

## DETERMINANTS OF PRO-ENVIRONMENTAL BEHAVIOUR: AN EXPERT OPINION STUDY THROUGH DELPHY METHOD

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### ABSTRACT

The study started with an inquiry in the field of environmental education with a specific emphasis on Pro-environmental behavior (PEB). There were various studies found which explained pro-environmental behavior and also discussed the probable determinants of it. The objective of the study was to find out the determinants of Pro-Environmental Behavior relevant in West Bengal/ Indian scenario. In the first phase, a study was done through a content analysis followed by NVivo qualitative software application to understand the trend. In the second phase, the determinants found through content analysis were further verified with local experts in this field. Academicians with expertise in the research area of the environment were requested to provide their opinion. 'Delphi method/technique' was used for this evaluation. Selected determinants found through qualitative study were sent to the experts for their opinion and provide a ranking too. Experts were also requested to provide further input for new variables as the determinants of the PEB. A total number of 16 new variables were generated from the feedback of experts other than the predetermined 21 variables (from original 27 variables). Therefore the PEB determinant study resulted in the final list of **thirty-seven (37)** variables.

**KEYWORDS:** Environmental Education, Pro-Environmental Behavior, Delphi Method

### INTRODUCTION

The issue of Environment is surprisingly complicated from the very beginning. Though man and nature always lived in closest of the company, the past of environmental education (EE) doesn't go much back in history. According to BBC news "Birth of green generation" happened in Stockholm in 1972. There were mainly two groups, small one concerned with the environment and popular one interested in campaigning for civil rights to vegetarianism. In the conference, the need for a common outlook and common principles were felt to inspire and guide the people of the world. Therefore, among the declaration of the United Nations Conference on the Human Environment, one proclamation was "Man is both creature and molder of his environment, which gives him physical sustenance and affords him the opportunity for intellectual, moral, social and spiritual growth." Through the decades, the concept changed by many evaluation and re-evaluation and Pro-Environmental Behavior found immense importance in Environmentalism. Environmentalism emerged as a global phenomenon in the late 1960s and early 1970s (Buttel 2002; Mertiget *al.* 2002). Since then, scholars have recognized the fundamental importance of exploring how knowledge, beliefs, and attitudes

influenced human response to ecological degradation and pollution (Maloney *et al.* 1975). One of the oldest models to explain human behavior and environment were based on the linear progression of environmental knowledge leading to environmental awareness and concern (environmental attitude) by Burgess *et al.* (1998). Later on models like – altruism, empathy, and pro-social behavior model; sociological models, economic models, psychological models etc. There are many terms too to describe environment friendly behavior like pro-environmental behavior, sustainable behavior, green behavior, pro-ecological behavior, environmentally significant behavior, environmentally responsible behavior, environment protective behavior, environment preserving behavior etc. It was not only the difference in choice of words but these choices are conscious choices. Through time behavior of human towards the environment has changed and this change gave birth to a new relationship between them; defined relation in different shades. But one question remained fundamental in this quest. **Why we do what we do?** Therefore in this study the main objective is to identify those determinants of Pro-Environmental Behavior which are relevant in West Bengal / Indian scenario.

## REVIEW OF LITERATURE

There are various studies which were done in this area. Also, studies with the qualitative design were given emphasis in the review to build the design of the current study. Some of those studies were –

Value-Belief- Norm (VBN) model is based on the altruism theory propagated by Schwartz (1977). V-B-N model is proposed by Stern *et al.* (1993) which states that altruistic behavior increases when a person is aware of other people's suffering. In this same course, the person feel a sense of responsibility to help ease the suffering. Later on, the researchers expanded this notion and included 'social orientation', an 'egoistic' and 'biospheric orientation'.

To understand the effects of instruction on environment-friendly behavior Volk and Hungerford (1981) investigated on students behavior. It was found that students who were encouraged to develop and apply the knowledge and skills initiated and participated in responsible environmental behavior to a greater degree than the students who had experienced only awareness oriented instruction.

Kollmuss, A. & Agyeman, J. (2002) did one of the most important studies on PEB post -2000. They examined to understand the reason why people act environmentally or not by using a few of the most influential and commonly used analytical frameworks. They analyzed the factors that have been found to have some influence, positive or negative, on pro-environmental behavior. Some of such factors were demographic factors, external factors (e.g. institutional, economic, social and cultural) and internal factors (e.g. motivation, pro-environmental knowledge, awareness, values, attitudes, emotions, a locus of control, responsibilities, and priorities). Through their study, they argued that no direct relationship is there between environmental knowledge and pro-environmental behavior. Rather they proposed "pro-environmental consciousness", environmental knowledge, values, and attitudes, together with emotional involvement makes up this complex.

Bamberg & Moser (2007) did a study "Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behavior". This is done by a meta-analysis of psycho-social determinants of pro-environmental behavior. In their study it was found that mean correlations between psycho-social variables and pro-environmental behavior were similar to those reported by Hines *et al.* (1986). In the results of the study it was also found that besides attitude and behavioral control, a personal moral norm is a third predictor of PEB.

To evaluate urban sustainability Musa, Yacob, Abdullah, and Ishak (2015) worked on developing environmental well-being indicators. Delphi method was used for the study because the relationship among variables is complex and a consensus among experts also needed to understand the complexity. The criteria to select the expert panel was on the basis of knowledge and experience of the field of study; ability and willingness to participate; adequate time to participate; and effective communication skills. Two rounds of the study were done to understand the consensus for the factors responsible for sustainability. The study resulted in twelve (12) environmental well-being indicators for urban sustainability in Malaysia.

## **OBJECTIVES**

Objectives of the paper were to find out the determinants of Pro-Environmental Behaviour relevant in West Bengal/ Indian scenario.

## **METHODOLOGY**

This current study is the second phase of a continuous quest to find out the identifying factors of Pro-Environmental Behavior. In this study, at first, a probable list of determinants for Pro-environmental behavior was prepared. But the final objective was to understand what are the determinants identified in India/West Bengal perspective. As the selected determinants have to be evaluated with proper proficiency, expert opinion was the best option to apply in this case. Delphi technique is used to get an expert opinion. Delphi is defined as “systematic solicitation and collation of judgments on a particular topic through a set of carefully designed sequential questionnaires interspersed with summarized information and feedback of opinions derived from earlier responses”(Delbecq, Van de Van, & Gustafson,1975).

Among all the available methods, the reason to use the Delphi method was -

- Possibility to get an in-depth analysis of each determinant
- Use of modern media made communication more responsive and alive
- Better response rate
- Multi feedback process enhances interaction

The experts chosen were mostly from West Bengal and academically involved in environmental studies all over India through direct or indirect academic experiences. After deliberation from both sides, a final expert list was prepared. Then the survey questionnaire was sent to the selected expert panel for their consideration and ranking accordingly. Experts were also requested to add their views on variables which they readily provided. A second modified list was made on the basis of the 1<sup>st</sup> round responses from an expert panel and sent for their final approval. Feedback with a higher rating of consensus and individual viewpoint both enlisted as Delphi method provide space for variety in complex measures. Thus the final identification on determinants of Pro-environmental behavior was achieved.

## **ANALYSIS AND INTERPRETATION**

As is stated earlier, this present study is the second phase of identifying the determinants of Pro-Environmental behavior. In the first phase, a content analysis was done exploring the dominant determinant of PEB. For that, a detailed analysis was done using NVivo11 qualitative software. The analysis was done on the selected studies enlisting their dates,

year, a name of researcher/s, research tool/design, approach, and determining variables. As found, PEB researches gained momentum from the 1970s. Therefore around 90 studies were chosen from 1976 to 2015 for content analysis.

In the first phase, primary critical analysis of contents from 90 research works (from 1976 to 2015) and treatment of these through NVivo11 software, the variables found to be considered for determining Pro-Environmental Behavior was

- Scholastic Variables (02) – **Instructional Objective, Instructional Models.**
- Socio-Demographic Variables (08) - **Age, GENDER, Education, Marital Status, Income, Employment Status, Individual Sense of Responsibility, Altruism**
- Environmental Variables (05) – **Environmental Perception, Knowledge of Issues, Knowledge of Action Strategies, Environmental Talk, active Involvement.**
- Physiological Variables (01) – **Sightedness**
- Psychological Variables (07)– **Attitude, Verbal Commitment, Rational Choices, Motivation, Personal Moral Norm, Personality, Habit.**
- Policy Variables (04) – **Encourage, Engage, Enable, Exemplify.**

So, the total number of variables found as determinants of PEB in the first phase was twenty-seven (27).

The second phase had two parts. First part contains an in–depth deliberation by experts on already selected twenty-seven variables to sort out which are relevant in West Bengal / Indian scenario. In the second part, experts were requested to add, as they find suitable new variables which they feel are equally relevant as the first part to include with them. Through these two parts, local determinants of PEB were selected.

### **First Stage**

In this current study, the above-selected variables (27) were sent to experts for farther in-depth deliberation on local standardization. As mentioned earlier the Delphi method has a back and forth method where each expert gave their opinion on each variable presented to them. After compiling all the feedbacks the final list of variables which were accepted by all experts sent to them for final verification. Through this rigorous process, the final list of variables from the above twenty-seven (27) was proposed. Those were -

1) Instructional objective, 2) Curriculum (model was replaced by broader holistic curriculum) 3) Individual sense of responsibility, 4)Altruism, 5) Restrain and willingness to use less natural resources, 6) ‘being a parent’, 7) environmental perception, 8) knowledge of issues, 9) active involvement, 10) Knowledge of action strategies, 11) Environmental talk, 12) Attitude, 13) Rational choices, 14) Motivation, 15) personal moral norm, 16) Personality 17) Habit, 18) Encourage, 19) Engage, 20) Enable and 21) Exemplify

### **Second Stage**

This stage was included to improve the validity of the opinion given by experts by providing enough space so that all the local determinants, as found by experts through their long experience in this field can be included in the final selection of determinants of PEB. The following suggestions were received from the fourteen experts in this stage-

**Table 1: New Variable of Determinants of PEB as Proposed by Experts of Delphi Method**

New Variables Proposed as the Determinants of PEB	Reason Why it is Important as Determinant of PEB
1) Adoption of sustainable lifestyle practices.	Pro environmental behavior is directly related to lifestyle practices like consumption, food habits, travel, and transport, willingness to pay for ecofriendly products.
2) Development of value system-Development of self transcendence as against self-enhancement.	Proenvironmental behavior requires that selfish interests are to be curbed.
3) Development of spiritual values.	Identification with the natural world and understanding of oneness with the universe is the basis of proenvironmentalism
4) Collective action.	A just social order is prerequisite to PEB
5) Sense of social justice.	A just social order is prerequisite to PEB
6) People empowerment.	A just social order is prerequisite to PEB
7) Culture / or any of its aspect.	Environmental awareness is a social aspect our culture engrafted in.
8) Environment of Educational Institutions (Schools/Colleges)	A clean environment and environmentally aware teachers would initiate students to grow as a socially and environmentally aware citizen, which is lacking in most teaching-learning processes and at the seats of learning.
9) Workplace Environment	Likewise, a clean and healthy workplace environment not only increase the efficiency of the manpower and work output but also transform the adult individual to maintain a neat environment around wherever they go.( I am sure you will understand what this word 'clean' would mean; this signifies both proximal and distal scales.)
10) Political Agenda and Will	Without political outlook and will no awareness could fight for a fruitful implementation of pro-environment action. Therefore, political people at the helm of affairs should be made aware suitably and that awareness should be reflected in their political agenda. In election processes, such local environmental issues should get priority in the campaign.
11)Global Scene Vs local scene on Environmental issues	Environmental issues alien to a section of individual should be avoided and local issues that are more palpable should be thrust upon.
12) Wastes or Wealth: Management & Economic Perspective	Ill management practices are actually responsible for generating more wastes in most cases while good management can very well turn wealth from wastes. Short-term economic gains are actually the reasons for long-term economic losses. Ecosystem values are seldom given any attention that it deserves.
13) Punishment	Without penalty behavior modification is not possible.
14) Environmental ethics	To differentiate good and bad in relation to the environment.
15) Rules and regulations	To be answerable.
16)Environmental monitoring	To implement policies and laws.
17)Environmental education	For awareness.
18) People of aboriginal habits or aboriginal people are strong social determinants	People in the urban area are used to with the artificial preferences in almost all aspects of life. Aborigines, still living in the lap of nature in return nurture nature as much as possible.
19) Educational efficacy	Other than objective and curriculum, evaluation of the system for attaining highest efficacy is important. A change can only be proposed after that.
20) Natural environment in school	To be bonded with nature.

These variables were again sent to the experts and after another round of analysis, the final list of sixteen variables was selected. Those were –

1)Sustainable Lifestyle practices 2) Self-transcendence value to self-enhancement 3) Spiritual value 4) Collective action 5) Social justice 6) People empowerment 7) Pro-environment school and workplace 8) Political agenda and will 9) Ecosystem values 10) Global scene Vs local scene on environmental issues 11)Waste or Wealth: management & economic

perspective 12) Punishment/rules and regulations/monitoring 13) Environmental ethics 14) Importance of place 15) Educational efficacy 16) Culture

Therefore the final list of all the determinants of PEB found in this study were -

1). Instructional objective, 2) Curriculum, 3) Individual sense of responsibility, 4) Altruism, 5) Restrain and willingness to use less natural resources, 6) 'being a parent', 7) environmental perception, 8) knowledge of issues, 9) active involvement, 10) Knowledge of action strategies, 11) Environmental talk, 12) Attitude, 13) Rational choices, 14) Motivation, 15) personal moral norm, 16) Personality 17) Habit, 18) Encourage, 19) Engage, 20) Enable, 21) Exemplify. 22) Sustainable Lifestyle practices 23) Self-transcendence value to self-enhancement 24) Spiritual value 25) Collective action 26) Social justice 27) People empowerment 28) Pro-environment school and workplace 29) Political agenda and will 30) Ecosystem values 31) Global scene Vs local scene on environmental issues 32) Waste or Wealth: management & economic perspective 33) Punishment/rules and regulations/monitoring 34) Environmental ethics 35) Importance of place 36) Educational efficacy 37) Culture.

## DISCUSSIONS

The PEB determinant study resulted in the final list of **thirty-seven (37)** variables. Among those variables **altruism, motivation, personal norm, personality, habit and environmental variables** like environmental perception, environmental talk etc were considered determinants of PEB from earlier studies too and continued to be significant determinants. But current studies in specific environmental behavior like minimizing consumption of natural resources, green energy, green consumer, recycling, waste management, plastic-free lifestyle etc found new determinants of PEB. Some of new variables, as found from the trends in PEB researches from 2011 to 2015 were **social modeling, self efficacy, rapid urbanization, local production, infrastructure ( highly significant)** even as specific as **cognitive style of students** as determinants of PEB ( Osbaldiston, R. et al, 2011; Sawitri, D.R., 2015; Chen, X. et al, 2011; Calsado, C.F.A. et al, 2015; Sierzchula, W., 2014; ). These variables are new and needed to be explored more and therefore were not selected as determinants of PEB in this study. Also in this study, an expert opinion feedback produced **fifteen (15) new variables** as determinants of PEB. Among these new variables, there were **lifestyle practices, self-transcendence values to self-enhancement, spiritual values, people empowerment**. As the new variables from international studies show, in this study too there is a trend of PEB determinants in the area of **personal factors**. A farther exploration may conclude that personal factors like these are the significant trends in determinants of PEB.

Another important variable which emerged from expert opinion was '**place**'. As also found by Dunlap et al (2000) people brought up in urban areas score higher on the NEP scale. There were some studies in content analysis which proposed 'place' related variables for PEB like space specific differences (Kuribayashi, A., 1998), sense of place (Ardoin, N.M., 2004), place-based education (Zandliet, D., 2007), Place attachment (Halpenny, E.A., 2010) which were significant determinants of PEB. In this study expert's qualitative responses state that people living in close proximity to natural environment are more likely to have pro-environmental behavior than others. Even experts added that aborigine residents have far more protective responses to their immediate environment than the non - aborigines. There are current incidents like 'Niyamgiri movement' where tribal population stood against corporate-driven greed to protect Mother Nature and the highest law of the land, supreme court uphold that. The 'place' determinants also suggest the trend of **nonlinear** character of PEB determinants. Even in this study, some new variables proposed by experts were **ecosystem**

values( which was a fundamental value for greener economical growth), **environmentalism in aboriginal people, the importance of local issues, natural environment in school and workplace** etc which are related with 'place determinant'.

As the trend study by Ardoin(2012) suggested, in this study too community-related variables were significant determinants of PEB. Among the final selected determinants **active involvement, engage, self-transcendence values, social justice, collective action, culture** all these are related with community spirit. These could be farther explored to understand the inter-relationship and implications in applied areas, especially educational practices.

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