International Journal of Sustainable Development and Planning
Vol. 19, No. 11, November, 2024, pp. 4431-4439
Journal homepage: http://iieta.org/journals/ijsdp

Determinants of Pro-Environmental Behavior at Work Among Vietnamese Enterprise Employees

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https://doi.org/10.18280/ijsdp.191130

Received: 4 February 2024
Revised: 22 September 2024
Accepted: 7 November 2024
Available online: 28 November 2024

Keywords:
green human resource management, leader behavior, motivation, pro-environmental behavior, work satisfaction

ABSTRACT

The current state of environmental pollution in developing countries like Vietnam has become a difficult problem for sustainable development. In order to reduce the above situation, employees in enterprises need to be facilitated and encouraged to perform pro-environmental behaviors at work. This study was conducted with the aim of finding out the factors affecting pro-environmental intentions and behaviors at work of employees of Vietnamese enterprises. The authors used qualitative methods - in-depth interviews and random sampling techniques to collect data from 350 employees, before putting all data into SmartPLS software. The research results showed that external motivation, internal motivation, work satisfaction, leader behavior and green human resource management have positive effects on pro-environmental intentions and behaviors at work. Thus, this study has clarified the influencing factors, emphasized the role of motivation and green human resource management on pro-environmental behavioral intention, and provided some meaningful implications for managers to promote pro-environmental intention and behavior at the workplace.

1. INTRODUCTION

Environmental problems occur in many countries, especially in developing countries, including Vietnam. According to the Yale Center for Environmental Law and Policy report, Vietnam is in the top 10 countries with the highest pollution levels in Asia. In May 2024, Hanoi ranked 35th out of 200 countries with the highest environmental pollution levels in the world. According to the World Bank's assessment, it is estimated that the socio-economic damage caused by environmental pollution in Vietnam is up to more than 13 billion USD/year, equivalent to 6-7% of the country's GDP. According to the Vietnam Enterprise White Book, by the end of 2023, Vietnam had about 925,000 active enterprises, an increase of 3% compared to 2022. The rapid expansion of enterprises creates urbanization and industrialization, leading to wasteful and uncontrolled exploitation and use of natural resources, affecting ecosystems and biodiversity. Many enterprises do not really care about environmental protection and environmental protection measures are mainly in response to State regulations.

Pro-environmental behavior (PEB) aims to solve pollution problems and promote sustainable development [1]. Employees' PEB at work is important in limiting environmental degradation and climate change in the future [2] and green behavior at work also contributes to sustainable transportation development, green consumption activities, waste management, and resource conservation [3]. Nones et al. [4] pointed out that business organizations, particularly large multinational corporations, are increasingly focusing on activities that contribute to a more sustainable environment. It can be affirmed that environmental protection is the foundation for sustainable economic development [5], and needs to come from the internal activities of businesses. Ones et al. [6] identify individual actions, especially the actions of employees within the organization, play an important role in achieving or not achieving environmental sustainability. Saifulina et al. [7] pointed out the importance of pro-environmental behavior in the workplace for organizations because of its contribution to the achievement of overall green environmental goals. Developing an environmental lifestyle at work also plays a prominent role for organizations to save costs by being more efficient in using energy sources; recruit, train and retain talent; build brand reputation, create favorable public relations, and increase revenue and business opportunities [8].

The development of sustainable lifestyles in households, companies and educational institutions has been of interest in many studies [9]. However, environmental protection is not only related to national policies but also needs to be improved on the awareness and behavior of individuals regarding environmental protection, i.e. their PEB [3]. In the business world, organizations' initiatives to develop internal green plans, and adopt environmental management systems and other certifiable environmental standards will not be effective without employee participation [6, 10]. In a number of studies

in environmental psychology, scholars have paid great attention to describing pro-environmental behaviors and examining the factors that determine their implementation [11-13]. Biga et al. [9] point out that pro-environmental behaviors have been researched in both the public and private sectors, but are rarely addressed in the workplace [14]. Many authors are now researching the role of green behaviors and the factors influencing its implementation in Vietnam; nevertheless, studies that focus on PEB in Vietnam remains fairly limited, particularly studies concentrating on motivating factors and leader behavior, as well as green human resource management (GHRM) regulations, which have never been researched previously. This research was conducted with two main objectives:

Firstly, use the integration of factors in motivation theory and new factors discovered in recent years to understand their influence on employees' pro-environmental intentions and workplace behaviors.

Secondly, based on the research results, the authors propose some implications for managers to encourage employees' PEB at workplace.

2. THEORETICAL BASIS AND RESEARCH HYPOTHESIS

Protecting the environment through human activities is called "PEB", "green behavior", "environmentally friendly behavior" or "low carbon behavior" [15, 16]. Graves and Sarkis [17] define PEB as environmentally responsible activities such as improving environmental awareness, creating green products and processes, and eliminating environmentally harmful practices. Kollmuss and Agyeman [18] believe that PEB at work is employee's behaviors aimed at reducing negative impacts on the environment at work. Norton et al. [19] interpret PEB in the workplace as employees' perceptions of organizational attributes and behavioral norms within a company related to environmental sustainability. PEB at work includes all voluntary or regulated activity carried out performed by individuals in the workplace to protect the natural environment or improve the work environment [7].

Saifulina et al. [7] mentioned PEB in the workplace including recycling paper, printing double-sided when possible, participating in activities to address environmental issues, making suggestions to improve the organization's environmental performance, and using everyday resources such as water and electricity sparingly. This study uses the perspective of Saifulina et al. [7] in approaching PEB.

Fishbein [20] emphasized intention as a direct determinant of a certain behavior. Therefore, any attempt to change individual behavior must first change the individual's intentions. When individuals express an intention to perform some environmentally related action, that individual is more likely to have engaged in environmental behavior than are individuals who do not express such an intention [21]. According to some studies by Armitage and Conner [22], Webb and Sheeran [23], intention is considered a good predictor of behavior, leading to a higher rate of employees contemplating the idea of performing environmentally – friendly activities in the workplace [24]. Schwenk and Moser [25] also demonstrated the impact of intention on PEB at work, confirming that employees who intend to recycle at work are more likely to take act. Accordingly, the following hypothesis was developed:

Hypothesis H1: *Intention has a positive influence on employees' pro-environmental behavior in the workplace.*

Motivational theories have been used in studies of the antecedents of the decision to engage in PEB [26, 27], including the self-determination theory (SDT) developed by Ryan and Deci [28]. SDT is a theory of the motivational process of human self-determined behavior. SDT posits that the type of motivation an individual possesses is an important determinant of behavior [29]. SDT divides motivation into two types, namely external motivation and internal motivation. Motivation is important for employees to act pro-environmentally and the studies have shown a positive and significant relationship between motivation and pro-environmental behavioral intention [30, 31]. People are only willing to engage in non-compulsory actions when they feel motivated that these behaviors are important to themselves and their overall well-being. Govindarajulu and Daily [32] suggested that there is a positive relationship between an individual's motivation and his or her behavior to improve the environment. Accordingly, we hypothesize that:

Hypothesis H2: *External motivation has a positive influence on the pro-environmental behavioral intention in the workplace.*

Hypothesis H3: *Internal motivation has a positive influence on the pro-environmental behavioral intention in the workplace.*

Work satisfaction can be defined as an individual's perception and evaluation of his or her job, influenced by the individual's specific requirements, such as their desires, expectations, and beliefs [33]. Biga et al. [9] and Paillé and Mejía-Morelos [34] argued that when employees feel satisfied with their jobs, they are more likely to demonstrate pro-environmental behavioral intentions at work. Xie et al. [35] asserted that work satisfaction plays an important role in shaping people's attitudes and behavioral intentions toward the environment. Furthermore, work satisfaction promotes a healthy work environment and strengthens interpersonal relationships [36], which can stimulate cooperation and create environmentally friendly initiatives within companies. Individuals who are satisfied with their jobs tend to engage in more environmentally beneficial activities and are motivated to make environmentally beneficial decisions [37]. Consequently, we hypothesize that:

Hypothesis H4: *Work satisfaction has a positive influence on the pro-environmental behavioral intention in the workplace.*

According to Bandura [38], individuals learn by observing others and then starting and maintaining similar behavioral patterns themselves. PEB will be displayed by employees with the backing of their leaders, and this kind of behaviors will be carried out more responsibly when leaders use rewards as a motivator [39]. Leaders who have direct interaction with employees will likely greatly impact their PEB at work [40]. Graves et al. [41] provided insight into this relationship from the following perspective: pro-environmental behavioral intentions will increase when leaders engage in PEB at work and will decrease when leaders do not care about them. Similarly, leaders who tend to engage in green behavioral intention are more likely to have employees engage in PEB [42, 43]. Recently, several studies have also attempted to

highlight the role of leader behavior on employees' pro-environmental behavioral intention [44-46]. As a result, the hypothesis is proposed:

Hypothesis H5: *Leader behavior has a positive influence on employees' pro-environmental behavioral intentions in the workplace.*

According to Ansari et al. [47], GHRM methods include setting up environmental duties, goals, and objectives, organizing company-wide environmental management activities and initiatives, and encouraging employees to adopt environmentally friendly practices. Additionally, GHRM is one of the primary causes of firms' shift to ecologically friendly HRM, according to Saifulia et al. [7]. Pinzone et al. [48] and Pham et al. [49] demonstrate the favorable influence of GHRM on pro-environmental behavioral intentions in the workplace. GHRM methods, according to Saeed et al. [50], help employees become more aware of environmental issues and make changes to their behavior that will lead to a more environmentally lifestyle in both life and the workplace. The implementation of GHRM strategies in an organization can enhance employees' environmental consciousness and facilitate their pro-environmental conduct. This can foster a sense of shared sustainability principles and philosophies among employees, fortify business unity, and effectively foster a "climate factory" within the enterprise [51].

Hypothesis H6: *GHRM has a positive influence on employees' pro-environmental behavioral intentions in the workplace.*

3. METHODOLOGY

3.1 Study area

Hanoi, the capital of Vietnam, in 2021, has 178,493 operating businesses, accounting for 20.8% of the country and at the same time, this number of business increased of 7.6% compared to 2020. In 2022, Hanoi issued Enterprise Registration Certificate for 29.6% of newly registered businesses, an increase of 23% compared to 2021 with the total number of newly registered capital reaching VND 328.4 billion, a decrease of 5%. Also in 2022, Hanoi City created jobs for 203,000 employees, reaching 126.9% of the year plan and increasing by 13% compared to 2021. In 2023, Hanoi City sets the goal of solving the problem. Employment for 162,000 employees in the city and an increase of 2,000 employees compared to 2022. Along with the recent increase in labor, environmental protection in the workplace has also been greatly improved. Employees have a sense of hygiene, saving electricity and water in the office with many actions such as: turning off unnecessary electrical appliances when leaving the room or when working hours are over; spending a few minutes every day to sweep the trash, clean the personal workspace as well as the common room; disposing of garbage after working hours, do not leave garbage overnight at the office [52]. Furthermore, in 2022, the Ministry of Natural Resources and Environment of Vietnam also provides guidance for PEB at work. Firstly, it is saving energy sources by taking advantage of natural light and wind, using renewable energy, turning on the air conditioner from 25 degrees or higher, and turning off electrical appliances when not in use. Second, it is waste reduction and recycling. This could involve setting up recycling stations, providing staff with reusable cups and plates, and minimizing the use of single-use materials, sorting trash, saving printing ink and paper. However, the first choice of employees in businesses is often disposable plastic utensils and energy resources are still being wasted through the continuous use of air conditioning, computer power that does not turn off when not in use. Meanwhile, research on PEB in the workplace in Vietnam is limited. To date, only Nguyen et al. [53] have investigated this behavior in the context of luxury hotels in Ho Chi Minh City, Vietnam. In addition, studies often focus on PEB of tourists [54], schoolchildren [55], fishers [56], and consumers [57].

3.2 Sample and procedure

For qualitative research, in-depth interviews were conducted with 12 employees of some enterprises in Vietnam. The interview took place within 45 minutes and was conducted at the interviewee's own workplace. Interviews were recorded and stored on the computer. Then, from the data in the computer, the authors synthesize and analyze to adjust and unify the research model before conducting a large-scale survey.

For the quantitative study, the author used a random sampling method. Based on the list of enterprises published in the Vietnam Business Yellow Pages, the author selected nearly 60 enterprises in Hanoi. The authors directly contacted each enterprise and approached about 5-7 employees at each enterprise to distribute and collect survey forms. The authors received the consent of the enterprise's leaders and the consensus of the respondents before conducting the survey. The results showed that the number of collected forms was 381; the number of qualified forms was 350. With a confidence level of 95% and a precision of ±7%, Yamane [58] suggested that when the total population size is more than 100,000 people, a sample size of 350 is perfectly reasonable for this study.

To process the collected data, the authors applied partial least squares structural equation modeling (PLS-SEM) and used SmartPLS to analyze the data [59]. Using the procedure proposed by Hair et al. [59], the study tested the measurement model and the structural model.

3.3 Measures

We measured Intrinsic Motivation (IM) using three items adapted from Hicklenton et al. [60]. External Motivation (EM) includes three items taken from Grønhøj and Thøgersen [61]. Work Sastisfaction (WS) comprises five items adopted from Greenhaus et al. [62]. Leader Behavior (LB) adapts from Wesselink et al. [63] with a three-item scale. Green Human Resource Management (GHRM) are inherited the questionnaire including 6 dimensions (JP, GR, GS, GT, GPA and GRD) with 15 scales by Jose Chiappetta Jabbour [64]. Finally, Intention (IN) includes three items adapted from Ajzen [65] and Pro-Environmental Behavior (PEB) with nine-item measure by Blok et al. [66]. The study used a Likert scale from 1 (strongly disagree) to 5 (strongly agree) for all items in this paper.

4. RESULT

4.1 Research sample statistics

Table 1. Respondents' characteristics

Characteristics	N	%
Gender		
Male	155	44.3
Female	195	55.7
Age		
From 18 to 30	282	80.6
From 30 to 40	40	11.4
From 40 to 50	23	6.6
Over 50	5	1.4
Educational qualification		
Highschool	49	14
College	18	5.1
Bachelor	253	72.3
Master	26	7.4
PhD	4	1.1
Working experience		
Under 1 year	150	42.9
From 1 to 5 years	130	37.1
From 6 to 10 years	42	12
From 11 to 20 years	18	5.1
Over 20 years	10	2.9
Monthly salary		
Under 5 million VND	120	34.3
From 5 to 10 million VND	123	35.1
From 11 to 15 million VND	53	15.1
Over 15 million VND	54	15.4

After screening, 350 questionnaires were included in the overall sample, with approximately 44.3% of the questionnaires coming from male employees and approximately 55.7% coming from female employees. The majority of the employees participating in the survey were young employees between the ages of 18 and 30 (accounting for approximately 80.6%), followed by employees between the ages of 30 and 40 (accounting for approximately 11.4%). In the survey sample, employees with a bachelor's degree or higher accounted for the largest proportion - approximately 72.3%. In addition, the survey results showed that the majority of respondents - 42.9% - were fresh graduates with less than one year of experience, followed by those with one to five years of experience (approximately 37.1%). This is also one of the reasons why the top and second highest percentages of employees - 35.1% and 34.3%, respectively - have salaries between VND5 million and VND10 million and below VND5 million (Table 1).

4.2 Research results

Evaluation of the measurement model followed the recommendations of Hair et al. [67]. Internal consistency, convergent validity and discriminant validity were examined to determine the overall fit of the measurement model.

Internal consistency was validated by checking Cronbach's Alpha and composite reliability (CR). Cronbach's Alpha value of all factors reached a value in the range of 0.744 to 0.921. CR value of all factors reached a value in the range of 0.837 to 0.938. As shown in Table 2, Cronbach's Alpha and CR of are above 0.7 indicating that all constructs have a high level of internal consistency [67].

Table 2. Internal consistency and convergent validity

Variables	Items	Convergent Validity		Reliability Statistics	
		Indicator Loading	Cronbach's Alpha	AVE	CR
PEB	PEB1	0.831	0.921	0.613	0.934
	PEB2	0.808			
	PEB3	0.790			
	PEB4	0.759			
	PEB5	0.766			
	PEB6	0.754			
	PEB7	0.786			
	PEB8	0.809			
	PEB9	0.737			
IN	IN1	0.875	0.812	0.727	0.889
	IN2	0.822			
	IN3	0.860			
EM	EM1	0.867	0.785	0.699	0.874
	EM2	0.844			
	EM3	0.797			
IM	IM1	0.839	0.761	0.676	0.862
	IM2	0.825			
	IM3	0.803			
WS	WS1	0.884	0.916	0.750	0.837
	WS2	0.897			
	WS3	0.837			
	WS4	0.879			
	WS5	0.830			
LB	LB1	0.794	0.753	0.668	0.858
	LB2	0.805			
	LB3	0.851			
JP	JP1	0.899			
	JP2	0.904			
	JP3	0.872			
GR	GR1	0.913	0.787	0.824	0.904
	GR2	0.902			
GS	GS1	0.926	0.830	0.854	0.922
	GS2	0.923			
GT	GT1	0.825	0.744	0.662	0.854
	GT2	0.824			
	GT3	0.790			
GPA	GPA1	0.897	0.901	0.835	0.938
	GPA2	0.942			
	GPA3	0.901			
GRD	GRD1	0.921	0.833	0.857	0.923
	GRD2	0.930			

After analyzing internal consistency, 41 items were used to analyze the convergent validity test. The convergent validity of the measurement model was tested using indicator loadings and average variance extracted (AVE). First, the indicator loadings should be higher than 0.70, which indicates that the construct explains more than 50% of the item variance [67]. In this study, all indicator loadings were higher than 0.70. Second, the AVE of the construct should exceed 0.5. Table 2 shows that the AVE values of each construct ranged from 0.613 to 0.857, which meets the general rule.

According to Hair et al. [67], discriminant validity should be verified to ensure that a construct is different from other constructs. Fornell and Larcker [68] suggested that discriminant validity is sufficient when the square root of AVE is greater than the correlation values of the constructs. The author found that the condition was satisfied (Table 3).

Table 3. Discriminant validity

	EM	GHRM	GPA	GR	GRD	GS	GT	IM	IN	JP	LB	PEB	WS
EM													
GHRM	0.103												
GPA	0.059	0.813											
GR	0.147	0.862	0.459										
GRD	0.069	0.872	0.624	0.606									
GS	0.033	0.734	0.381	0.460	0.475								
GT	0.100	0.920	0.540	0.579	0.592	0.539							
IM	0.704	0.075	0.048	0.047	0.048	0.077	0.076						
IN	0.651	0.098	0.106	0.053	0.092	0.039	0.033	0.697					
JP	0.085	0.951	0.542	0.809	0.683	0.543	0.707	0.060	0.117				
LB	0.497	0.116	0.128	0.098	0.057	0.109	0.082	0.484	0.524	0.067			
PEB	0.498	0.072	0.067	0.059	0.056	0.043	0.060	0.639	0.668	0.052	0.370		
WS	0.315	0.098	0.052	0.056	0.064	0.091	0.114	0.309	0.475	0.087	0.322	0.356	

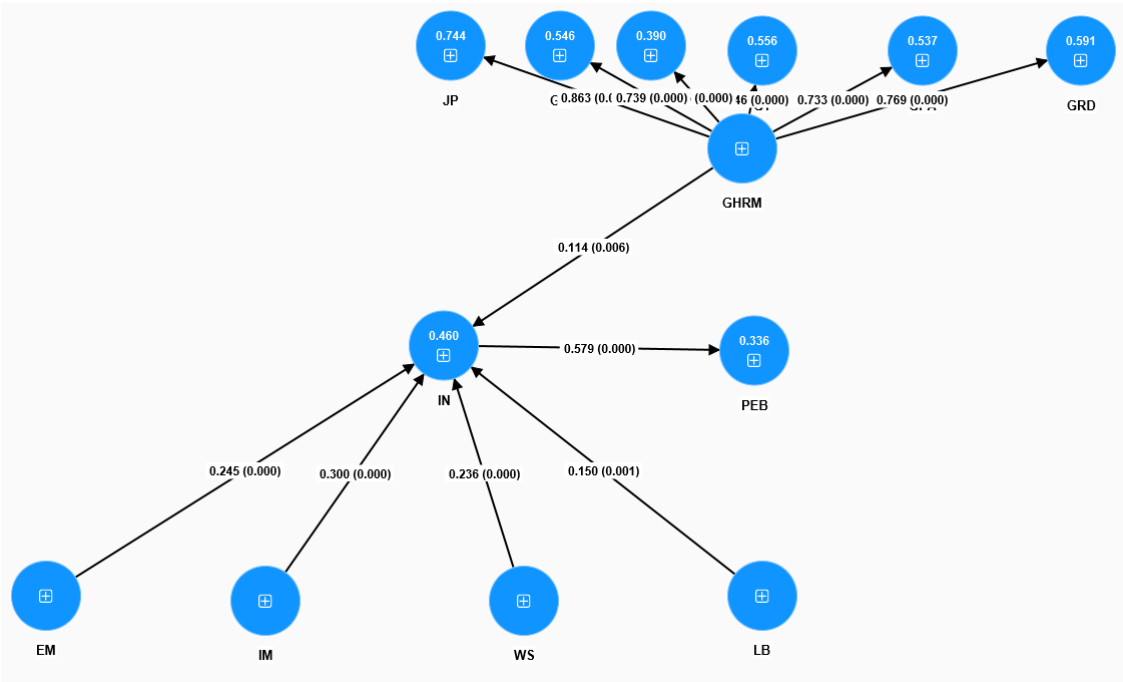

Figure 1. Structural model

Structural equation modeling (SEM) was performed to test the hypotheses. The results of hypothesis testing are presented in Table 4 and Figure 1. All P-value values are less than 0.05 (with a 95% confidence level), indicating that all independent variables have an impact on the dependent variables and that all of the model's relationships achieve statistical significance. External motivation, internal motivation, work satisfaction, leader behavior and GHRM are shown to have positive relationships with pro-environmental behavioral intentions at work of corporate employees (β=0.245, 0.300, 0.236, 0.150 and 0.114 respectively). Employees' intentions and their PEB at work are also positively correlated (β=0.579).

Table 4. Analysis of hypotheses

Hypothesis		β	t	P Value	Result
H1	IN -> PEB	0.579	13.381	0.000	Accepted
H2	EM -> IN	0.245	4.948	0.000	Accepted
H3	IM -> IN	0.300	6.634	0.000	Accepted
H4	WS -> IN	0.236	5.838	0.000	Accepted
H5	LB -> IN	0.150	3.196	0.001	Accepted
H6	GRHM -> IN	0.114	2.741	0.006	Accepted

5. DISCUSSION AND CONCLUSION

5.1 Discussion

This study focuses on investigating the factors influencing PEB at work of corporate employees. All hypotheses are confirmed by the research data.

Hypothesis H1 is confirmed: Intention is proven to have a positive relationship with PEB at work of employees. This result is consistent with the assertion of Untaru et al. [25]; Schwenk and Moser [26]. Therefore, to promote PEB, it is necessary to investigate the factors that determine pro-environmental behavioral intentions at work.

Hypotheses H2 and H3 are supported: External and internal motivation have a positive and stronger influence than the remaining factors on pro-environmental behavioral intentions of employees. Afsar et al. [30] and Budzanowska-Drzewiecka and Tutko [31] also confirmed the above research results. Besides, this study showed that intrinsic motivation has a stronger influence than extrinsic motivation on behavioral intention.

Hypothesis H4 is confirmed: Work satisfaction has a positive correlation with employees' pro-environmental

behavioral intention. Paillé and Mejía-Morelos [34] and Xie et al. [35] also confirmed the role of work satisfaction in forming pro-environmental behavioral intention.

Hypothesis H5 is supported: Leader behavior has a positive influence on employees' pro-environmental behavioral intention. Javaid et al. [44], Luu [45] and Singh et al. [46] suggested that leaders will be role models for employees to follow when performing PEB at work.

Hypothesis H6 is confirmed: GHRM has a positive relationship with employees' pro-environmental behavioral intention. Recent studies by Pinzone et al. [48]; Pham et al. [49]; Saeed et al. [50] all have similar conclusions. However, GHRM is the factor that has the weakest impact on intention.

5.2 Theoretical implications

This study makes several theoretical contributions. First, it sheds light on PEB of employees and examines the factors influencing this behavior in the context of very few studies investigating PEB in the workplace [14]. Second, the authors add to the understanding of the role of extrinsic and intrinsic motivation in pro-environmental behavioral intentions in the workplace. Thus, the study demonstrates the process of motivating self-determined human behavior according to Ryan and Deci's [28] SDT. Third, we reinforce the finding that GHRM is also related to pro-environmental behavioral intentions in the workplace. Thus, job descriptions (JP), green recruitment (GR), green selection (GS), green training (GT), green performance appraisal (GPA), and green awards (GRD) all need to be addressed to promote behavioral intentions.

5.3 Practical implications

Based on the research results, we propose some implications for business managers as follows:

First, intrinsic motivation is proven to have the strongest influence on employees' pro-environmental behavioral intentions. Therefore, managers need to focus first on solutions to promote employees' intrinsic motivation. Managers create opportunities and excitement for employees through suggestions, conversations or creative idea competitions for a green, clean and beautiful working environment. This will help employees realize that they must be conscious of protecting the environment at work without being influenced by anything such as regulations or rewards.

Second, leader behavior will determine employees' PEB, so managers themselves need to take the lead in implementing PEB. Managers directly guide and monitor the environmental protection process at the workplace of employees such as whether they save paper, turn off the lights/fans/air conditioners when leaving the room or not.

Third, managers must build GHRM plans from all stages from recruitment, use, training... Employees who have not yet applied environmentally friendly activities will be provided with precise and useful guidance on the benefits of environmentally friendly behavior in the company, which will help them gradually develop environmentally friendly intentions at the workplace.

5.4 Limitation

The current study contains several limitations and should be future research directions. Firstly, the research team's primary focus is on studying the intentions and behaviors of employees in Hanoi; hence, the research has a limited reach and cannot be generalized to all employees throughout the country. Therefore, future research should include employees from a wide range of provinces in Vietnam. Secondly, current research models only explain 58.5% of pro-environmental intentions in the workplace, indicating that additional factors must be taken into account. When doing research, the authors found that integrating the theory of planned behavior (TPB), motivation theory, and the norm activation model (NAM) is the next appropriate research route. Finally, the differences in demographic characteristics such as gender, age, education level, work experience, and monthly income should be examined to see how these affect intentions and PEB in the workplace in follow-up research.

5.5 Conclusion

This study examines the factors influencing the intention and PEB at the workplace of Vietnamese employees. According to the research results, intrinsic motivation, extrinsic motivation, work satisfaction, leader behavior and GHRM are positively correlated with the intention to perform PEB at work, in which intrinsic motivation is the factor with the strongest influence on the intention. At the same time, the authors also confirmed the relationship between intention and PEB at work of corporate employees. Thereby, the authors give some implications to encourage PEB at work of employees.

ACKNOWLEDGMENT

This research is funded by National Economics University, Hanoi, Vietnam.

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