Exploring the Predictors of Employee Green Behaviour among Academics in Malaysia

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Abstract

Green behaviour appears to be a pivotal panacea to the concerning situation of the dwindling environmental condition. Studies have indicated the importance of green behaviour to alleviate the continuous environmental degradation, especially among employees in the organizations. This study investigates the role of personal moral norms (PMN), environmental knowledge (ENK), and perceived behavioural control (PBC) in influencing Employee green behaviour (EGB) among academics in Higher education institutions (HEIs). The data collected through a cross-sectional quantitative survey among 425 academics at research universities in Malaysia was analyzed using the Smart PLS 3.3 version. The results showed that academics' PMN and PBC positively influence their EGB. However, their ENK was not significantly related to EGB. Employees' moral obligations due to their guilt for contributing to environmental degradation may result in green behaviour. Also, employees' confidence about their ability and the ease of performing green behaviour will influence their actual performance of green behaviour. This study furthers the understanding of the theory of planned behaviour and value-belief-norms theory. The implications of this study were also discussed.

Keywords

Employee green behaviour, Personal moral norms, Environmental knowledge, Perceived behavioural control, Academics

1. Introduction

The beneficial contributions of employee green behaviour (EGB) within organizations have drawn the attention of experts in Malaysia and other countries because of environmental challenges (Buyong et al., 2021). Malaysia has made numerous efforts over the years to ensure environmental sustainability, including the establishment of the Ministry of Energy, Green Technology, and Water (KeTTHA) in 2009 to enable them to achieve their ultimate objective of addressing environmental concerns through high-impact research and development (R&D) of green technologies in Malaysia (Department of Environment (DOE) Malaysia, 2010). Previous studies have found that EGB affects the natural environment and provides significant benefits to organizations and their employees. EGB benefits organizations by lowering resource consumption (Busse and Menzel, 2014; Zhang et al., 2019) and enhancing organizational environmental performance (Saleem et al., 2020; Zhu et al., 2021). At the individual level, green behaviour complies with job requirements or environmental protection objectives and contributes to employees' increased engagement with environmental initiatives and job satisfaction (Ababneh, 2020; Mi et al., 2020).

In recent years, an increasing number of higher education institutions (HEIs) worldwide have attempted to integrate environmental management and green practices into their core services (Aboramadan, 2020). Numerous tertiary institutions in Malaysia are stepping up environmental conservation efforts. For instance, Universiti Putra Malaysia (UPM) has a green mandate linking university operations to sustainability goals via effective environmental management, mentoring, curriculum development, and quality management-based systems (Sani, 2019). HEIs play a significant role in identifying and implementing approaches and alternative solutions to address existing environmental issues (Aboramadan, 2020; León-Fernández and Domínguez-Vilches, 2015). EGB refers to employee behaviours that support environmental management practices in the organization (Dumont et al., 2017; Fawehinmi et al., 2020a). EGB is critical to the effective implementation of green practices in the workplace (Chen et al., 2021). It has been shown that engaging employees in green practices improve environmental performance and competitive advantage (Kim et al., 2019).

Although EGB has gained some popularity at the individual and organizational levels, there is no empirical evidence on the combined effect of PMN, ENK, and PBC on EGB among Malaysian academics. Fawehinmi et al. (2021) conducted one study on EGB among academics in Malaysia, focusing on attitude, environmental concern, and PBC on EGB. Other studies on EGB were undertaken in various contexts utilizing different predictors. For instance, in public and private sector hospitals and universities in Pakistan, using ethical leadership, green psychological climate, employees' harmonious environmental passion, green psychological climate, and employees' environmental commitment (Saleem et al., 2021); University of Mining and Technology in China, utilizing person-organization fit with the moderating effect of psychological distance (Mi et al., 2020); Palestinian HEIs, exploring green human resource management with the mediating effect of green work engagement (Aboramadan, 2020). Furthermore, Gao et al. (2017) examined attitude, PBC, descriptive norm, and personal moral norm among samples from three cities in China. Based on the limitations mentioned above, there is a need for additional research on EGB among Malaysian academics (Fawehinmi et al., 2021; Muniandy and Anuar, 2020).

The objective of this study is to examine the effects of PMN, ENK, and PBC on EGB among academics in Malaysian universities. To achieve this objective, this study developed a theoretical framework based on the theory of planned behaviour (TPB) and value-belief-norms (VBN). The theoretical framework was used to investigate and comprehend the predictors of EGB among academics. Numerous studies, including (Arya and Chaturvedi, 2020), (Botetzagias et al., 2015), (Gao et al., 2017), (Yadav and Pathak, 2017), and (Yusliza et al., 2020), have examined individuals' pro-environmental behaviour in personal and work settings. As a result, it is appropriate to use TPB and VBN as the underpinning theory for this study.

2. Literature Review

In reviewing a wide range of literature probing topics including employee green behaviour, personal moral norms, environmental knowledge, and perceived behavioural control, the following sections discuss specific reviews:

2.1 Employee Green Behaviour

The concepts of green behaviour, pro-environmental behaviour, or pro-environmentalism have been used interchangeably in the literature. Yang et al. (2020) state that pro-environmental behaviour and green behaviour significantly minimize the harm done to the environment or add substantial benefits to environmental preservation.

Yang et al. (2020) argue that green behaviour is propelled by a combination of self-interest and environmental concerns at both the employee and organizational levels. Authors have argued that employee behaviour significantly influences the environmental performance of companies (Jackson et al., 2011; Renwick et al., 2013). Specifically, Jabbour et al. (2015) argue that effective environmental management strategies in organizations are anchored on employees' behaviour towards environmental sustainability.

2.2 Personal Moral Norms as antecedents of Employee Green Behaviour

Personal Moral Norms (PMN) are standards of morality that people follow (Raymond and Schneider, 2014). The concept of PMN as a direct predictor of behaviour has been explicated by the Value Belief Norm (VBN) theory (Stern et al., 1999). Steg et al. (2014) affirm that PMN is a direct consequence of beliefs influenced by values. Thus, values ignite beliefs that promote moral obligation that propels individuals to carry out pro-environmental behaviours.

Moreover, multiple studies in different domains have affirmed that PMN is vital in shaping the behaviours of individuals (e.g., Steg et al., 2014; Marcus and Roy, 2019; Unsworth et al., 2020). Marcus and Roy (2019) argue that PMN, through green behaviour, influences how individuals carry out pro-environmental actions on the environment. They concluded that PMN arising from individual values and beliefs imbibed by employees at home and their work is essential in explaining their green behaviour. It has been discovered that PMN positively influences environmental conserving behaviours in the workplace (Ciocirlan et al., 2020). Based on the above arguments, this study hypothesizes the following:

H1: Personal moral norms positively influence employee green behaviour

2.3 Environmental knowledge as an antecedent of Employee Green Behaviour

Environmental Knowledge (ENK), as conceptualized by Laroche, Bergeron, and Barbaro-Forleo (2001), is the capability of an individual to identify the symbols, concepts, and behavioural patterns essential for environmental protection based on acquired information. Organizations' investment in providing essential ENK to their employees has been vital in promoting green behaviour (Zibarras and Coan, 2015). Christina et al. (2017) agrees and suggests that environmentally friendly organizations employ specific green training as a pro-environmental behavioural strategy to enhance the knowledge of employees towards green behaviour in the workplace.

Futhremore, Liobikienė and Poškus (2019), who advocate promoting environmental education, found that ENK positively shaped individuals' environmental concerns, directly motivating their green behaviour. It is in tandem with study findings that established that the advancement of ENK promotes green behaviour among employees (Safari et al., 2018). Based on the above arguments, this study hypothesizes the following:

H2: Environmental Knowledge positively influence employee green behaviour

2.4 Perceived Behavioural Control as an antecedent of Employee Green Behaviour

The Theory of Planned Behavior (TPB) is among the most extensively utilized models for studying individual behaviours (Yuriev et al., 2020). TPB posits that behaviours arise from Intentions, which indicates how hard individuals are willing to try a behaviour. Perceived Behavioural Control (PBC) refers to an individual's perception regarding their capability and access to the required resources and opportunities to execute a specific behaviour (Ajzen, 1991). The critical consideration here is the presence or absence of factors that may enable or inhibit the execution of the particular behaviour.

PBC is an essential variable that predicts the behaviour of individuals. Ajzen (2020) stresses that a positive attitude and supportive subjective norms motivate engaging in a behaviour. However, intention to proceed with that specific behaviour is only possible when perceived control over such behaviour is vital. When employees feel confident and have the enabling resources to accomplish green behaviour easily, they will practice EGB. It was discovered that PBC significantly influenced the green behaviour of employees (Zierler et al., 2017). Based on the above arguments, this study hypothesizes the following:

H3: Perceived behavioural control positively influences employee green behaviour

Figure 1 displays this study's research framework based on the above hypotheses development, depicting three independent variables and one dependent variable.

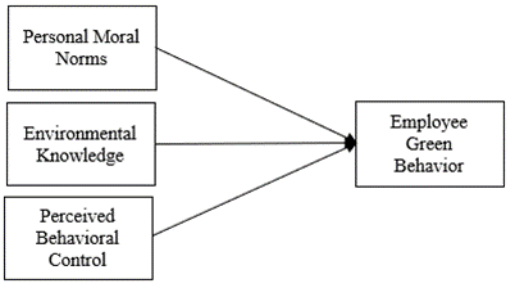

Figure 1. Research framework

3. Methods

3.1 Participants and Procedure

Between December 2019 and March 2020, data from academics at Malaysian research universities was collected using convenience sampling. Six hundred sixty-five questionnaires were distributed, 483 were returned; however, only 425 were valid (63.91 percent response rate). Raosoft.com's (2019) sampling size table established the minimal sample size. So, 425 valid questionnaires returned are enough for this investigation.

3.2 Measurements

The first section of the survey focused on workplace EGB. Seven items used were adapted from Blok et al. (2015) because this study focused on specific behaviour. The responses ranged from 1 (never) to 5 (always). The second section of the questionnaire assessed ENK by asking four questions about environmental issues and solutions. The items were adapted from Gatersleben et al. (2002). The responses ranged from 1 (not at all) to 5 (to a very great extent). Four items from Ruepert et al. (2016) and Steg and de Groot (2010) measured PMN. The items were rated 1 (strongly disagree) to 5 (strongly agree). A 5-item scale, derived from Swaim et al. (2014), was used to assess PBC. The response ratings ranged from (1) "Strongly disagree" to (5) "Strongly agree." Gender was used as a control variable. Previous research has linked gender to EGB (Ahmad et al., 2021).

3.3 Data Analysis

The research model was analyzed in SPSS 25 and Smart PLS 3.3. The structural model was analyzed after the measurement model based on the suggestion of Hair et al. (2016).

4. Data Collection

4.1 Demography of Respondents

Two hundred eighty-nine women (68%) and 136 males (32%) took part in this survey. Their mean age was 41.21 (SD 1.67; 39–43). 84.9 % of them possess a PhD, and 0.7 % have other advanced degrees. They comprise 56.7% Senior lecturers and 6.6% professors.

5. Results and Discussion

5.1 Statistical analysis

Table 1 shows the descriptive statistics of the constructs. PMN has a mean of 4.24. (On a 5-point Likert scale), and standard deviation (SD) of 0.63. ENK has a mean of 3.84, with SD of 0.74. PBC has a mean of 4.04, with SD of 0.69. EGB has a mean of 3.52, with SD of 0.84. Most of the respondents were female, at 68 percent. The findings denote that the academics' PMN toward environmental sustainability is high, indicating that they have moral obligations toward environmental-friendly practices in the HEIs. Academics ENK is shown to be average. Nevertheless, PBC is shown to be high among academics. However, academics' EGB was average, which could be ascribed to the lack of proper employee-centered environmental policies in HEIs.

Table 1. Descriptive statistics

Variables (N= 425)	Mean	Standard Deviation
PMN	4.24	0.63
ENK	3.84	0.74
PBC	4.04	0.69
EGB	3.52	0.84

5.2 Measurement Model

The model's convergent validity is determined first, followed by its discriminant validity. As per Hair et al. (2017), convergent validity is assessed using factor loading, average variance extracted (AVE), and composite reliability (CR). Additionally, factor loadings of 0.4 to 0.7 have been stated as appropriate, provided the CR and AVE are good (Hair et al., 2014). As indicated in Table 2, most factor loadings are above 0.7, except for ENK item with a factor loading of 0.689. Nevertheless, it is satisfactory, as long as AVE is above 0.5 and all the CR > 0.7. Based on the finding, it can be deduced that the constructs' convergent validity is satisfactory (Fornell and Larcker, 1981).

Table 2. The result of Construct Validity and Reliability

Construct	Items	Factor Loading	CR	AVE
Personal Moral Norms	"I feel guilty if I do not act pro-environmentally at work."	**0.856**	**0.898**	**0.688**
	"I feel morally obliged to act pro-environmentally at work."	**0.848**		
	"I feel proud when I act pro-environmentally at work."	**0.804**		
	"I would violate my principles if I would not act pro-environmentally at work."	**0.809**		
Environmental knowledge	"I know about the problem of environmental pollution caused by human activities."	**0.820**	**0.875**	**0.637**
	"I have good knowledge about environmental issues."	**0.870**		
	"I can see with my own eyes that the environment is deteriorating."	**0.689**		
	"I am aware of how to protect the environment from pollution on the university premises."	**0.803**		
Perceived behavioural control	"It is easy for me to perform pro-	**0.813**	**0.914**	**0.681**

	environmental activities in the workplace."			
	"I have control over my actions to support the environment in the workplace."	**0.842**		
	"It is my decision whether or not to perform pro-environmentally in the workplace."	**0.779**		
	"I have the ability to perform pro-environmentally in the workplace."	**0.876**		
	"I have control over performing pro-environmental activities in the workplace."	**0.814**		
EGB	"I make sure that air-conditioning is switched off when not in the office."	**0.748**	**0.857**	**0.544**
	"I print and photocopy double-sided."	**0.753**		
	"I switch off my computer/notebook when I leave my office for a considerable period."	**0.747**		
	"I switch off the lights when I leave my office for a considerable period of time, and there is no one else."	**0.723**		
	"I recycle plastics."	**0.718**		

Note: EGB 6 and 7 were deleted because of low factor loading

Gholami et al. (2013) hypothesized that discriminant validity is achieved when a clear contrast between distinct notions exists. Additionally, how many indicators focus exclusively on a particular construct. It is critical to conduct a precise discriminant validity assessment to ensure that the constructs are statistically distinct and distinct from other constructs (Hair et al., 2019). As Henseler et al. (2015) recommended, the study will present it using the HTMT ratio at this point. If the HTMT value is higher than 0.85, it is hypothesized that there is a severe problem with discriminant validity (Franke and Sarstedt, 2019). As illustrated in Table 3, the HTMT criteria are less than 0.85, indicating that discriminant validity has been demonstrated.

Table 3. Discriminant validity (HTMT)

	EGB	ENK	PBC	PMN
EGB				
ENK	0.253			
PBC	0.322	0.333		
PMN	0.406	0.526	0.451	

5.3 Structural Model

Before doing hypothesis testing, it is vital to validate that the structural model does not have any issues with lateral collinearity. According to Diamantopoulos and Siguaw (2006), the variance inflation factor (VIF) used to quantify collinearity must be less than 3.3. As shown in Table 4, all VIF values are less than the threshold value established by Diamantopoulos and Siguaw (2006), indicating that collinearity is not an issue in this research. For hypothesis testing, the resolution to accept the hypothesis is determined by the t-value, p-value, and confidence interval bias-corrected using the bootstrapping procedure with resampling of 5000. The analysis supported two of the three hypotheses developed. The study revealed that ENK was not significantly linked to EGB (ß = 0.089, t = 1.662: LL = -0.001, UL = 0.174, P > 0.01), hence H1 is not supported. Further, PBC was positively linked to EGB (ß =0.185, t = 3.480: LL = 0.092, UL = 0.268, P < 0.001), hence H2 was supported. Likewise, PMN was positively linked to EGB (ß = 0.216, t = 3.966: LL = 0.125, UL = 0.304, P < 0.001). Therefore, H3 is supported.

Table 4. Result of Hypotheses Testing

	Beta	**SE**	**T Stat**	**P Values**	**LL**	**UL**	**Decision**	**VIF**
ENK -> EGB	0.089	0.053	1.662	0.048	-0.001	0.174	NS	1.286
PBC -> EGB	0.185	0.053	3.480	0.000	0.092	0.268	Supported	1.216
PMN -> EGB	0.216	0.055	3.966	0.000	0.125	0.304	Supported	1.398

Environmental knowledge = ENK ; Perceived behavioural control = PBC; Personal moral norms = PMN; Employee green behaviour = EGB.

The coefficient of determination (R^2), the effect magnitude (f2), and the predictive relevance (Q2) of predictive variables on EGB criteria variables are calculated in Table 5. According to figure 2, the R^2 value of 0.191 indicates that ENK, PBC, and PMN account for 19.1% of the variance in EGB. R2 score of 19.1% is reasonable in this area of study concerning EGB, with three independent variables. When predicting human behaviour, which is a difficult endeavour, an R^2 of 0.10 is considered adequate. For R^2 levels to be regarded sufficient, Falk and Miller (1992) suggested at least 0.10. Also, Cohen (1988) suggested R^2 values for endogenous latent variables are assessed as follows: 0.26 (substantial), 0.13 (moderate), 0.02 (weak). Chin (1998) recommended R^2 values for endogenous latent variables based on: 0.67 (substantial), 0.33 (moderate), 0.19 (weak). Hence R^2 of 0.191 is deemed satisfactory.

Further, this research utilized Geisser's (1974) Q2 to determine prediction accuracy. A blindfolding process was used to determine the model's prediction power. When a distance of 7 is used, the Q2 value reflects the predictive relevance of certain criterion variables if the Q2 value is greater than 0 (Fornell and Cha, 1994; Hair et al., 2017). The Q2 of the criteria variables, EGB, is 0.095, indicating a reasonable predictive value. Cohen (1992) classified effect sizes of 0.35, 0.15, and 0.02, respectively, as large, medium, and small effect sizes. This study discovered that ENK, PBC, and PMN have a negligible, small, and small effect on the EGB, respectively (0.008; 0.035; 0.041).

Table 5. Coefficient of Determination (R^2) and Effect Size (f^2)

Construct	**R2**	**Q2**	**F2**	**Decision**
EGB	0.191	0.095		
ENK			0.008	Nil
PBC			0.035	Small
PMN			0.041	Small

Environmental knowledge = ENK ; Perceived behavioural control = PBC; Personal moral norms = PMN; Employee green behaviour = EGB.

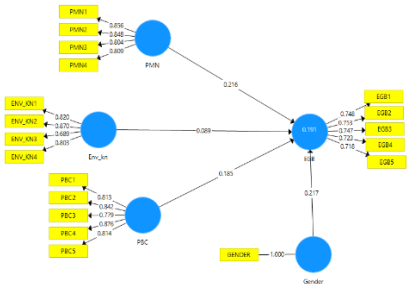

Figure 2: PLS-SEM Algorithm for the Measurement Model

5.4 Importance-performance map analysis (IPMA)

This study used importance-performance map analysis (IPMA) to understand better how each exogenous construct performs to anticipate the criteria construct degree of importance (Ringle and Sarstedt, 2016). Instead of focusing exclusively on the path coefficients (i.e., the "importance measure"), IPMA considers the average value of latent variables and their indicators (i.e., the "performance measure") (Ringle and Sarstedt, 2016). Figure 3 depicts the IPMA results, which reflect all exogenous factors' relative importance and performance (i.e., ENK, PBC, and PMN) associated with EGB prediction.

The findings show that PMN is more significant than the other EGB predictors in this study's model, and the next significant predictor is PBC. Thus, these IPMA results provide additional support for the structural model results. Consequently, while the structural model results give information on the relative importance of each determinant of EGB, the IPMA results provide additional insight into how well each predictor performs in predicting EGB – outlining critical areas for emphasis and immediate paths for improvement.

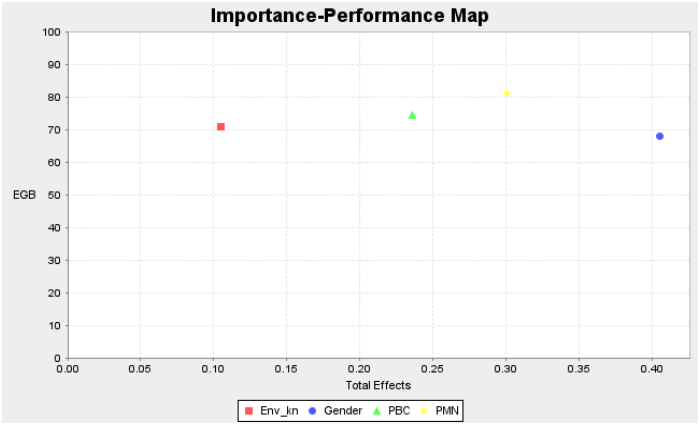

Figure 3: Importance-Performance Map Analysis (IPMA) for EGB

5.5 Discussion

The practice of EGB is imperative in the effective implementation of environmental sustainability initiatives in organizations. This study reveals the effectiveness of internal psychological drive in predicting EGB. Based on the findings in this study, PMN is shown to predict EGB positively, and the magnitude of this prediction is the highest in this study. This finding is congruent with the debates of extant studies (Chen and Tung, 2014; Ciocirlan et al., 2020; Fawehinmi et al., 2020b). Fawehinmi et al. (2020b) assert that employees' moral obligation toward the environment would push employees to practice green behaviour in the workplace.

Nevertheless, the finding reveals that ENK does not significantly influence EGB. This finding is aligned with previous results (Mat Said et al., 2003), which narrated that employees' ENK does not necessarily lead to green behaviour. It

could be because an employee has only factual Knowledge but not procedural Knowledge of EGB. The finding opens up a need to improve the procedural ENK of employees to influence their EGB conducts (Young et al., 2015). Further, it is postulated that ENK may result in a series of beliefs and personal moral obligations to influence EGB (Ünal et al., 2018) significantly.

Further, PBC was discovered to influence EGB significantly. This finding is consistent with previous studies (Arli et al., 2020; Fawehinmi et al., 2021; Yadav and Pathak, 2017). Arli et al. (2020) revealed that the degree to which individuals believe that they have the confidence to perform recycling behaviour would determine their performance of recycling behaviour. Therefore, a higher PBC would lead to increased conduct of EGB.

5.5.1 Theoretical and Practical Contribution

To the best of our knowledge, this study is the first to empirically investigate the long-overlooked combined predictive powers of ENK, PMN, and PBC in influencing the practice of EGB of academics – especially in Malaysia. Our findings extend insights into the contemporary assumptions undergirding environmental sustainability by evolving the theory of planned behaviour (TPB) and the VBN theory (Ajzen, 2020; Mohiuddin et al., 2018; Yeboah and Kaplowitz, 2016).

This study shows the importance of personal moral obligation in forming behaviour such as EGB, as Ajzen (1991) suggested. It shows that the guilty feeling of employees about the state of the ecosystem and the resulting resolution to take it as a point of responsibility will influence the conduct of EGB. Further, PBC reiterates the argument of Ajzen (1991) that confidence and availability of enabling facilities will directly influence behaviour. The reassurance of employees' capability boosts their self-efficacy, which plays a pivotal role in forming EGB.

In terms of practical implication, policymakers and top management should encourage moral obligations toward environmental sustainability, heightened ENK, and PBC among employees. Top management and policymakers need to formulate a robust environmental sustainability policy to inform, train, re-train, and encourage employees on environmentally friendly activities. Employees should be regularly reminded of ecological impact while educating employees about the need to stop environmental degradation while revitalizing the environment. It is necessary because indiscriminately throwing batteries, papers, plastic, and glass has terrible consequences on the environment. Also, batteries not correctly recycled may contaminate soil and water, damaging aquatic life, plants, and human health.

Top management should provide EGB-friendly amenities in the workplace to ease EGB. It should feature neatly labelled recycle bins, stickers informing staff to turn off their electronics, and providing facilities for convenient web conferencing. Policies should also reflect an environmental sustainability position, encouraging staff to follow suit. For instance, the top management can set an example for employees, such as car-sharing, using environmentally friendly cars, opting for video conferencing instead of travelling, and visibly engaging in recycling activities. Finally, top management should motivate and promote employees' green behaviour successes, such as rewarding high green performing employees.

6. Limitations, Future Directions, and Conclusion

This study establishes a direct association between PMN, ENK, PBC, and EGB. It reveals the considerable impact of employees' moral commitments and PBC on the EGB. It reaffirms the crucial importance of psychological factors in enhancing EGB, which should be pushed firmly in HEIs and other organizations. Although this study has limitations, it can serve as a springboard for future research. Future research should go deeper into the relationship between ENK and behaviour by examining ENK's many characteristics, such as declarative and procedural knowledge.

It would be interesting to understand further the moderating role of PMN in the interaction between ENK and EGB. Furthermore, environmental consciousness and green passion should be investigated in future studies to determine their predictive significance for EGB. Due to the difference in cultural contexts, this study cannot be generalized to other countries, and additional studies should be done in other countries, particularly emerging and developed economies. Finally, this study gathered quantitative data through a self-administered questionnaire. Future research may apply qualitative methods to assess the short- and long-term impacts of PMN, ENK, and PBC on the EGB of academics.

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