

Title:

A Social Learning Approach to understanding Voluntary Environmental Citizenship Behavior of Millennial employees

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Abstract

Achieving Sustainable Development Goals (SDGs) necessitates environmentally friendly behaviors from all stakeholders, including corporations and their employees. This study investigates the factors influencing Voluntary Environmental Citizenship Behavior (VECB) among millennial employees (Gen Y, born between 1982-2000) within organizations. Drawing on Social Learning Theory, the research examines the impact of various constructs on VECB. Data collected from 969 Indian millennials across diverse demographics was used to test the hypothesized relationships through structured equation modelling (PLS-SEM). The study found that Organizational Initiatives for Sustainability (OIS), Employee's Environmental Commitment (EEC), Employee Engagement initiatives for Sustainability (EES) and employee's Environmental Self-efficacy (ESE) positively influence VECB of the millennial employees. However, the other two factors studied - Social norms and Consequences - are found to have no impact on VECB, which is contrary to findings in extant literature. Moreover, EEC is found to moderate the relationship between OIS and VECB, suggesting that employees who strongly identify with their organization's environmental values are more likely to engage in voluntary sustainable behaviors beyond formal requirements. Research implications and practical implications of the study findings are also discussed.

Key Words: Voluntary Environmental Citizenship Behavior, Organizational Initiatives for Sustainability, Employee Engagement Initiatives for Sustainability, Employee's Environmental Commitment, Environmental Self-efficacy, Social Learning Theory.

Introduction

In the last few years, the issue of sustainable development, and especially- achieving Sustainable Development Goals (SDGs) has become a focus of attention for governments, policy makers, scholars and practitioners across the world, including India. A key requirement for achieving SDG goals by any country would be for all stakeholders – including individuals and corporations - to learn and adopt environmental-friendly behaviors. Environmental sustainability is emerging as an important factor of corporate existence in the 21st century (Starik & Marcus, 2000), as corporates adopt environmentally responsible initiatives for business benefits, as exemplified in studies by Tatoglu et al (2020), Li et al (2024), etc. As commented by Lülfs & Hahn (2014), the overall sustainability score of companies is the result of a complex set of behaviors by employees within and outside of companies. As opined by Lasrado and Zakaria (2020), successfully urging employees' green behaviors can boost an organization's environmental influence and score. Ferrarini (2021) points out that an increasing number of organizations today are including sustainability initiatives adopted by them to define their corporate purpose. Parallely, Bhattacharyya et al (2023) have found that employees' perception that their organization is purpose-driven impacts their sustainability behaviors in their organization, especially when they feel that they have greater autonomy and choice in voluntarily adopting such behaviors. In this study, the authors have attempted to study the various factors that affect adoption of voluntary pro-environmental behaviors by employees in an organizational context, especially those belonging to the category of 'millennials' (commonly known as Gen Y, born between 1982-2000 as defined by the US census 2015), referred to here as employees' *Voluntary Environmental Citizenship Behavior* (VECB). The constructs that affect VECB were identified as *Organizational Initiatives for Sustainability* (OIS), *Employee Engagement initiatives for Sustainability* (EES), *Employee's Environmental Commitment* (EEC), *Consequences* (Cons), *Social Norms* (SN), and employee's *Environmental Self-efficacy* (ESE), based on findings from existing literature. A research model was conceptualized for testing hypothesized relationships among the constructs. Data was collected from 969 respondents in India through judgmental sampling, across various demographic variables, and already existing scales for the various constructs were used for measuring the constructs, after revalidating them in the present context, to test the hypotheses.

As per Reed et al (2010), social learning is increasingly becoming a normative goal in natural resource management and policy . Moreover, social learning is often combined with other concepts such as participation and pro-environmental behavior . However, based on extensive review of literature, it is found that while one or two components of social learning have been used by researchers to study pro-environmental behavior, in specific demographic contexts, a multi-aspect approach, to the best of the authors' knowledge, have not been considered, where all aspects of social learning and multiple demographic contexts are studied. This multi-dimensional approach is one of the major strengths of the paper. Moreover, given that the Gen Y or millennials is the largest generation globally, accounting for 25% of the world's population (GAIA, 2016; Jang et al, 2011), and expected to make up 75% of the global workforce by 2030 (Ismail & Lu, 2014), millennials' pro-environmental behaviors will have a major influence in shaping organizations' sustainability journey going forward, an issue that has not been sufficiently addressed in literature till date, hence this specific focus on millennial employees' behavior, is the second major strength of the current paper, in terms of providing a comprehensive understanding of why and how millennial employees voluntarily adopt Environmental Citizenship Behaviors in their organizations. Implications for future research and practice, as well as limitations of the present research, are also discussed.

Literature Review and Hypotheses

Glasser (2007) emphasizes the importance of social learning – the way individuals and groups learn - for creating a more sustainable and desirable world. Glasser defines learning as “...the process of acquiring knowledge, skills, norms, values, or understanding through experience, imitation, observation, modeling, practice, or study; by being taught; or as a result of collaboration”. Wals’ (2007) edited compendium has looked at the theoretical principles, perspectives and praxis of social learning in the context of sustainability. Wals, van der Hoeven & Blanken (2009) have highlighted the importance of Social Learning in creating a sustainable world. As per Reed et al (2010), Diduck et al. (2005), Keen et al. (2005a), social learning is increasingly becoming a normative goal in natural resource management. Ciocirlan (2017) has tried to understand how employees’ adoption of sustainable and pro-environmental behaviors are influenced by observing their organizations’ adoption of sustainable practices. This is an extension of Bandura (1977)’s Social Learning Theory that explains human behavior in terms of continuous interaction among cognitive, behavioral, and environmental influences. Bandura calls out four components through which social learning occurs: (a) Attention – a ‘model’ behavior in the environment must grab or capture a potential learner’s notice, (b) Retention – the learner must remember the observed behavior, (c) Reproduction – the learner must be able to accurately replicate the observed behavior, and (d) Motivation – the environment must offer a consequence (reinforcement or punishment) that increases the probability for a learner to demonstrate what they have learned. Henry & Dietz (2012) have integrated the values-beliefs-norms theory to extend the understanding of individual behavior in environmental issues. Shao et al (2023) have confirmed the usefulness of social learning theory in explaining the cascade effect of voluntary green behavior at work.

Employees’ voluntary environmental citizenship behavior (VECB)

As pointed out by Ones & Dilchert (2012), research streams have by and large neglected the intra-firm processes at the level of the individual employee. Following up on this, Lülfs & Hahn (2014) offered a model for corporate initiatives aimed at promoting individual sustainable behaviors, thereby advancing overall corporate sustainability. Subsequently, Ciocirlan (2017) has approached environmental sustainability from an HR perspective. The article further refines the concept of the environmental workplace behaviors (EWBs), defined here as “work behaviors directed toward the protection or improvement of the natural environment, which may or may not generate value for the organization; these behaviors may be performed by employees situated at any organizational level.” In order to address the issue of how to encourage employees to perform voluntary pro-environmental behavior at work, Tosti-Kharas, Lamm & Thomas (2017) have identified both eco-centric and organization-centric rationales that motivate employees to perform voluntary pro-environment behaviors. Prior to that, Norton et al (2015) had differentiated between pro-environmental behaviors required by organizations, and voluntary behavior displayed at the employees’ choice. Concept of voluntary green behavior by employees is similar to that of organizational citizenship behavior, which refers to actions that enhance the organizational, social, and psychological context in which tasks are performed. (Borman & Motowidlo, 1993; Organ, 1997).

Studies suggest that Gen Y may diverge from traditional approaches to social and environmental engagement. Urbain et al. (2013) found Gen Y individuals favor non-institutionalized forms of giving, potentially impacting their response to traditional corporate

social responsibility (CSR) initiatives. Similarly, Rai (2022) reported that Gen Y employees in India perceive a lack of alignment between their environmental values and organizational support. Furthermore, research suggests Gen Y prioritizes individual expression. Erickson (2008) and Twenge (2010) characterize Gen Y as more individualistic than previous generations, highlighting a potential disconnect with traditional top-down environmental programs within organizations. Eastman & Iyer (2021) established that millennials, who are more status driven are motivated to display voluntary environmentally conscious behaviour. Despite these potential challenges, Gen Y also demonstrates a strong environmental conscience. Dwidienawati et al., (2021) found elevated levels of environmental concern and a willingness to take personal responsibility within this generation.

Organizational Initiatives for Sustainability (OIS)

Lin et al (2010) examined the influence of corporate citizenship on organizational citizenship behaviors (OCBs). OCBs are found to be positively influenced by perceived legal and ethical citizenship. Millennials in particular tend to be supportive of socially responsible companies (Furlow, 2011). Paillé, Boiral & Chen (2013) have found that employees are more inclined to put in additional environmental efforts when they perceive that their organization supports their supervisor by providing the necessary resources and decision-making flexibility to engage in pro-environmental behavior. Aragón-Correa, Martín-Tapia I & Hurtado-Torres (2013) identified that robust HR practices such as exchange of information and promoting employee cooperation help in development of a proactive natural environmental strategy for a firm. factors such as workplace green initiatives. Manika et al (2015) have found that various types of green behaviors are influenced by both individual factors, such as employees' general eco-friendly attitudes and the significance they place on an organization's environmentally friendly reputation, and organizational factors, including the perceived environmental actions of the organization and the perceived incentives and support it provides. Lozano (2016) has provided a framework for organizational sustainability and defined Corporate Sustainability (CS) as activities that progressively attempt to add to sustainability initiatives, including the economic, environmental , and social dimensions . Norton et al (2017) have posited that employees' perception of organizational sustainable practices influence their green behavior. Chaudhary (2020) has identified that green HR practices by employers significantly impact task-related as well as voluntary pro-environmental behaviors by employees. Lei & Khan (2023) argue that pro-environmental behaviours by individuals at work contribute to the improvement of an organization's environmental performance, and that employees' engagement in pro-environmental behaviour are impacted by organizational initiatives towards sustainability. Khan et al (2023) have found that CSR activities by organizations impacts organizational citizenship behaviors and pro-environmental behaviors through the mediation mechanism of work meaningfulness and organizational identification. In a recent article, Zafar & Suseno (2024) have found that green HRM practices positively impact voluntary pro-environmental behaviors, through the mediating effects of organizational pride and green psychological climate. Similarly, David et al (2024) found that CSR activities by organisations had a trickle-down effect on employees' green behaviors.

Accordingly, it is hypothesized that:

H1: Organizational initiatives for sustainability (OIS) will have a positive relationship with Voluntary Environmental Citizenship behaviors (VECB) by employees.

Employee Engagement initiatives for Sustainability (EES)

Muthuri, Matten & Moon (20029) have found that opportunities for employee volunteering creates avenues for building social capital in terms of improved business – community relationships. In their study of 164 pharmaceutical firms across 27 countries, Aragón-Correa et al (2013) have found positive and significant relationships between employee engagement practices such exchange of information and employee cooperation, and the development of a proactive environmental strategy for a firm. Zhang, Zhang & Daim (2013) have found that Green human resource management systems that require employees to engage in environmental-friendly behavior (or required EGB), and leader's pro-environmental attitude have a positive effect on the voluntary green behavior of employees. Norton et al (2017) have found that employees' perception of organizational sustainable practices influence their voluntary green behavior. More recently, Amrutha and Geetha (2021) have established that green training of employees positively impacts their voluntary green behaviors.

Accordingly, it is hypothesized that:

H2: Organization's Employee Engagement initiatives for sustainability (EES) will have a positive relationship with Voluntary Environmental Citizenship behaviors (VECB) by employees.

Employees' Environmental Commitment (EEC)

A meta-analysis of organizational citizenship behavior dimensions by LePine, Erez & Johnson (2002) revealed that conscientiousness and organizational commitment are established indicators of organizational citizenship behavior by employees. Nohe et al (2013) found that followers' commitment to change had a positive relationship to change-promoting behaviors and team performance. While trying to understand what strategies helped motivate employees towards adopting green behaviors, Temminck, Mearns & Fruhen (2015) found that organizational commitment is an antecedent of organizational citizenship behavior by employees. Heo & Muralidharan (2019) have found that knowledge commitment has a strong impact on environmentally conscious behavior among millennials. Sharma et al (2021) have found that employee commitment plays a significant mediating role between innovation and green performance. In the context of clean sports and anti-doping behavior, Clancy et al (2022) found that sportspersons' commitment to personal integrity positively influenced clean sport behavior on their part. More recently, Ren, Tang & Zhang (2023) have found that voluntary green behavior by employees was positively affected by their affective commitment.

Accordingly, it is hypothesized that:

H3a: Employees' Environmental Commitment (EEC) will have a positive relationship to Voluntary Environmental Citizenship behaviors (VECB) by employees.

Employees' Environmental Commitment (EEC) as moderating variable

Various researchers have studied commitment as a moderating variable between organizational initiatives and outcomes. For example, in a marketing context, Agrawal & Maheswaran (2005) found that commitment is a key dimension of attitude strength (as defined by Pomerantz, Chaiken, and Tordesillas, 1995), and a significant moderator in persuading customers towards a particular brand. Raineri & Paille (2016) found that when a company and its line

managers prioritize and promote environmental protection, employees tend to feel a voluntary feeling of belonging and commitment to the organization's environmental goals and values, which is reflected in their citizenship behaviors. Zainudin et al (2019) have proposed a conceptual framework by including organizational commitment as a moderating variable to the relationship between workplace environment, job performance and job satisfaction. More recently, Afsar et al (2020) discovered that an internal locus of control influenced the relationship between responsible leadership and employees' pro-environmental behavior, mediated by organizational commitment .

Accordingly, it is hypothesized that:

H3b: Employees' Environmental commitment (EEC) will moderate the linkage between Organizational Initiatives for Sustainability (OIS) and Voluntary Environmental Citizenship behaviors (VECB) in a way that the relationship is stronger for higher levels of Environmental Commitment.

H3c: Employees' Environmental Commitment (EEC) will moderate the linkage between Employee Engagement Initiatives (EES) and Voluntary Environmental Citizenship behaviors (VECB) by employees

Environmental Self-efficacy (ESE) of employees

Self-efficacy pertains to the belief people have in their efforts to solve a given problem and is a major determinant of intention, which further affects performance (Bandura, 1997). Huang (2016) found that an individual's environmental self-efficacy impacts pro-environmental behaviors , in media use context. In the context of collective behavior, Jugert et al (2016) found that enhancing perceptions of collective efficacy encourages pro-environmental behavior, by increasing the perception that one's group - and, through this, the self - is capable of bringing about change. Lauren et al (2016) found that self-efficacy mediated the relationship between easy and more difficult pro-environmental behaviors, and could help encourage engagement in more challenging pro-environmental behaviours even in millennials (Taufique et al., 2021). Testa et al (2020) found that individual attitudes and self-efficacy influence Organizational Citizenship Behaviors related to environmental and health and safety issues, and are influenced respectively by perceived organizational support and social norms. Similarly, Tiwari's (2023) recent study, suggests a positive relationship between green self-efficacy (belief in one's ability to perform environmentally friendly actions) and environmentally conscious behavior (VECB) among Gen Y employees. More recently, Luo, Zhu and Guo (2024) found that green self-efficacy impacted voluntary green behavior by employees.

Accordingly, it is hypothesized that:

H4: Employees' Environmental Self-Efficacy (ESE) will have a positive relationship to Voluntary Environmental Citizenship behaviors (VECB) by employees.

Consequences of environmental citizenship behavior (Cons)

Operant Conditioning is a method of learning proposed by Skinner (1938) [based on Thorndike's (1898) law of effect] that occurs through consequences – either rewards and punishments - for behavior. Through operant conditioning, an individual makes an association between a particular behavior and a consequence. Behavior which is reinforced tends to be repeated (i.e. strengthened); behavior which is not reinforced tends to die out-or be extinguished (i.e. weakened) (Skinner, 1971) . This was further proved by Wei & Yazdanifard (2014) which

found that by applying positive reinforcement techniques, desired positive behaviors are encouraged and negative behaviors are eliminated. Similarly, Geng & Fleming (2021)'s study finds that an employee's indulging in whistle-blowing will depend on how consequences of his / her are framed. In the specific background of pro-environmental behavior by employees, Joiremans et al (2005)'s study has established that concern for future consequences impacts employees' organizational citizenship behavior. More recently, Lange & Dewitte (2023) have studied the effect of non-monetary reinforcement on pro-environmental behavior, and find that pro-environmental behavior is reinforced by non-monetary stimuli.

Accordingly, it is hypothesized that:

H5: Consequences of environmental citizenship behavior (Cons) will have a positive relationship to Voluntary Environmental Citizenship behaviors (VECB) by employees

Social Norms (SN)

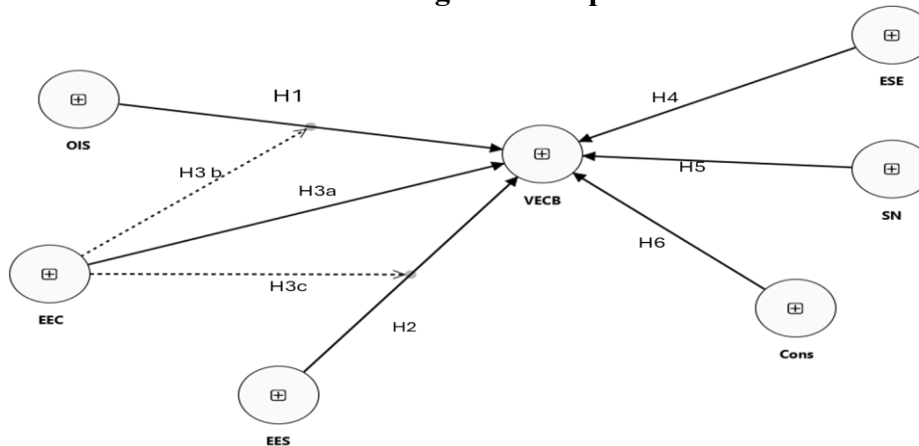
Social norms are the unwritten, informal rules of behaviour followed by groups and communities, which are expected to influence behavior of individuals and move them towards collective behavioral change. In recent years, the concept of social norms has been used widely in developmental studies and discourses, and several international development agencies have endorsed it and explicitly include 'norm change' in their behavioral change strategies, operational plans and reporting requirements (Harper et al., 2020). Reese, Loew & Steffgen (2014)'s study on environmental behavior in hotels has found that guests were found to be using less number of hotel towels when normative messaging was used. Similarly, Nyborg et al (2016) have found that by influencing norms at a societal level, we can help address large-scale environmental sustainability problems, such as plastic pollution. Culiberg & Elgaaid-Gambier (2016)'s cross cultural study in Slovenia and France have shown that individual's PEB is influenced by perceived norms from appropriate others (relatives/friends). Borg, Curtis & Lindsay (2020)'s study explores the role of social norms in predicting plastic avoidance, using the theory of normative social behavior. Descriptive norms was found to be the strongest predictor of plastic avoidance. Among millennials, social factors like wanting to appear environmentally conscious and gain social approval can be powerful drivers of pro-environmental behavior (Naderi & Steenburg, 2018; Griskevicius et al., 2010).

Accordingly, it is hypothesized that:

H6: Social norms (SN) will have a positive relationship to Voluntary Environmental Citizenship behaviors (VECB) by employees

On the basis of the literature review, the proposed model is depicted in Figure 1 below.

Figure 1: Proposed Model



Data and Methodology

Research Instrument

In order to study the various factors that affect adoption of voluntary pro-environmental behaviors by employees in an organizational context, referred to here as employees' *Voluntary Environmental Citizenship Behavior* (VECB), we obtained quantitative data through the distribution of an online survey. The constructs that affect VECB were identified as *Organizational Initiatives for Sustainability* (OIS), *Employee Engagement initiatives for Sustainability* (EES), *Employee's Environmental Commitment* (EEC), *Consequences* (Cons), *Social Norms* (SN), and employee's *Environmental Self-efficacy* (ESE). In this survey, the participants' perception towards their *Organizational Initiatives for Sustainability* (OIS) (11 items), and *Employee Engagement initiatives for Sustainability* (EES) (8 items) were assessed using items as outlined by Ray & Roy Choudhuri (2018). Employee's *Environmental Self-efficacy* (ESE) was evaluated through 20 statements, adapted from Moeller & Stahlmann (2019). EEC was measured through 6 items, using the scale developed by Raineri & Paile (2016). *Social norms* (SN) (2 items) was measured using Kim & Seock (2019)'s tool. *Consequence* (Cons) was a 2-item measure, based on Schneider et al (2017). The dependent variable VECB was measured through 7 items, adapted from Boiral & Paille (2012). The entire instrument consisted of 56 statements measured on a five-point Likert-type scale, from 1 (strongly disagree) to 5 (strongly agree). The questionnaire also included 9 demographic questions, to ensure heterogeneity of the sample.

Respondents and Data Collection

The data was collected in India through online self-administered questionnaire survey. A total of 985 questionnaires were received for analysis out of which 16 were discarded because of missing data or same answer formats, thus leading to response rate of 98.3%. Final sample count was 969 respondents. Judgemental sampling was used for the study, with respondents limited to those millennials who are currently employed in organizations in India. G*Power was employed to calculate the sample size necessary for the statistical analysis (Faul et al, 2009). The findings illustrated that a sample size of 760 is needed to achieve the statistical power of 99%. Thus, the current sample size of 969 is fit for measurement. Table 1 depicts the demographic distribution of the sample. The sample had a good mix of male and female and with varying years of work experience.

Table 1: Sample Demography

		Frequency	Percentage			Frequency	Percentage
Gender	Female	409	42.2	Number of years with the present organization/ Institute	Less than one year	445	45.9
	Male	560	57.7		Between 1-2 years	287	29.6
Education	Under-Graduate	514	53.0		Between 2-4 years	116	12.0
	Graduate	34	3.5		more than 4 years	121	12.5
	Master's degree	334	34.4	Size of the present Organization (number of employees)	less than 10	196	20.2
	Doctoral degree	86	8.9		10-50	117	12.1
	others	1	0.1		50-250	124	12.8
Annual Income in Indian Rupees (In Millions)	less than 0.5M	638	65.8		250-500	121	12.5
	Between 0.5M - 1M	171	17.6		over 500	411	42.4
	Between 1M- 1.5M	82	8.5	City of Residence	Tier 1	320	33.0
	More than 1.5M	78	8.0		Tier 2	87	9.0
					Tier 3	36	3.7
					other	526	54.2
					Total	969	99.9

Common Method Bias (CMB)

Harman's Single Factor Test was done to determine the presence of Common Method Bias (CMB). This test is to assess the extent of covariance among the factors. The maximum variance explained by a single factor was only 31.91%. This is well below the threshold value for CMB which is 50% (Podsakoff, et al., 2003), indicating that CMB does not have a significant impact on our study. Moreover, since the Variance Inflation Factor (VIF) values of all variables are below the threshold of 3.3 (Kock, 2015), the model is considered free of common method bias.

Testing of Measurement model

PLS -SEM was used to analyze the proposed model. Convergent and discriminant validity was determined. Each score of Cronbach Alpha was above the threshold value of 0.70, as indicated in Table 2.

Table 2: Results of Measurement Model Testing

Construct	Indicator	Factor Loading	Cronbach's Alpha	rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)
Employees' voluntary environmental citizenship behavior (VECB)	VECB1	0.72	0.883	0.885	0.909	0.588
	VECB2	0.766				
	VECB3	0.746				
	VECB4	0.799				
	VECB5	0.752				
	VECB6	0.778				
	VECB7	0.802				
Employee's Environmental Commitment (EEC)	EEC1	0.628	0.899	0.902	0.917	0.527
	EEC2	0.781				
	EEC3	0.773				
	EEC4	0.818				
	EEC5	0.813				
	EEC6	0.78				
	EEC7	0.876				
	EEC8	0.905				
	EEC9	0.86				
	EEC10	0.845				
Employee Engagement initiatives for Sustainability (EES)	EES1	0.633	0.955	0.956	0.959	0.537
	EES2	0.622				
	EES3	0.773				
	EES4	0.763				
	EES5	0.775				
	EES6	0.76				
	EES7	0.779				
	EES8	0.758				
Employee's Environmental Self-efficacy	ESE1	0.64	0.877	0.882	0.903	0.541
	ESE2	0.694				
	ESE3	0.733				
	ESE4	0.744				
	ESE5	0.735				
	ESE6	0.747				
	ESE7	0.713				
	ESE8	0.704				
	ESE9	0.751				
	ESE10	0.741				
	ESE11	0.711				
	ESE12	0.755				
	ESE13	0.766				
	ESE14	0.724				

	ESE15	0.757				
	ESE16	0.731				
	ESE17	0.786				
	ESE18	0.709				
	ESE19	0.765				
	ESE20	0.742				
Organizational Initiatives for Sustainability (OIS)	OIS1	0.721	0.917	0.918	0.930	0.547
	OIS2	0.741				
	OIS3	0.747				
	OIS4	0.735				
	OIS5	0.703				
	OIS6	0.774				
	OIS7	0.73				
	OIS8	0.721				
	OIS9	0.742				
	OIS10	0.741				
	OIS11	0.776				

The convergent validity of the model was determined by examining the proportion of variance of the study constructs as well as factor loadings of all the items. All the factor loadings shown in Table 2 exceed 0.7 except EEC1, EES1, EES2 and ESE1. We have kept these elements in our model because their composite reliability (CR) and average variance extracted (AVE) values are both higher than 0.70 and 0.50 respectively. As a result, convergent validity was proven because the AVE for each construct was more than 0.50 (Henseler et al., 2009; Hair, et. al., 2017). Furthermore, we evaluated the discriminant validity of our measurement model using the Fornell-Larcker criterion and the Heterotrait-Monotrait ratio of correlations (HTMT) validity (Fornell & Larcker, 1981; Henseler et al, 2015). The results, as shown in Table 3 and 4, indicate that the Fornell-Larcker criterion values are below the threshold of 0.90 and the HTMT values are less than one, which meets the standards for providing evidence of discriminant validity in the measurement model (Henseler, et al, 2015; Voorhees, et al, 2016).

Table 3: Fornell-Larcker results to assess Discriminant Validity

	Cons	EEC	EES	ESE	OIS	SN	VECB
Cons	0.852						
EEC	0.702	0.768					
EES	0.415	0.464	0.735				
ESE	0.617	0.639	0.426	0.733			
OIS	0.286	0.323	0.518	0.270	0.740		
SN	0.588	0.650	0.472	0.549	0.351	0.891	
VECB	0.536	0.660	0.494	0.550	0.371	0.508	0.767

Table 4: HTMT Criterion results to assess Discriminant Validity

	Cons	EEC	EES	ESE	OIS	SN
Cons						
EEC	0.958					
EES	0.558	0.532				
ESE	0.800	0.701	0.464			
OIS	0.377	0.362	0.578	0.287		
SN	0.866	0.812	0.583	0.652	0.423	
VECB	0.720	0.757	0.558	0.594	0.410	0.626

Additionally, the standardized root mean square residual (SRMR) was 0.040, which is considered a good fit (Hu & Bentler, 1999), further affirming the fit of our model.

Results

Evaluation of the Structural Model

Structural equation model (SEM) was tested using a composite based approach of partial least squares (PLS). We used the leading software tool, SmartPLS 3.3.2 by Ringle et.al. (2015) to carry out the analysis for our structural model. To evaluate the efficacy of our model, we calculated the coefficient of determination (R^2). According to Ali et al (2018) and Muller et al (2018), when analysing the findings, it is crucial to take into account the magnitudes and signs of the path coefficients. In our study, the calculated R^2 value for VECB behavior was 0.506. These results suggest that the study model has moderate predictive ability (Ali et al, 2018). To further support our hypotheses, we employed the bootstrap re-sampling technique with 5000 samples, using a significance level of 5% (refer Table 5, and Figure 2 below).

Figure 2: Structural Model

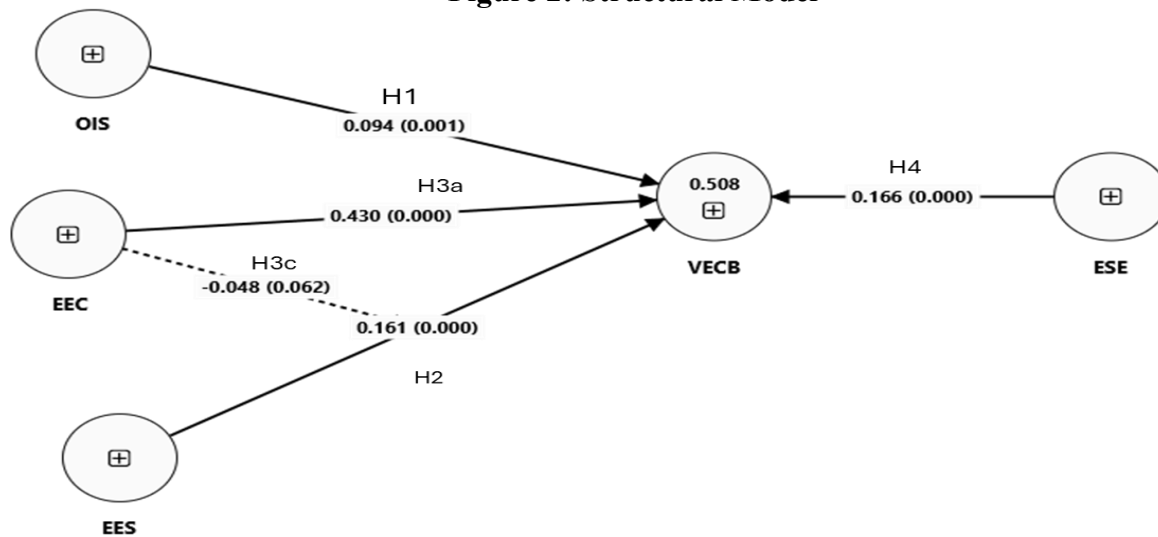
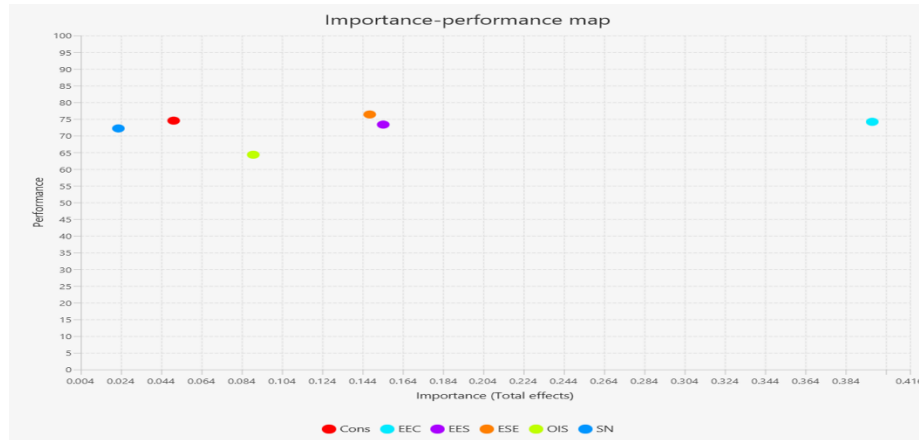


Table 5: Path coefficients and Hypothesis testing

		Beta	SE	T statistics	P values	2.5%	97.5%	
H1	OIS -> VECB	0.094	0.030	2.979	0.003	0.03	0.15	Accepted
H2	EES -> VECB	0.161	0.040	3.885	0.000	0.08	0.24	Accepted
H3a	EEC -> VECB	0.430	0.048	8.327	0.000	0.30	0.49	Accepted
H3b	EEC x OIS -> VECB	0.014	0.035	0.387	0.698	-0.06	0.08	not Accepted
H3c	EEC x EES -> VECB	-0.048	0.030	1.874	0.061	-0.116	0.004	Accepted at 90%
H4	ESE -> VECB	0.166	0.043	3.441	0.001	0.07	0.23	Accepted
H5	SN -> VECB	0.023	0.041	0.554	0.579	-0.06	0.10	not Accepted
H6	Cons -> VECB	0.050	0.043	1.183	0.237	-0.03	0.13	not Accepted

The hypotheses that were proposed signifying a direct association between variables (viz. H1, H2, H3a and H4) are found to be supported at $p=0.0001$. We also established the statistical significance of the path coefficients using the percentile bootstrap confidence interval method (Aguirre and Ronkko, 2018). Our results specify that OIS, EES, EEC and ESE positively influence VECB (Table 5). The importance of these factors relative to each other is displayed in the Importance Performance map analysis given in Figure 3 below.

Figure 3: Importance Performance Map Analysis



We studied the moderating effect of EEC on the relationship between OIS and VECB (H3b) and between EES and VECB (H3c). H3b was not significant and H3c was significant at 90%. The relationship between consequences and social norms and VECB (H5& H6) were also not significant.

The paper also addresses the issue of multi-collinearity of the constructs. The Variance Inflation Factor (VIF) values range from 1.6 to 2.4, which have been satisfactory and below the suggested limits of 3.33 (Diamantopoulos, 2008), implying that there are no serious collinearity issues in the proposed study model.

Discussions

This study has attempted to understand how various factors such as *Organizational Initiatives for Sustainability* (OIS), *Employee Engagement initiatives for Sustainability* (EES), *Employee's Environmental Commitment* (EEC), *Consequences* (Cons), *Social Norms* (SN), and employee's *Environmental Self-efficacy* (ESE) affect the adoption of *Voluntary Environmental Citizenship Behavior* (VECB) by millennial (Gen Y) employees. Data collected from 969 respondents in India, through judgmental sampling, across various demographic variables, was analysed to test eight different hypotheses relating to relationships between the above constructs.

We find that EEC, EES, ESE and OIS positively influence VECB. In fact, EEC is found to have the highest impact on VECB, followed by EES and ESE. OIS appears to have a very slight impact on VECB. However, contrary to the findings by Naderi & Steenburg (2018), neither Consequence nor Social norms are found to have any impact on VECB, and appear to be subsumed under the overall construct of EEC, as is evident from the high loadings into EEC in HTMT. Moreover, EEC was found to slightly moderate the linkage between EES and VECB, but not between OIS and VECB. What seems to be emerging strongly is that constructs that are specific to the individual (such as commitment, self-efficacy, employee engagement) are found to have stronger impact on VECB, whereas relatively 'passive' constructs such as OIS where the employee observes initiatives being taken, has a weaker impact. The findings have both research and practical implications, in the context of millennial (Gen Y) employees.

The most critical predictor emerged as employee environmental commitment (EEC), demonstrating a very high impact on VECB. This suggests that employees who strongly identify

with their organization's environmental values are more likely to engage in voluntary sustainable behaviors beyond formal requirements.

Employee self-efficacy (ESE) and employee engagement initiatives for sustainability (EES) also exerted a moderate positive effect on VECB. Employees who believe in their ability to perform sustainable actions (ESE) and have a history of positive experiences related to environmental practices are more inclined to adopt such behaviors voluntarily.

Implications and Future research

Research implications: The finding that OIS has a weak impact on VECB seems to align with the findings of Urbain et al (2013) that Gen Y individuals do not prefer institutionalized forms of 'giving'. In another study among Gen Y employees in India, Rai (2022) has found that employees feel a lack of support from their organizations in terms of withholding their work values, which further reinforces our finding of weak impact of OIS. This could possibly lead to a perception by the employees of 'tokenism' of the organizational initiatives for sustainability, thus having very limited impact on their VECB. The strong impact of EEC is also reflected in Heo & Muralidharan (2019)'s study which found that individual constructs such as environmental concern and knowledge commitment, has a strong impact on environmentally conscious consumer behavior. By identifying Employee Environmental Commitment (EEC) as a key moderator in the OIS-VECB relationship, the study uncovers how personal identification with organizational values amplifies voluntary sustainable behaviors. Erickson (2008) had found that Gen Y tend to be more individualistic than any other generation, a fact reinforced by Twenge (2010)'s nomenclature of "Generation Me" or "GenMe" for millennials. These findings seem to explain (a) why individual focused constructs appear to have a far stronger impact on VECB, as compared to organizational initiatives that are merely observed, and (b) lack of support for constructs such as Social Norms and Consequences. This finding in particular appears to contradict existing theories of the effect of Social Norms and Consequence and by offering a fresh perspective on the dynamics of employee-driven sustainability, calls for further investigation. A recent study by Tiwari (2023) has found a positive relationship of green self-efficacy with environmentally conscious behavior by Gen Y employees, which aligns with the study finding of positive impact of ESE on VECB. Finally, Dwidienawati et al (2021) have found high levels of environmental concern among Gen Y, and a willingness to take responsibility for the environment, which probably explains the positive impact of EES on VECB in the study. Finally, the findings contribute to the refinement of Social Learning Theory by integrating individual and organizational dimensions within the sustainability domain.

Practical Implications: The findings of the study have significant practical implications too. The study can help equip organizations with actionable insights into fostering voluntary environmental behaviors among employees, particularly millennials, who are a dominant segment of the workforce, with high levels of self-efficacy, coupled with cynicism and an individualistic approach to life, would be driven more by internal drivers such as commitment, confidence and active participation. Hence, while many organizations have started adopting a range of pro-environmental initiatives and Green HRM practices, such initiatives need to be taken up with active participation of employees, and empowered with more decision-making authority for such initiatives, which would reinforce their environmental commitments and sense of self. Parallely, customised training programs to strengthen the green self-efficacy of employees, especially millennials, and greater

opportunities to engage actively in the organization's sustainability initiatives would go a long way to furthering organizations' green endeavours.

Social implications: This study can be expected to be significant in terms of making a positive social impact, in various ways. By identifying drivers of VECB, this research provides a roadmap for organizations to encourage environmentally friendly behaviors among employees, contributing to achieving Sustainable Development Goals (SDGs). Insights from the study can guide organizations to design and implement effective sustainability and engagement programs that foster a culture of environmental responsibility. The findings would empower managers to leverage millennials' environmental commitment and self-efficacy, ensuring long-term organizational contributions to global environmental goals. Policymakers can also use this research to encourage organisations to integrate employee-centric approaches into their sustainability agendas, fostering widespread adoption of voluntary sustainable behaviors at scale.

Future Research

The current study has used a quantitative approach through self-reported questionnaire responses, which comes with its attendant limitations. Future studies could look at a triangulated approach where in-depth interviews with select respondents could help to glean more comprehensive insights about the implications of the findings. Further, this study has focused only on millennial behavior. Given that Gen Z (those born post 2000) are now entering the workforce, future research could be taken up to study their green behavior, including in comparison with other generations. Moreover, future research can also look at disaggregating the data across various demographics and analyzing the hypothesized relationships among various demographics.

Statements and Declarations

Competing Interests, and Funding

The author(s) declared no potential competing interests with respect to the research, authorship, and/or publication of this article. Moreover, no funding was received to assist with the preparation of this manuscript.

Data availability

Data used for the study has not been deposited in any repository but will be made available on request.

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