Examining environmental sensitivity in India

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Abstract

Objectives: Evaluate the degree of "Environmental Sensitivity" and determine factors that influence individual's pro-environmental behaviour. The objective is to explore important causal processes operating in contemporary Indian society which best predicts the environmental sensitive behavior.

Methods/Statistical Analysis: Using data gathered from World Value Survey (WVS)-Wave 6 database from 2010-2014 to investigate the relationship between attitude and self-driven consumer behavior towards the environment. The factors included are: (1) Collective Action and Political Participation, (2) Perception of Democracy, (3) Negative externalities, (4) Social Cohesion and Trust, (5) Political Unrest and Fear, (6) Morality, (7) Personal and Social Value (Schwartz), (8) Religiosity and Spiritual Well Being. The data analysis primarily uses structural equation modeling (SEM) and partial least squares (PLS) statistical methods.

Findings: This paper as a novelty shows the relevance of certain behavioural parameters that are often neglected in analyzing the cause of environmental damage at the grass root level, such as political interest, social capital, fear of political unrest, democracy and increasing political participation. These variables have a strong impact on the environmental sensitivity.

Application: The effect of Morality, Social Value and Political participation was statistically significant with overall goodness of fit of 48%. The strongest effect was observable for Social Value Orientation, which validates the fact that cross-cultural differences are one of the major reasons for the environmental sensitivity among individuals. All three proxies of environmental sensitivity that were statistically significant in the study have a positive impact on individuals' attitude towards environmental morale. Thus, there is a need to frame an egalitarian, affectionate and intellectually enlightened economy, the policy aim of government should be create awareness among individuals and also highlight the cross-country comparisons of other nations faring well in environmental monitoring and control.

Keywords: Collective Action, Environmental Sensitivity, Mutual Trust, Pro-Environmental Behavior.

1. Introduction

There is a wide range of literature that have estimated environmental preferences and behavior of individuals, but a neglected aspect of study when it comes to developing economies especially Indian economy wherein Environment is one of the key parameters that has been targeted under the Million Development Goals-2020. The focus on environmental attitudes began in the early 1970s with one of the pioneer study [1] on gender gaps in environmental attitude, following that majority of other studies focused on specific and limited environmental domains by [2] focusing on contingent valuation of environmental goods, study [3] in 1998 highlighted the self-selection bias in contingent valuation through surveys, [4] conducted an extensive field study to highlight the causes of environmental problems based on Willingness to Pay, and [5] in 2004 evaluated gender differences in environmental valuation.

It is difficult to find any major literature related to country-specific problems and focusing on environmental damage perspective as a whole. Largely these studies with self-monitored questionnaire have the disadvantage of a bias that may crop in due to self-perception from the respondents, which may not fully capture the intricacies of individual's sensitivity towards the environment. Environment is an ambiguous public good, where people generally neglect the importance of this intangible good which is critical for our existence. It is an ambitious attempt made to empirically value the parameters that have a significant impact on citizens' environmental preferences and search for factors that shape environment sensitive behavior.

The World Values Surveys has been used for this purpose which allows us to find a proxy for certain latent behavioural factors that have an impact on environmental attitudes. This attempt is in line with the growing propensity among social scientists to use surveys for several other research domains, [6-9] studies used WVS to empirically estimate happiness, tax morality and attitude towards environmental damage. The World Value Survey uses a rich set of independent variables to investigate in detail what shapes individuals' environmental values in an economy. Main advantage of using these national-specific studies is the possibility to design a country-level environmental initiatives and policy interventions that craters to the need of the citizen's taking into consideration the widespread diversity across country. It allows framing policies from a generalized perspective to a more region-specific need assessment. Focusing on Indian economy, next section of the paper first introduces the theoretical framework of the model. Highlighting the parameters used for the study and the way individuals' environmental attitudes are defined, introduced the model, and presented our hypotheses. Lastly, we present the empirical findings, and some concluding remarks based on the findings of the study which may help the policymakers to frame an efficient sustainable roadmap

2. Theoretical framework

The conceptual framework consists of eight elements that measure the socio-economic and demographic diversity in the country which plays a greater role in framing an individual's behavior. To raise environment sensitivity among individuals, there is a greater need to understand the factors that predominantly influences an individual.

3. Data

The data used in the present study are taken from the World Values Survey (WVS-Wave 2016 India). The WVS is a worldwide investigation of socio-economic and politico-cultural differences, based on national representative survey. Data from these surveys are made publicly available for use by researchers interested in measuring change in behavioral patterns overtime. To assess environmental attitudes of individuals in India we use the following question from these data sets as:

3.1. Dependent Variable: Environmental Sensitivity

Variables – Questions

1. V122 - Confidence: Environmental organizations
2. V78 - Schwartz: Looking after the environment is important to this person; to care for nature and save life resources
3. V81 - Protecting environment vs. Economic growth

These statements are extracted from World Value Survey based on the cross-loadings of reflective scale that is greater than 0.7. These factors are used to measure Environmental Sensitivity among individuals' in India that measures individual's attitudes towards preventing environmental damages (V78 and V81) and voluntary participation in environmental goals (V122).

3.2. Independent variables

1. Perception of democracy

Variables – Questions

1. V132Democracy: Religious authorities interpret the laws.
2. V133 - Democracy: People choose their leaders in free elections.
3. V134 - Democracy: People receive state aid for unemployment.
4. V135 - Democracy: The army takes over when government is incompetent.
5. V136 - Democracy: Civil rights protect people's liberty from state oppression
6. V138 - Democracy: People obey their rulers

Ranking as one of the largest democratic country among the world, this citizen specific perception of Democracy is a crucial factor to understand National Pride and Democratic sentiment of an individual towards the nation. We investigate Democracy as a proxy for national identification. Greater intensity of democracy among individuals may induce a higher degree of cooperation among individuals and a higher preference to preserve a country's environmental conditions. Democracy and political scenario of the country generates greater involvement and contribution towards social good. Hence, we use these parameters to predict that a greater involvement and perceived notion about Democracy leads to stronger pro-environmental attitudes.

2. Negative externality

Variables – Questions

1. V194 - We depend too much on science and not enough on faith
2. V68 - Future changes: More emphasis on the development of technology
3. V197 - The world is better off, or worse off, because of science and technology

Technology being a boon-or-bane is one of the most debatable parameter. Technology has had some positive effects and evolutionary changes like bringing in electric car technology, smart gadgets, lighting and cooling systems, LEDs and countless other developments that has made life easier but also tougher in many sense. Greater dependence on technology has escalated the issues like pollution, global warming, and depletion of natural resources, deforestation, and rapid exhausting of the natural resources. Technological advancements have now made the humans lives unsustainable, an extraordinary collective effort is needed to maintain an ecological balance and create a harmony between human and nature. These parameters are used to measure the dependence and need for Science and Technology that significantly reduces Environmental Sensitivity among individuals.

3. Social Unrest and Fear

Variables – Questions

1. V183 - Worries: A war involving my country
2. V184 - Worries: A terrorist attack
3. V185 - Worries: A civil war
4. V186 - Worries: Government wire-tapping or reading my mail or email

This variable is integrated into the model, to analyze the "social distress" component of individuals which creates tension and dissatisfaction towards the economy. Greater the fear of socio-political hostility and threat of cross-territory wars, lesser will the individuals motivation to contribute towards the Environment.

4. Political sentiment

Variables – Questions

1. V115 - Confidence: The government
2. V116 - Confidence: Political Parties
3. V117 - Confidence: Parliament
4. V128 - Political system: Having experts, not government, make decisions according to what they think is best for the country
5. V129 - Political system: Having the army rule
6. V130 - Political system: Having a democratic political system
7. V85 - Political action: Signing a petition
8. V86 - Political action: Joining in boycotts
9. V87 - Political action: Attending peaceful demonstrations
10. V88 - Political action: Joining strikes
11. V89 - Political action: Any other act of protest

Another crucial factor included is to measure the individuals' political interest and confidence in the Government. We have used several proxies to check the robustness of the results and included parameters which best describe an individual's interest in Politics. From literature, it can be assumed that politically interested people are well-informed with greater degree of awareness about what is going on in economy and thus may in a better position to comprehend the seriousness of the environmental issues and problems, leading to a higher willingness to contribute. This is a generally quite neglected parameter that requires more attention. We use the degree of involvement into the political system and political orientation (confidence in the Government and administration) as aproxy for this construct.

5. Social Cohesion and Trust

Variables - Questions

1. V106 - How much you trust: People of another religion
2. V107 - How much you trust: People of another nationality

The need for social cohesion and trust is a crucial factor in explaining also individuals' attitudes to contribute for environmental sustainability. Two statements that are used to measure the Social Capital construct is based on Trust towards people of other religion and nationality, greater the social harmony greater will be the degree of cooperation.

6. Morality

Variables - Questions

1. V199 - Justifiable: Avoiding a fare on public transport
2. V200 - Justifiable: Stealing property
3. V201 - Justifiable: Cheating on taxes if you have a chance
4. V202 - Justifiable: Someone accepting a bribe in the course of their duties
5. V203 - Justifiable: Homosexuality
6. V203 - Justifiable: Prostitution
7. V204 - Justifiable: Abortion
8. V205 - Justifiable: Divorce
9. V206 - Justifiable: Sex before marriage
10. V207 - Justifiable: Suicide
11. V208 - Justifiable: For a man to beat his wife
12. V210 - Justifiable: Violence against other people

Economic Morality and Justice are necessary factor that needs to be reinforced for efficient working of a system. Without collective responsibility, social harmony, transparency, integrity and morality, the system will breakdown with increasing level of disparities and inequalities among individuals. Thus, these indicators define what is justifiable and what is not in a society, which highlights the dark side of the shadow economy and the tolerance level of people towards these social causes. To enforce social harmony and equality, these is a need to develop an environment that supports gender justice, democracy, environmental activism, trust in government, support non-violent society and no impact of shadow economy. The greater the shadow economy, greater will be the degree of injustice, social divisions, anarchical disorder and economic inequality. There will be no coherence in the society, people will be self-interested and bound to take irrational decisions affecting the economy as a whole diminishing the social capital.

7. Social value

Variables - Questions

1. V70 - Schwartz: It is important to this person to think up new ideas and be creative; to do things one's own way

2. V71 - Schwartz: It is important to this person to be rich; to have a lot of money and expensive things

3. V72 - Schwartz: Living in secure surroundings is important to this person; to avoid anything that might be dangerous
4. V73 - Schwartz: It is important to this person to have a good time; to "spoil" oneself
5. V74 - Schwartz: It is important to this person to do something for the good of society
6. V75 - Schwartz: Being very successful is important to this person; to have people recognize one's achievements
7. V76 - Schwartz: Adventure and taking risks are important to this person; to have an exciting life
8. V77 - Schwartz: It is important to this person to always behave properly; to avoid doing anything people would say is wrong
9. V79 - Schwartz: Tradition is important to this person; to follow the customs handed down by one's religion or family

World Value Survey incorporates the study [10] which includes factors influencing the global values. Through a cross-country comparative analysis, the study highlights seven key parameters that form the template for cultural value orientations. The cultural values such as, Embodiment, Hierarchy, Mastery, Affective Autonomy, Intellectual Autonomy, Egalitarianism, and Harmony designs and develops a sociological and psychological disposition of individuals affecting the pro-environmental behavior.

8. Religiosity

Variables - Questions
1. V153 - Whenever science and religion conflict, religion is always right
2. V154 - The only acceptable religion is my religion
3. V155 - All religions should be taught in public schools
4. V156 - People who belong to different religions are probably just as moral as those who belong to mine

Religious denominations play an important role in determining economic outcomes mainly by fostering religious beliefs that influence individual behavior and traits such as harmony, conflict resolution, work ethic, and openness to strangers. The religious networks and interactions among peers fostered by community gatherings in temples/churches are important elements of social capital which frames the human behaviour.

3. Conceptual framework

The Figure 1 describes the conceptual framework that is developed to ascertain the interrelationship of behavioural factors in determining the Environmental Sensitivity among individuals in India. The factors derived from the World Value Survey are: (1) Perception of Democracy, (2) Negative externalities, (3) Political Unrest and Fear, (4) Collective Action and Political Participation , (5) Social Cohesion and Trust (6) Morality, (7) Personal and Social Value (Schwartz), (8) Religiosity and Spiritual Well Being.

3.1. Hypothesis
H1: Perception of Democracy positively influences Environmental Sensitivity
H2: Presence of Externality negatively influences Environmental Sensitivity
H3: Political Unrest and Fear negatively influences Environmental Sensitivity
H4: Political Participation positively influences Environmental Sensitivity
H5: Social Cohesion and Trust positively influences Environmental Sensitivity
H6: Morality positively influences Environmental Sensitivity
H7: Social Value (Schwartz) positively influences Environmental Sensitivity
H8: Religiosity positively influences Environmental Sensitivity

Figure 1. Conceptual Framework for measuring Environmental Sensitivity
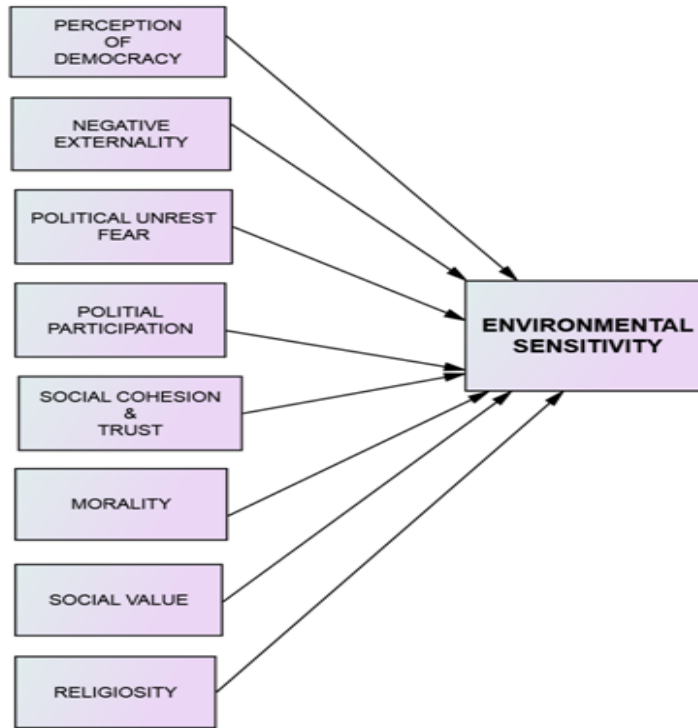
4. Empirical results

4.1. Structural model assessment

PLS-SEM (Partial Least Square-Structural Equation Modeling) path modeling the study [11,12] was used to test the hypotheses using Smart PLS 2 software [13]. Reflective measurement models were first tested for the reliability and validity of the model-fit. From Table 1, these eight variables were shortlisted based on Composite Reliability of constructs were higher than the baseline requirement of 0.7 and construct Convergent validity represented by Average Validity Extracted(AVE) were close to 0.4-0.5 value as in the study [14] and Cronbach Alpha with more than 0.7 value.

Table 1. Reliability and Validity

	AVE	Composite Reliability	Cronbachs Alpha
Democracy	0.423	0.836	0.8293
Externality	0.3759	0.7488	0.7131
Fear	0.5692	0.8866	0.8462
Morality	0.5855	0.9441	0.9386
Social Value	0.477	0.8913	0.8632
Politics	0.3998	0.8764	0.8421
Religiosity	0.6018	0.858	0.7804
Trust	0.4875	0.7887	0.6569

Table 2. Correlation and Discriminate validity

	Democracy	Externality	Fear	Morality	Social Value	Politics	Religiosity	Sensitivity	Trust
Democracy	0.65								
Externality	0.2414	0.613							
Fear	0.0394	0.2911	0.754						
Morality	0.0845	0.0876	0.0092	0.765					
Social Value	0.0387	0.3086	0.2669	0.0074	0.691				
Politics	0.1001	0.4207	0.3608	-0.0151	0.4621	0.632			
Religiosity	-0.0321	0.3576	0.3066	-0.0001	0.4564	0.5081	0.776		
Sensitivity	0.0591	0.3561	0.3317	0.1009	0.5833	0.5285	0.4495	0.687	
Trust	0.0626	0.0742	0.0907	-0.0654	0.1196	0.2266	0.1145	0.1878	0.698

Further, the criterion of Discriminate validity (Table 2) was tested which is based on the criterion that the square root of AVE value of all constructs should be greater than the inter-construct correlations based on the study [15].

4.2. Path model assessment

After the reflective constructs were confirmed based on these preliminary tests, further the structural model is empirically tested based on path coefficients that were extracted through bootstrapping technique. The results showed that the hypothesized model had acceptable fit indices displayed in Table 3. The factors morality, social value and political participation positively impact the environmental sensitivity, that is, Hypotheses 4, 5, and 6 are supported. After the examining the model using World Value Survey, we can conclude that the predictive power of the endogeneous constructs has substantial R square value of 0.4774, that is, these socio-economic factors explain nearly 48% of the variation in environment sensitivity behavior among individuals.

Table 3. Path coefficients

	Hypothesis	Original Sample (O)	Standard Error (STERR)	T Statistics (|O/STERR|)
H1	Democracy -> Sensitivity	-0.0083	0.0952	0.0876
H2	Externality -> Sensitivity	0.0696	0.0677	1.0281
H3	Fear -> Sensitivity	0.0908	0.061	1.4894
H4	Morality -> Sensitivity	0.1001	0.0637	1.9716
H5	Social Value-> Sensitivity	0.3779	0.0704	5.3669
H6	Politics -> Sensitivity	0.2264	0.0744	3.0407
H7	Religiosity -> Sensitivity	0.1007	0.068	1.4803
H8	Trust -> Sensitivity	0.0735	0.0546	1.3454
	R square			0.4774

5. Policy Implications and Conclusion

This paper evaluates whether pro-environmental behavioural factors is an important determinant affecting individual's perceived environmental cooperation and environmental morale. We hypothesize that the socio-economical, political and demographic pattern across nations influences individual's behavior which further tend to have a contagion effect of influencing behavior of other individuals in the society resulting in catastrophic environmental damage. Our attention was focused on behavioural factors that frame an individual's decision making capabilities and morality. Using World Value Survey data of Indian economy, we provided empirical support for this conditional cooperation and environmental sensitivity hypothesis. To our knowledge, this is the first study of this nature focusing on the factors influencing Environmental Sensitivity in Indian economy, demonstrating the positive relationship between perceived environmental morality, social values and greater political participation on environmental sensitivity. The effect of morality, social value and political participation was statistically significant with overall goodness of fit of 48%.

The strongest effect was observable for social value orientation, which validates the fact that cross-cultural differences are one of the major reasons for the environmental sensitivity among individuals. Thus, there is a need to frame an egalitarian, affectionate and intellectually enlightened economy, the policy aim of government should be create awareness among individuals and also highlight the cross-country comparisons of other nations faring well in environmental monitoring and control. This paper as a novelty shows the relevance of certain behavioural parameters that are often neglected in analyzing the cause of environmental damage at the grass root level, such as political interest, social capital, fear of political unrest, democracy and increasing political participation. These variables have a strong impact on the environmental sensitivity. All three proxies of environmental sensitivity that were statistically significant in the study have a positive impact on individuals' attitude towards environmental morale. Western countries have high degree of environmental sensitivity, while it is low in emerging economies. A significant amount of cooperative individuals is required to induce a positive environment that reinforces conditional cooperation. An economy which has many non-compliant individuals tends to exhibit weaker social norms which lead to negative externalities.

Thus an extensive understanding of what shapes environmental morale needs to be investigated further to highlight the tipping points in an economy which leads to this irreversible vicious cycle of environmental disharmony. Economy-specific policies need to be framed to target factors that play an important role in designing environmental morale and sensitivity among individuals and induces conditional cooperative dynamics. Thus by investigating citizens' environmental preferences we can now underlines and frame policies targeting the importance of these variables by strengthening the social capital framework, encouraging political participation and active voluntary participation in environmental sensitive causes and boost individual morale which increases their willingness to contribute to the environmental protection.

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