regulations on extrinsic factors over the motivation continuum. Hence, it has been Hypothesized that:

H5: There is a significant impact of Extrinsic Regulations on Extrinsic Factors.

Methodology

This section includes empirical analysis of the present study. For that purpose, a survey questionnaire has been developed based upon the existing literature, details of the questionnaire



design are stated as follows. Secondly, following section also highlights data collection process along with the demographics of the study. Lastly, Data analysis techniques have also been discussed in detail. The Instrument for the present study has been adapted from the existing studies. All items of the study comprise of Seven-point Likert scale response format ranging from Strongly Disagree (1) to Strongly Agree (7). Items drawn from these studies have been validated and proven reliable for model testing in previous studies. Four items of extrinsic regulations have been taken from Trembley et al. (2009). for Basic psychological needs, six items have been adapted from Deci et al. (2001). In addition, five items each have been adapted for Extrinsic factors from Gagne et al. (2015) and De Young (1986) for Intrinsic factors. Lastly, instrument of Self-Determined motivation and Recycling Intention has been adapted from Pelletier (1998) and Fishben & Ajzen (2010) with three items for each of the variables respectively.

Table.1: Convergent Validity of measurement Model

Constructs	Items	Loading	α	AVE	CR
Extrinsic Regulations	ER1	0.783	0.843	0.681	0.895
	ER2	0.866			
	ER3	0.833			
	ER4	0.816			
Basic Psychological needs	BPNI	0.669	0.814	0.519	0.865
	BPN2	0.804			
	BPN3	0.766			
	BPN4	0.634			
	BPN5	0.768			
	BPN6	0.665			
Extrinsic Factors	EF1	0.860	0.851	0.624	0.892
	EF2	0.754			
	EF3	0.812			
	EF4	0.716			
	EF5	0.800			
Intrinsic Factors	IF1	0.704	0.761	0.513	0.839
	IF2	0.576			
	IF3	0.700			
	IF4	0.737			
	IF5	0.840			
Self-Determined Motivation	SDM1	0.864	0.802	0.716	0.883
	SDM2	0.812			
	SDM3	0.862			
Recycling Intention	RI1	0.944	0.831	0.759	0.903
	RI2	0.707			
	RI3	0.942			



The demographic detail of respondents is mentioned as follows. For the collection of data, a total of 380 questionnaires were sent out to all those respondents who were recyclers. A self-administered questionnaire was sent for data collection by using Google survey method. A questionnaire link was shared across social media platforms and via email. None of the data went missing during fill up stage, because questions included closed ended options to choose from. In addition, out of 350, a total of 303 responses were submitted back. These respondents include 142 males whereas 161 female respondents. Details of respondents' profile are stated in Table 2.

Table 2. Respondents Profile

Measures		Frequency	%
Gender	Male	142	46.86%
	Female	161	53.13%
Age	16-25	207	68.4
	26-35	74	24.3
	36-45	15	4.8
	45 and above	7	2.5
Educational Level	Intermediate	67	22.2
	Bachelors	162	53.5
	Masters	53	17.6
	postgraduate	21	6.9

For the evaluation of structural model, structural equation modeling (SEM) approach through a partial least squares (PLS) method has been used. PLS is known to be as a second-generation evaluation technique that can be used to test the measurement and structural model, along with regression and Component Factor Analysis (CFA) (Hair et al.,2012). Thus, this study has used Smart-PLS to conduct a PLS estimation.

4. Result Analysis

To avoid common method biasness Variance Inflation Factor (VIF) has been used. According to Kock, (2005), occurrence of VIF should be equal to or less than 3.3. For present study all values are at maximum value of 2.72. Hence, there is no such issue of common bias method been observed so model is considered free of common method bias. To assess the reliability and validity of the constructs included in the study, consistency and validity tests have been conducted. These tests have been stated as a requirement to reduce the measurement error, includes convergent validity, Internal consistency, and discriminant validity (Hair et al., 2011). Assessment of mentioned validities has been conducted by analyzing Cronbach's alpha (α), composite reliability (CR), factor loadings, and average variance extracted (AVE). For the CFA, there should be a minimum value of 0.7 (Hair et al.,2012). The findings of current study show that

all CFA values are above 0.7, shows the internal consistency of the data. In addition, all the values of AVE and CR are above 0.5 and above 0.8 respectively, these measurement outcomes show that there is a reasonable convergent validity (Table 1).

4.1 Structural Model

For the evaluation of hypotheses, estimated path coefficients of the structural model have been examined. As shown in the fig. 1, results of the variables and constructs show that there is a significant and positive impact of extrinsic regulations on extrinsic factors H_1 ($\beta=0.781$, $p < 0.000$). Basic Psychological needs have a significant impact on Intrinsic factors of recycling, H_2 ($\beta=0.832$, $p < 0.000$). Likewise, extrinsic, and Intrinsic factors have a significant positive impact on Self-Determined Motivation, as H_3 ($\beta=0.526$, $p < 0.000$) and H_4 ($\beta=0.376$, $p < 0.000$) respectively. Lastly, results show that self-determined motivation portrays a significantly positive impact on Recycling intentions of consumers, H_5 ($\beta=0.723$, $p < 0.000$).

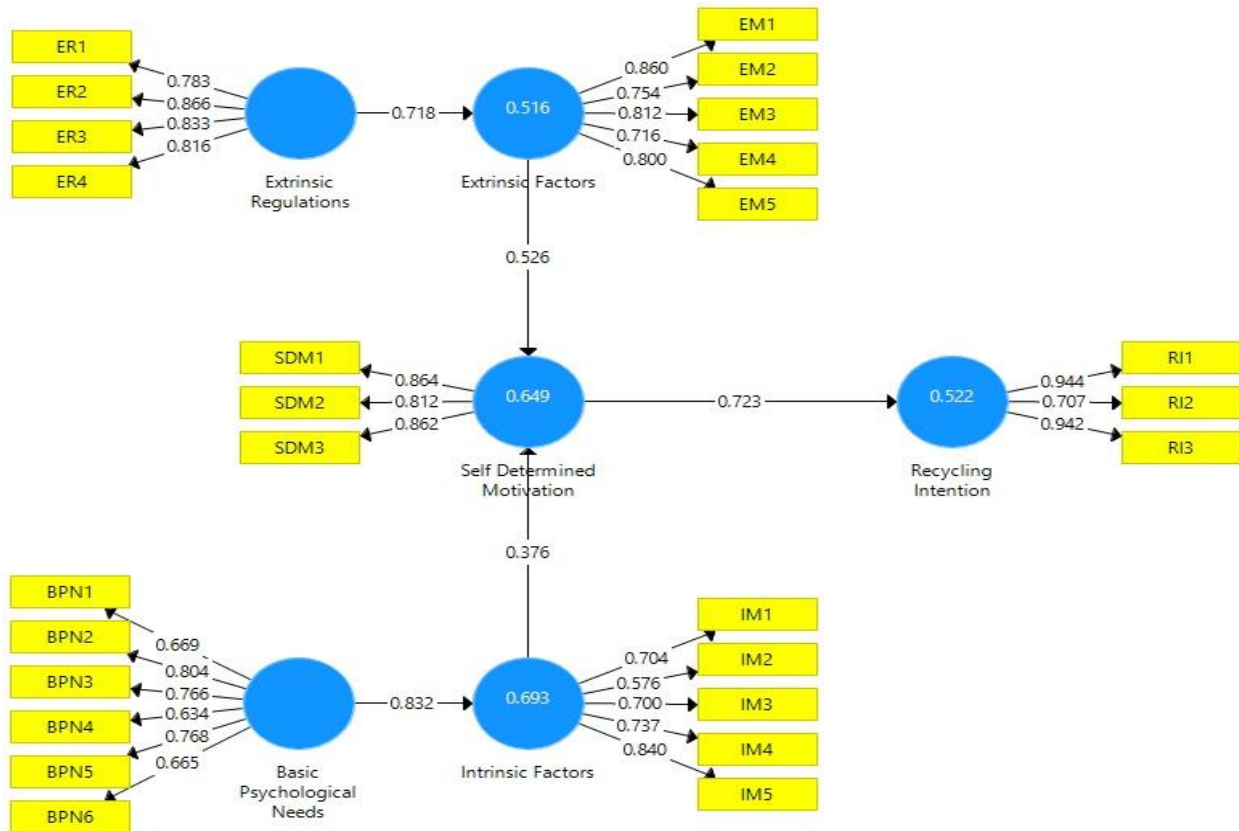


Fig.1

Table 3: Measurement Model and Discriminant Validity

Measures	BPN	EF	ER	IF	IR	SDM
Basic Psychology needs	0.721					



Extrinsic Factors	0.635	0.790				
Extrinsic Regulations	0.747	0.718	0.825			
Intrinsic Factors	0.612	0.580	0.642	0.716		
Recycling Intentions	0.632	0.594	0.694	0.672	0.714	
Self-Determined Motivation	0.764	0.745	0.689	0.682	0.723	0.846

Note: ER= Extrinsic Regulation, EF=Extrinsic Factors, BPN= Basic psychological Needs, IF= Intrinsic Factors, SDM= Self-Determined Motivation, and RI= Recycling Intention of consumers.

According to Hair et al., (2016), the value of R^2 should be greater than 0.2 to be considered acceptable, in the same line present study shows the acceptable value of R^2 that is 0.522. In addition, Study also reports the value of Q^2 by using Stone-Geisser's blindfolding technique. This procedure is a sample reuse procedure (Mikalef et al., 2017). Through this technique cross-validation as well as function fitting can be examined. It also assists in analyzing predictive relevance of model's constructs. According to Hair et al., (2012) $Q^2 > 0$ shows that model has a predictive relevance. Results show that Extrinsic factors ($Q^2 = 0.302$), Intrinsic factors ($Q^2 = 0.343$) and self-determined motivation ($Q^2 = 0.455$), all of these have reasonable and satisfactory predictive relevance, since they have values above than 0 (Hair et al., 2017).

Table 4. Structural Model results (Hypotheses Testing)

Hypothesis	Relationship	Std Beta	Std error	t-value	Decision	Q^2	R^2
H ₁	ER → EF	0.718	0.028	25.470	Supported		
H ₂	BPN → IF	0.832	0.017	48.130	Supported		
H ₃	EF → SDM	0.526	0.043	12.132	Supported	0.302	0.522
H ₄	IF → SDM	0.376	0.052	7.197	Supported	0.343	
H ₅	SDM → RI	0.723	0.032	22.357	Supported	0.455	

Note: ER= Extrinsic Regulation, EF=Extrinsic Factors, BPN= Basic psychological needs, IF= Intrinsic Factors, SDM= Self-Determined Motivation, and RI= Recycling Intention of consumers.

5. Discussion and Implications

5.1 Discussion

The incorporation of pro environmental behaviors into an individual's lifestyle is of greater concern for environment and promotion of more sustainable future. Self Determination theory established interesting propositions to understand the factors that can have impact on such behaviors. later, those propositions then became the foundation to build upon several motivational frameworks in diverse fields including education, health, Human Resource management and



Marketing. Present research entails to study the motivational constructs that could have an impact on recycling intention of Pakistani Consumers. After the analysis of hypotheses, it has been proven that different types of Extrinsic Regulations namely Introjected, external, controlled, and integrated regulations have significant impact to shape extrinsic factors to Self-Determined motivation for recycling. However, In the context of Intrinsic factors, they evolved from the basic psychological needs of Autonomy, competence, and relatedness of a recycler, this relationship has also tested significant and positive to have its impact on self-determined motivation.

However, the demonstrated relationship between Intrinsic, Extrinsic Factors and their predisposition constructs have shown some interesting outcomes in the context of Pakistan. It came out that an individual won't just wait for the reward to motivate him/herself recycling. Today, they seem to derive satisfaction from the actions they do willingly for their environment. It has also been noted that consumers' feelings derived from autonomy, competence and relatedness have got impacted more to form intrinsic factors of motivation as compared to those of Extrinsic regulations and extrinsic factors. These results do not depict that one should go for one type of motivational regulations and should eradicate the alternate one, but it demonstrates that a good integration of both type of regulations will be sufficient to shape an individual's self-determined motivation. Furthermore, Intrinsic regulations and factors are inherent and are more salient to derive actions, whereas, extrinsic can be secured ones, so both have integrated significance in the context of recycling behaviors of Pakistani consumers.

5.2 Theoretical Implications

The purpose of this research was to study the extrinsic and Intrinsic regulations and assess their impact on factors leading to enhance or decrease self-determined motivation of consumers. Firstly, results of the present study have shown interesting insights that also validates the established scale 'The Motivation towards the Environment Scale' (MTES) (Pelletier et al. 1998) in the context of developing countries specifically Pakistan. Secondly, theoretical contribution of the present study demonstrates that SDT has a significant value to get impacted by extrinsic factors and regulations, and it also has significance to frame an individual's intention of recycling. In this way, study significantly depicts that both intrinsic as well as extrinsic factors are of utmost importance, they need to be considered when investigation environmental behaviors of consumers. For External Regulations, it has been mentioned in previous studies that two of the regulation types are high in self determined motivation (Identified and introjected). whereas other two (External and Integrated) are low on self- determined motivation (Ryan and Deci,2000). Interestingly, Present study does not portray this difference in forming self-determination level. According to the results, both are significant to shape an individual's self-determination towards Recycling intention. This brings clarity to complexed motivation continuum of SDT. It will lay the foundation of Pro-environmental behavior to explore and extend further motivational factors in the domain. Furthermore, proposed motivational framework can be used in diverse pro environmental behaviors (i.e., motivations to pro-environmental product purchase, motivational aspects to energy



conservation etc.) to check the generalizability and predictive power of the model across developing countries.

Lastly, research holds its significance for academic and theoretical audiences of research and development departments. Results of the study show greater generalizability of Self-Determination Theory, and it paves the way for academicians and R & D to initiate new propositions based upon SDT. The integration of Self-Determined motivation with well-established theory of planned behavior has open additional avenues for researchers to explore more constructs and increase the predictive power of the framework. In the context of Pro-environmental behaviors, there has been discussion and studies conducted on TPB's Intention-Behavior model (Fang et al.,2021; Kaffashi & Shamsuddin, 2019; Stancu,2016). However, to the best of available knowledge, the insights of dispositional and contextual motivational factors have not been touched upon in pro environmental behavioral domain, specifically in South Asian region. Hence, present study establishes the foundational framework to build upon related dispositions across stated audiences.

5.3 Practical Implications

Findings of present study are beneficial for businesses, marketers, government, policy makers, NGOs, and environmentalists. Following the present situation, businesses are socially bound to follow carbon neutral footprints as pledged by international business communities. Recent COP26 held in Glasgow, England (UNFCCC, 2021) is one of the latest occurrences that highlights the responsibility today's businesses are holding. Challenging situation comes when businesses know how to handle entire consumption cycle of their production to make their standing more sustainable. Which is apparently impossible without having to know their consumers, their perceptions, behavioral regulation, and contextual factors to motivate them to opt for pro-environmental behavior (i.e., Recycling). In line with this, study presents motivational dispositions to follow for businesses and marketers so that they can target their consumers and alter their practices accordingly. To start with the significant impact of Extrinsic regulations presented in the study, marketers can plan promotional campaigns, compensation packages, contests based on the content targeted to extrinsic regulations of consumers. Based on the significantly positive result of basic psychology needs, it is safe to state that extrinsic regulations' strategies need to be integrated well with basic psychological needs. Marketers may come up with the social or commercial advertisements highlighting the content that motivates them to intend towards recycling behavior. Study also portrays that apart from external regulatory factors, the internal needs of a consumer. Namely, their need to take autonomous decisions, to feel competent and confident in what they do will be even more effective in stimulating their recycling intention. In this way they can design their promotional content based on making a consumer build stronger self-efficacy, encourage self-initiation, and provides greater choices. Promotion and internalization of these motivators will enable consumers to experience greater sense of self-determination and meaningful impact on their recycling intentions. Government and policy makers



are another significant audience of this study, for Pakistan, there is a dire need of sustainable policy making to stay at par with internationally signed treaties. Keeping in mind the insights of consumers' regulatory behavior, policy makers are suggested to devise recycling programs with financial reward systems, incentive for recycling participation and funding such projects by government will strengthen motivation to stimulate consumers' recycling Intentions.

Lastly, NGOs and Environmentalists in collaboration with government can bridge the gap between consumers and policy makers. They are the ones who will be implementing and using government's finances effectively for social wellbeing. Being much closer to normal public, they may devise effective strategies to train households about the significance and benefits of recycling practices, reward systems and may involve them more into the processes to provide them with greater autonomy and competency. Thus, it is safe to argue that where extrinsic factors help in regulation towards recycling motivation, nevertheless, the ways to activate intrinsic motivators of consumers should also be considered. It has strongly been believed that conservation-oriented consumer lifestyles will be more fulfilling and rewarding for humans to survive in future.

5.4 Limitations and Future Work

Present study faced some constraints and could not cover certain aspects of stated variables that can be of significance for future research. Extrinsic and Intrinsic motivators may be researched based on certain situational and dispositional factors. Furthermore, future research may also wish to study if any or all types of extrinsic or intrinsic factors have equal or distinct impact on consumers' recycling intention and behavior. This difference could be based on an individual's demographic or social factors. In similar fashion, the impact of cultural and social setting can also be studied by examining their moderating or mediating impact on Consumers' recycling intention. Thus, in future, longitudinal study may be conducted to examine and address additional motivational variables based on SDT to develop the research foundation in pro-environmental domain. Lastly, this study will line up to create processes and patterns of framework across behavioral models including the variables like penalties, reward systems, positive notions of recycling intentions, and positive experiences of self-encouragement for the social wellbeing. Study also highlights areas for pro environmental policies to be researched and focused to generate sustainable and more responsible behavior i.e. to promote belief systems that how a consumer can feel satisfied with the formation of recycling behavior.

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