

Determinants of Consumers' Pro-Environmental Behavior – Toward an Integrated Model

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Abstract: This paper aims at constructing a model which will explain consumers' pro-environmental behavior by analyzing its direct and indirect predictors. To achieve this, variables from well-established models and theories were employed, such as Schwartz's Norm Activation Theory (NAT), Stern's Value-belief-norms Theory (VBN) and Ajzen's Theory of Planned Behavior (TPB). Important variables like perceived behavioral control, normative beliefs, awareness of the consequences of environmental problems, Compatibility with a pro-environmental behaviour, attitude towards a pro-environmental behavior and intention to behave in a pro-environmental manner are considered to be determinants of consumers' pro-environmental behavior. All these variables were discussed and assembled in an integrated research model which can be validated through a quantitative survey. Each variable was described at a conceptual and operational level, items and scales being proposed for each one. The proposed model will offer to organizations a valuable green marketing tool which can be used in the fight for environment protection. The proposed model is unique and can be used as a solid basis for future research.

Keywords: perceived behavioral control; normative beliefs; awareness of environmental problems; structural equation modelling

JEL Classification: C52; M31; Q57

1. Introduction

The 21st century is marked by numerous environmental problems like diminishing natural resources, population growth, excessive pollution, soil erosion and contamination, loss of forests and climate changes, problems which are primarily caused by human behavior (Lehman and Geller, 2004). Although these environmental problems affect each of us more or less, directly or indirectly, induction of a pro-environmental behavior (PEB) in individuals is often a challenge, a challenge which is very important because it is the only path to sustainability (Brewer & Stern, 2005; Turaga, Howarth & Borsuk, 2010).

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An environmental behavior (EB) is defined as any as any behavior which has a significant impact on the environment, even if it is unintentional (Krajhanzl, 2010). A pro-environmental behaviour (PEB) is defined as an individual's behavior that is "generally or according to the knowledge of environmental science, judged in the context of the considered society as a protective way of environmental behaviour or a tribute to the healthy environment" (Krajhanzl, 2010, p. 252) and implies performing a series of actions that diminishes the harm done to the environment as much as possible (Steg and Vlek, 2009).

In order to induce a pro-environmental behavior in individuals it is necessary to study the determinants of PEB, which is a topic of interest for many social disciplines like economy, sociology, anthropology, ecology or psychology. Over the last four decades, pro-environmental behaviour has been a research topic for many psychologists and sociologists which have tried to answer two basic questions: Why do individuals act pro-environmentally and which are the main barriers in adopting a pro-environmental behaviour (Kollmuss and Agyeman, 2002). Trying to answer these two questions gave birth to a series theories of moral motivation in social psychology like NAT - Norm-Activation Theory (Schwartz, 1970, 1973, 1977) and VBN – Value-belief-norms theory (Stern et al., 1999). Also the Theory of Planned Behavior – TPB (Ajzen, 1991) is another theory of social psychology very often used to explain pro-environmental behavior (PEB).

These theories and their relationship with pro-environmental behavior will be discussed further in order to select from them the most significant determinants of PEB.

2. Theoretical Background

The most known theories of environmental social psychology which can be applied to study pro-environmental behaviors or conservation behaviors are Norm-activation theory (NAT) and Value-belief-norms (VBN) theory, which will be further presented. Moreover, the Theory of Planned Behavior – TPB (Ajzen, 1991), a social psychology theory, will be presented because of its very useful variables and relationships among them which are essentially in explaining a pro-environmental behavior.

2.1. Norm-Activation Theory (NAT)

Norm-activation Theory (NAT) was developed by Schwartz (1970, 1975, 1977) in order to describe the relationship between activators, personal norms and behavior (Harland et al., 2007). NAT was initially used to explain helping behavior, but later was extended to altruistic pro-social behavior in general (Turaga et al., 2010) and it is very often used to explain decision making in moral situations like to pro-environmental behavior (Stern et al., 1999).

The main hypotheses of NAT is that the activation of personally held moral norms influences pro-social behavior (Turaga et al., 2010). According to NAT, norm-activations refers to a process in which individuals develop self-expectations regarding pro-social behavior which are called “*personal norms*” and consist in feelings of moral obligation or duty to act pro-social and have a direct influence on behavior (Harland et al., 2007).

However the activation of *personal norms* is not sufficient for pro-social behavior because they can be neutralized by denying the consequences of individual’s actions on others or by denying the responsibility to take action (Harland et al., 2007).

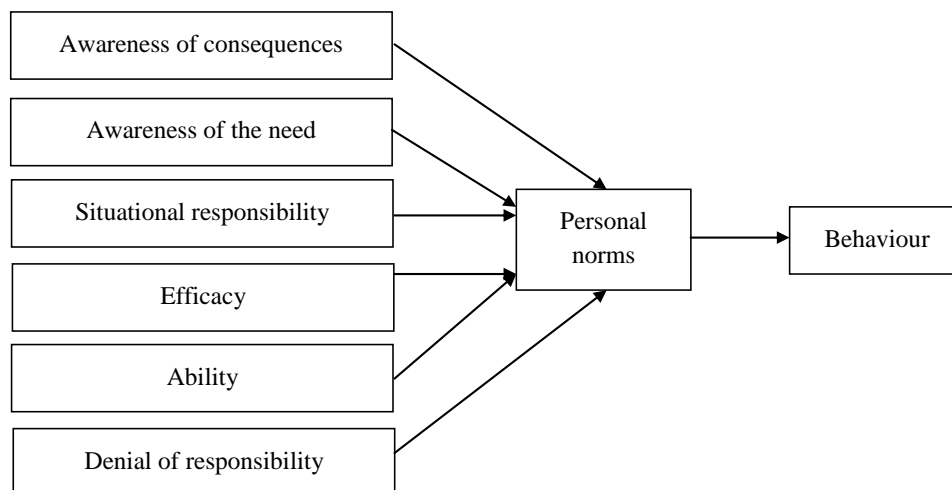


Figure 1. Norm Activation Theory – NAT

(Schwartz, 1977)

The process of norm activation consists of four situational factors or activators (awareness of need, situational responsibility, efficacy and ability) and two personality trait activators (*awareness of consequences* and *denial of responsibility*).

Norm-activation theory can be applied to explain a variety of pro-environmental behaviors, which can be grouped in two categories of behaviors. The first category includes behaviors like buying ecological gasoline, household energy conservation (Black, Stern & Elworth, 1985) or recycling, while the second category includes behaviors that support for environmental protection, such as signing a petition for better regulations regarding environmental protection (Stern, Diets & Black, 1985) or willingness to pay extra taxes for environmental protection (Guagnanao, Dietz & Stern, 1994).

2.2. Value-belief-norms Theory (VBN)

Stern, Dietz and Kalof (1993) explained that in addition to the personal norms based on altruistic values toward other human beings (“social-altruistic” value orientation), norms based on self-interest (“egoistic” value orientation) and altruism toward other nonhuman species (“biospheric” value orientation) also guide individuals’ pro-environmental action. They also stated that egoistic and biospheric personal norms are activated in the same way that altruistic personal norms are activated within norm-activation theory (Stern and Dietz, 1994).

Stern et al. (1999) developed the idea of three value orientations which describe environmental action and proposed a more complex theory, value-belief-norms theory - VBN. The VBN theory generalizes the normactivation theory to incorporate, in addition to the altruistic values, the egoistic and biospheric value orientations into personal norms.

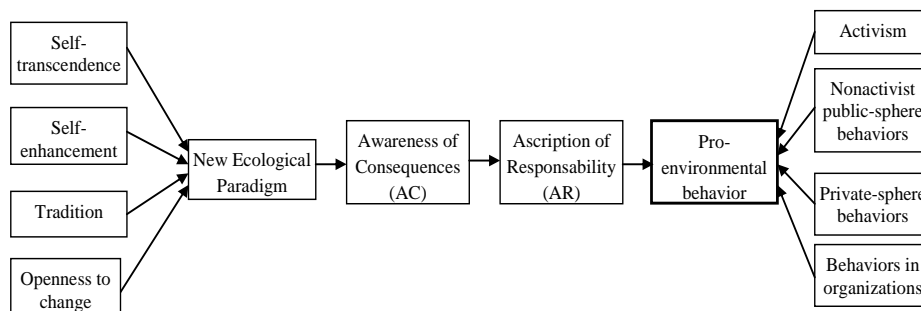


Figure 2. Value-belief-norms theory – VBN

(Stern et al., 1999)

The order of variables and their causal relationships is based on previous empirical work on PEB in social psychology (Gardner & Stern, 1996; Turaga et al., 2010). The hypothesized causal chain in the VBN theory “*moves from relatively stable, central elements of personality and belief structure to more focused beliefs about human environment relations, the threats they pose to valued objects, and the responsibility for action, finally activating a sense of moral obligation that creates a predisposition to act*” (Stern et al., 1999, p. 85).

2.3. Theory of Planned Behavior (TPB)

Theory of Planned Behavior (TPB) was introduced by Ajzen Icek in 1985, one of the developers Theory of Reasoned Action (TRA). Starting from the TRA, theory of planned behavior develops the initial model by adding a new variable called “*perceived behavioral control*”, thereby achieving a theory that explains human behavior in specific contexts, such as one in which the individual has no control over his behavior (Ajzen, 1985), the other variables remaining unchanged. Like in

the TRA, the intention to behave in a certain way remains a central factor in determining the current behavior.

The Theory of Planned Behavior developed as a need to improve the initial model, taking into consideration those situations where the individual does not have a complete volitional control (Ajzen, 1991, p. 181). There are certain situations in which a particular behavior depends in a certain measure by non-motivational factors such as the availability of opportunities and resources (time, money, cooperation from others, etc.) (Ajzen, 1991, p. 182). Icek Ajzen (1991) specifies that these factors are the real degree of control over behavior. The relationship between intention and behavior control is theoretically based on previous studies.

The Theory of Planned Behavior has demonstrated over time the effectiveness in predicting actual behavior in fields as diverse as educational behavior, sexual behavior, care and health practices, use of the Internet, social networking sites or tourism (Synodinos and Behan- Dye, 2014).

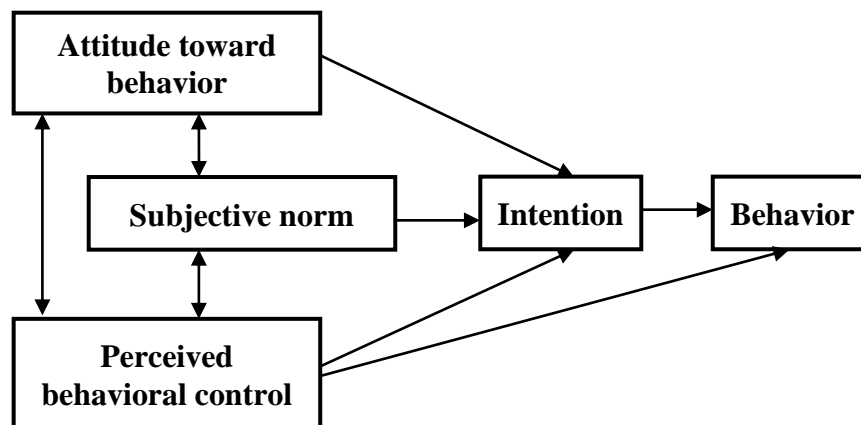


Figure 3. Theory of Planned Behavior – TPB (Ajzen, 1991)

More recently, the Theory of Planned Behavior began to be increasingly used in the study of ecological and pro-environmental behavior of individuals through empirical research by authors such as Synodinos and Behan-Dye in 2014, Chan and Bishop in 2013, Kim, NJIT, and Hancera in 2013, Greaves, Stride Zibarras and 2013, Fielding et al. 2008 or Oreg-Gerro and Katz in 2006.

In order to be effective in measuring and provide greater accuracy in measuring how the intentions and actual behavior, Ajzen (1991) notes that the predictors variables of TPB: attitude, subjective norms, and perceived behavioral control must be adequate and appropriate for the behavior that is intended to be predicted.

3. Research Framework and Hypotheses

In this study the behavior of consumers to act in a pro-environmental manner will be analyzed by studying their intention to behave in a pro-environmental manner. Like in the Theory of Reasoned Action, intention to behave in a certain way remains a central factor in determining the current behavior. Intentions to adopt a certain behavior, captures all the motivational factors that influence a particular behavior. As the intention to engage in a particular behavior is higher, the more likely that behavior to be achieved. (Ajzen, 1991).

Hypothesis 1: There is a direct and positive relationship between consumers' intention to behave in a pro-environmental manner and their pro-environmental behavior.

Consumers' decision to adopt a pro-environmental behaviour will be analysed through respondents' stated behavioral intention. Previous research has assumed a strong relationship between behavioral intention and attitudes towards the behavior. Thus, as a rule of thumb, the more favourable consumers' attitude toward the behaviour, the stronger the consumers' intention to perform the actual behavior (Hrubes et al, 2001; Fishbein and Ajzen, 1975; Ajzen, 2002):

Hypothesis 2: There is a direct and positive relationship between consumers' attitude towards behaving in a pro-environment manner and their intention to behave in a pro-environmental manner.

Environmental awareness has been defined by Kollmuss and Agyeman (2002) as "knowing of the impact of human behaviour on the environment" and has both an affective and a cognitive component based on the amount of knowledge and individual has. Thus, awareness supported by environmental knowledge is supposed to change consumers' attitude towards behaving in a pro-environmental manner:

Hypothesis 3: There is a direct and positive relationship between consumers' awareness of the consequences and need of a pro-environmental behaviour and their attitude towards such behaviour.

Being aware, rationalizing the need to adopt such behaviour and the consequences of not adopting it, should also influence consumers' intention to behave in a pro-environmental manner:

Hypothesis 4: There is a direct and positive relationship between consumers' awareness of the consequences and need of a pro-environmental behaviour and intention to behave in a pro-environmental manner.

Consumers live in a micro-system formed by their immediate social network, such as friends, family members, colleagues, neighbours, peer-groups. The approval or disapproval of their immediate social network is conceptualized to perform a

certain amount of pressure on consumers to engage or not to engage in certain behaviour (Ajzen and Fishbein, 2005). For example, neighbours can exert a social pressure in the case of waste sorting, since people usually value the opinions of their neighbours.

Hypothesis 5: There is a direct and positive relationship between normative beliefs coming from consumers' referent groups and their attitude towards a pro-environmental behaviour.

Hypothesis 6: There is a direct and positive relationship between normative beliefs coming from consumers' referent groups and their intention to behave in a pro-environmental manner.

Ajzen (1991) assumes that behaviour is not always under the complete volitional control of an individual, thus it cannot be explained only by the study of motivations. There are situations when individual behaviour depends to a certain extent upon the existence of opportunities and resources: time, money, skills, knowledge or the cooperation of others (Ajzen, 1991). These constraints represent the actual degree of control over one's behaviour. Researchers confirm that people with a high perceived behavioural control in term of the above mentioned resources are more likely to adopt a pro-environmental behaviour (Schultz and Oskamp, 1996). Moreover, Schultz and Oskamp (1996) indicate that the effort associated with performing behaviour is regarded as an impediment to action, consequently a barrier in adopting certain behaviour. For example, not having a nearby store supplied with eco-friendly products implies effort in reaching the nearest store, thus is more convenient for consumers to buy in their immediate proximity. Sorting waste, as well, requires more time and space than dumping all waste in one place, which some consumers do not possess.

Hypothesis 7: There is a direct and positive relationship between perceived consumers' behavioural control and their intention to behave in a pro-environmental manner.

Hypothesis 8: There is a direct and positive relationship between perceived consumers' behavioural control and pro-environmental behavior.

Another consumers' salient belief that has been disregarded in modelling consumers' pro-environment behaviour is compatibility, a Diffusion of Innovation Theory (DOI) specific variable that adapted to the specificity of this research, could be defined as the extent to which a new behaviour is perceived to be compatible with consumers' intentions and practices (adapted after: Rogers, 1995).

It is important that behavioural change towards a pro-environmental behaviour should fit individuals' current lifestyles even though the purpose of a pro-environmental campaign is a shift in long-term behavior. The changes generated by a pro-environmental behavior can often bring inconvenience and on short term,

they might not be in their best interest. For example, an individual used to drive to and from work with his personal car would find it inconvenient to start using public transportation in order to reduce air pollution. Personal transportation is part of his lifestyle and not many individuals are ready to give up comfort for the benefit of current and future societies. If a pro-environmental behaviour does not fit consumers' needs, values and lifestyle it can be regarded as being equal to "giving up and losing out" (Conolly si Prothero, 2003). A great challenge for policy implementation would be to show how a pro-environmental behaviour can fit one's needs. Compatibility with one's values is also important. Thus, a pro-environmental behaviour should be compatible with consumers' needs, values and lifestyle.

Hypothesis 9: There is a direct and positive relationship between consumers' perceived compatibility with a pro-environmental behaviour and their intention to behave in a pro-environmental manner.

Hypothesis 10: There is a direct and positive relationship between consumers' perceived compatibility with a pro-environmental behaviour and pro-environmental behavior.

The proposed model and research framework for explaining and predicting consumers intention to behave in a pro-environmental manner and their actual pro-environmental behavior is graphically represented below:

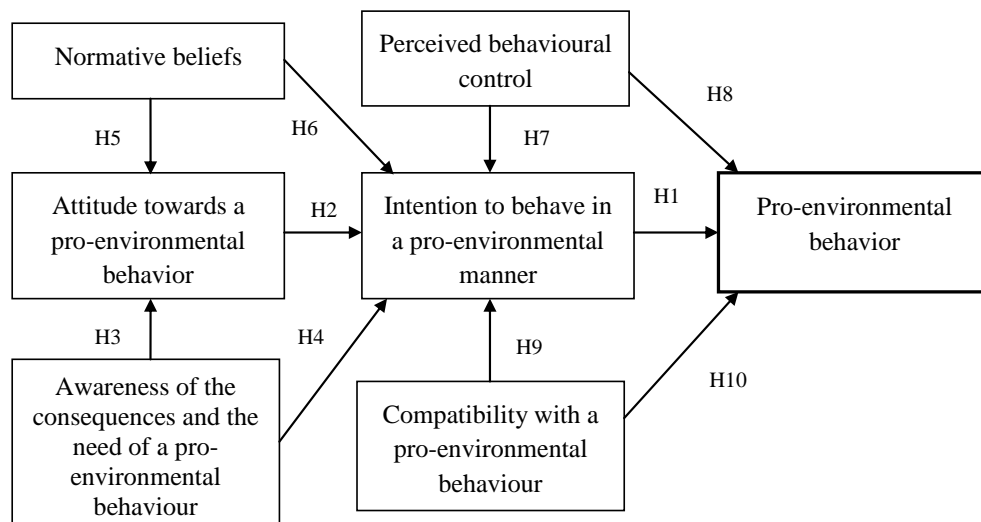


Figure 4. Proposed Research Framework of Pro-environment Behavior

4. Measurements

The research framework proposed in the previous section contains seven latent variables, verbal surrogates for each investigated phenomenon (Freeze and Rascheke, 2007), which are measured by the use of items (Law et al, 1998). Each variable is defined both at conceptual and operational level.

Six variables are measured on a 5 point Likert Scale: 1 – Strongly Disagree, 2 – Disagree, 3 – Neither agree or disagree, 4 – Agree to 5 – Strongly Agree.

One variable, *pro-environmental behavior* is measured on a 5 point frequency scale: never (1), sometimes (2), often (3), very often (4) and always (5). Further, each variable will be defined at a conceptual and operational level.

Consumers' awareness towards environmental issues represents the extent to which consumers perceive the need for a pro-environmental behaviour and its consequences. It is measured by a formative latent variable comprising the two dimensions measured through 4 items.

Table 1. "Awareness toward environmental problems" measurements

Items	Adapted after
I am aware of the importance of recycling	Self-developed
I try to reduce energy consumption	Self-developed
I am concerned about soil, water and air pollution	Self-developed
I prefer to buy organic products because I care about the environment in which we all live	Self-developed

Consumers' pro-environmental attitude represents the evaluative affect an individual associates to a pro-environmental behaviour (adapted after: Fishbein and Ajzen, 1975). It was measured as a latent formative variable with 4 items, comprising both the instrumental and the experiential dimension of attitude as recommended by Ajzen and Fishbein (2005). Items were adapted from Van den Berg (2007) list of affective and cognitive attitude items: like, adequate, wise and useful.

Table 2. "Pro-environmental Attitude" measurements

Items	Adapted after
I believe it is adequate to act in a pro-environmental manner.	Van den Berg (2007)
I believe it is wise to act in a pro-environmental manner.	Van den Berg (2007)
I believe it is useful to act in a pro-environmental manner.	Van den Berg (2007)
I like to think that people act in a pro-environmental manner.	Van den Berg (2007)

Perceived behavioural control represents all the situational factors and facilities that enable consumers to behave pro-environmentally, from the existence of resources (time, money, and knowledge), opportunities or facilitating conditions to perform the behavior. The 4 items measuring this formative latent variable were adapted after Ajzen (1991) for the purpose of this study.

Table 3. “Perceived behavioral control”

Items	Adapted after
I have enough environment knowledge for discerning between responsible and harmful behavior.	Ajzen (1991)
I have the necessary financial resources to sustain a green consumption	Ajzen (1991)
I have enough time to involve in environment protection activities.	Ajzen (1991)
I believe I am responsible for the environment we're living in	Ajzen (1991)

The normative beliefs represent the social pressure coming from consumers' reference groups. It was adapted after Fishbein and Ajzen (1975; 1991) and Fielding et al. (2008). It is constructed as a formative latent variable with 3 items measuring the extent to which each category of individuals whose opinions are valued by the consumers (friends, colleagues, neighbours, family members) behave, approve and encourage a pro-environmental behaviour.

Table 4. “Normative beliefs” measurements

Items	Adapted after
People who are important to me behave in an environmentally friendly way.	Fishbein si Ajzen (1975), Ajzen (1991)
People who are important to me would approve of me behaving in an environmentally friendly way	Fielding et al. (2008)
People who are important to me encourage me to behave in an environmentally friendly way.	Fielding et al. (2008)

Compatibility with a pro-environmental behavior represents the extent to which a pro-environmental behaviour is compatible with consumers' needs, values and lifestyle. It is a Diffusion of Innovation Theory (DOI) specific variable adapted to the specificity of this research and its items are adapted after Taylor and Todd (1995) and Rogers (1995). It is constructed as a formative latent variable with 3 items surprising the compatibility of such behaviour with all three elements mentioned above.

Table 5. “Compatibility” measurements

Items	Adapted after
Pro-environmental behavior is compatible with my personal needs.	Taylor și Todd, 1995; Rogers, 1995)
Pro-environmental behavior is compatible with my values.	Taylor și Todd, 1995; Rogers, 1995)
Pro-environmental behavior is compatible with my lifestyle.	Taylor și Todd, 1995; Rogers, 1995)

Consumers’ intention to behave in a pro-environmental manner represents a rational choice to buy, consume and dispose goods in a way that the environment is not or less affected by single acts. It was measured as a formative latent variable with 5 items; following Soderlund and Ohman (2006) approach for measuring intentions as expectations, plans and wants. Also two items are self developed.

Table 6. “Consumers’ intention” measurements

Items	Adapted after
I expect to behave in a pro-environmental manner	Soderlund and Ohman (2006)
I want to behave in a pro-environmental manner	Soderlund and Ohman (2006)
I intend to behave in a pro-environmental manner	Soderlund and Ohman (2006)
I intend to use natural resources in a responsible manner (e.g. water, paper, heat).	Self developed
I intend to buy, consume and throw the products in a way so that the environment is not affected at all or very little by my actions.	Self developed

Pro-environmental behavior is heavily influenced by individuals confidence in their own abilities necessary for a particular activity (Ajzen, 1991, p. 183). In this study the variable pro-environmental behavior reflects the extent to which consumers perform activities which are environmental friendly.

Pro-environmental behavior is a formative latent variable with 8 item. Six items of pro-environmental behavior variable were adapted from Environmental behaviors were measured using the Student Environmental Behavior Scale (SEBS), a 24-item instrument designed by Markowvits et al. (2012) for use with college students, one item is self developed and another one is adapted from Lee (2008).

Table 7. “Pro-environmental behavior” measurements

Items	Adapted after
I leave the lights on when I leave a room	Markowitz et al. (2012)
I leave the water running while brushing your teeth	Markowitz et al. (2012)
I throw recyclables (e.g., plastic bottle) in the trash can	Markowitz et al. (2012)
I leave my computer on or asleep at night (not fully turned off)	Markowitz et al. (2012)
I use reusable shopping bags	Markowitz et al. (2012)
I buy organic products (e.g. energy saving light bulbs, recycled paper).	Markowitz et al. (2012)
I don't drive unless it's necessary and I try to use public transportation or the bicycle.	Self developed
I buy organic products instead of normal when their qualities are similar	Lee (2008)

5. Conclusions and Future Research

Social psychology provides some good determinants in its moral frameworks which can be used to understand and model pro-environmental behavior. The first model described in this paper, Schwartz's NAT – Norm-activation Theory (1977) states that pro-environmental behavior in individuals arise when they are aware of the consequences of their decisions and actions on environment and when they accept a responsibility to do their share for the benefit of entire humanity (Turaga et al., 2010).

The second model presented, the VBN – Value-belief-norms Theory (Stern, Dietz and Kalof, 1993), shows how environmental behaviors are strongly related to deep-seated values orientations and concludes that people whose core values are “social altruistic” and/or “biospheric” are more likely to act pro-environmental, while “egoists: are better described by economic models like homo economicus (Turaga et al., 2010).

The third model presented, Ajzen's Theory of Planned Behavior – TPB (1991) introduces the variable attitude as a strong determinant of behavioral intention and an indirect determinant of pro-environmental behavior, in this case. TPB is a rational choice theory from social psychology which is very often used in the study of individuals pro-environmental behavior.

Beside these theories presented in this paper, a determinant from Roger's (1995) Diffusion of Innovation theory called compatibility was added to the final proposed model. The final model contains variables taken or adapted from four theories and combines theories of rational choice with moral norms theories.

Social behaviors like education behaviors (Serban et al., 2011), social responsibility (Serban et al., 2012), green events (Moise & Macovei, 2014), sexual behavior, care and health practices, use of the Internet for social campaigns (Serban et al., 2011), social networking sites or tourism (Synodinos and Behan-Dye, 2014) have now a new tool, a new framework which can be adapted to their specificity.

Moreover, the model proposed in this study will offer to organizations a valuable green marketing tool which can be used in the fight for environmental protection and social campaigns. By conducting a survey based on this model will give answers regarding the profile of individuals who have a pro-environmental behavior but, much more important, the model will help organizations to better understand the individuals that don't have a pro-environmental behavior in order to find out new ways to convince them to take environmental-friendly actions.

The proposed model is unique and can be used as a solid base for field research. However, more variables can be added to this model from other theories which could compensate, for example, the economic missing variables. Also, if the factorial analysis and internal consistency testing shows that some items or whole variables should be replaced, this will only open the road for the improvement of the model by adding new variables, items and measurement scales.

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