# Understanding the Antecedents of Employee Green Behaviour through the Lens of Psychological Variables

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## Abstract

Environmental pollution is one of the causes of climate change and has been causing havoc, affecting people's welfare globally, more so in Malaysia. For helping reverse the devastating pattern of environmental pollution, employees must be encouraged to practise green behaviour, where they align their values and behaviour towards environmental sustainability goals. Hence, this study sought to determine the antecedents of employee green behaviour (EGB) of academics at Malaysian Higher Education Institutions (HEIs) by investigating the impact of several psychological variables, namely attitude, environmental concern, and perceived behavioural control, on the behaviour. Data were collected through a cross-sectional quantitative survey among 425 academics at five research universities in Malaysia by using a convenience sampling. Further, the study used Smart PLS 3.2.8 version for analysis. The results showed that academics' attitude, environmental concern, and perceived behavioural control significantly impacted their EGB. The favourable disposition of academics towards environmental sustainability, their heightened concern about the current state of the environment, and their perceived behavioural control to practice environmentally friendly activities tend to result in EGB being conducted by the academics at the HEIs. This study contributes to further understanding of the theory of planned behaviour and value-belief-norms theory.

### Keywords
Employee green behaviour, attitude, environmental concern, perceived behavioural control, academics, Malaysia

## 1. Introduction
The need to sustain the environment has never been this crucial.  Humans and animals face new challenges for survival because of climate change. Climate change caused by the environment's degradation is causing drought and other disasters in the environment, such as intense drought, storms, heatwaves, rising sea levels, melting glaciers and warming oceans. In Malaysia, climate change has led to extreme weather occurrences, with more heat and flooding being experienced (Tang, 2019). For this reason, Malaysia has aligned with United Nations Sustainable development goals (AGENDA 2030), which promotes environmental sustainability through the participation of individuals (United Nations, 2015, p.12), by incorporating environmental sustainability goals in the 11th and 12th National Plans (Malaysia, 2015).

Such policies have required organisations to be a major cause of carbon emission (Yong et al., 2019) to ensure that their practices align with environmental sustainability goals. In tandem with these environmentally friendly policies, organisations have focused on being good corporate citizens by mitigating their negative impacts on society and the environment through the practice of corporate social responsibility (CSR), which is centred on environmental sustainability.  CSR is a major strategy to accomplish a competitive advantage by advocating for environmental sustainability (Ashton et al., 2017).

The successful implementation of environmental sustainability policies is dependent on the corporation of employees' behaviour in organisations. It is narrated that green intellectual capital that comprises employees' green contribution is pivotal in achieving environmental performance (Yusliza et al., 2020).  Employees are the main contributors in the pursuit of corporate environmental agendas, and the degree to which policies are embedded is likely to affect the desired green behaviours (Leidner et al., 2019). Employees' behaviour aligned with corporate environmental agendas is referred to as employee green behaviour (EGB) (Fawehinmi, Yusliza, Mohamad, et al., 2020). EGB has been shown to significantly impact environmental performance (Kim et al., 2019). It insinuates the importance of EGB in the successful implementation of environmental sustainability.

In light of the imperative role of EGB in organisations' goal to attain environmental performance, environmental psychologists have placed a great deal of attention to assess EGB and investigate the determinants (Blok et al., 2014; Dixon et al., 2015; Fawehinmi, Yusliza, Wan Kasim, et al., 2020; Gao et al., 2017; Muniandy & Anuar, 2020; Ruepert et al., 2016; Wesselink et al., 2017). These psychological constructs are assessed because of the need to understand the psychological reasons why employees' partake in or avoid certain activities such as EGB. These psychological constructs are also crucial because they can be a long-term and cost-effective method to induce employees' required green behaviour. Considering that EGB at the workplace is different from green behaviour at home because conserving resources at the workplace does not personally impact employees (Gao et al., 2017), hence these resources (such as energy, papers, and plastics.) could be easily neglected and wasted (Manika et al., 2013).

Studies on the psychological predictors of EGB, include mostly attitude, subjective norms and perceived behavioural control, intention, personal moral norms, environmental awareness, and values (Blok et al., 2014; Ruepert et al., 2016). However, few studies on EGB have investigated with attitude (Muniandy & Anuar, 2020; Safari et al., 2018), environmental concern (Ahmed et al., 2020), and PBC (Zierler et al., 2017). The study on the combination of attitude, environmental concern, and PBC on EGB has not been examined, especially among academics in Malaysia. It is opined that employees' environmental, attitudinal disposition will determine their green behaviour (Paço & Lavrador, 2017). Further, highly concerned employees are believed to do everything it takes to be environmentally friendly toward the environment (Urban & Scasny, 2012). Based on TPB, it is opined that employees with high self-efficacy and easy access to facilities that enable green behaviour, will be motivated to perform EGB (Ajzen, 1991). In contrast, other studies on EGB were carried out in steel company in Iran (Safari et al., 2018), diverse sectors across Europe (Ruepert et al., 2016), hotels in Pakistan (Ahmed et al., 2020), HEIs general employees in the Netherlands (Blok et al., 2014). However, EGB study on academics in Malaysia is limited (Muniandy & Anuar, 2020). Therefore, this study will investigate the role of attitude, environmental concern, and PBC on EGB among academics in Malaysian HEIs.

## 2. Literature Review
### 2.1 Attitude and Employee Green Behaviour
Attitude is a positive or negative evaluation of a topic (Verma et al., 2019). Milfont and Duckitt (2010) denoted attitude toward the environment as the psychological tendency to assess a degree of favour or disfavour about environmental issues. Since the consequences that come to be linked to a specific behaviour are already valued positively or negatively, people inevitably and concurrently obtain an attitude toward the Behaviour. The positive attitudes toward Behaviours are formed when it is believed to produce mainly desirable outcomes. Such is the attitude toward EGB, which is the positive disposition that performing EGB will help reduce or eliminate environmental degradation and its effects, such as climate change.

Even though studies have asserted that attitude does not directly impact behaviour (Blok et al., 2014), other studies have shown that an individual's attitude has a significant impact on green behaviour (Lee & Jan 2015; Polonsky et al., 2012; Tian et al., 2020). Similarly, it was revealed that specific behaviours could be well predicted from compatible measures of attitude, attitude toward the behaviour (Ajzen & Fishbein, 2005). The study among China employees discovered that pro-environmental attitude positively impacted the obligatory EGB and voluntary EGB (Tian et al., 2020). Likewise, Polonsky et al. (2012) found out that individuals with higher attitudes engaged in more green behaviour. Based on this postulation, it can be hypothesised that;
H1: Attitude is positively related to green employee behaviour.

### 2.2 Environmental Concern and Employee Green Behaviour
Environmental concern is regarded as an effect linked with beliefs about environmental problems (Schultz et al., 2004). Hu et al. (2010) defined environmental concern as "the degree to which people are aware of problems regarding the environment and support efforts to solve them and or indicate the willingness to contribute personally to their solution". Environmental concern differs from the attitude because it is an extended and precisely directed state of emotion. A person starts engaging himself with emotional thoughts such as being worried, displeasure, and compassion towards environmental matters (Milfont & Gouveia, 2006).

Environmental concern has been revealed to be a vital prerequisite of nurturing long-lasting workplace green behaviour, and consequently lessen the growing threat of climate change (Takács-Sánta, 2007). When a concern is raised about an issue such as environmental degradation, it ignites the inner drive to carry out behaviours, which would alleviate degradation in the environment (Chan et al., 2014). Previous studies seldom examined the role of environmental concern on EGB. However, studies have shown that highly concerned employees are more motivated to encourage and practice EGB than less concerned employees (Ahmed et al., 2020; Kura, 2016). Studies showed that EC strongly predicted the willingness to pay for organic food, based on pro-environmental behaviour (Shin et al., 2019). In the same vein, other studies narrated that environmental concern has been established to be a significant predictor of employee's green behaviour at work (Bissing-olson et al., 2013; Fujii, 2006). Based on this postulation, it is hypothesised that;

H2: Environmental concern is positively related to green employee behaviour.

## 2.3 Perceived Behavioural Control and Employee Green Behaviour

Perceived behavioural control refers to individuals' confidence to perform a behaviour successfully and the resources' availability to ensure that the behaviour is performed easily (Ajzen, 1991). PBC indicates "a person's belief as to how easy or difficult it would be to perform the behaviour" (De Groot & Steg, 2007; p. 1818). Among the personal attributes, studies have found that perceived behavioural control has an essential role in encouraging green behaviour (Arli et al., 2019; Esfandiar et al., 2020). It is posited that when facilitating conditions are available, such as a labelled recycling bin, green shuttle bus. Also, adequate knowledge, skills, and confidence to perform green behaviour effectively will motivate people to participate in green workplace behaviour. Employees with higher PBC will have a greater performance of EGB (Zierler et al., 2017). Based on this postulation, it is hypothesised that:

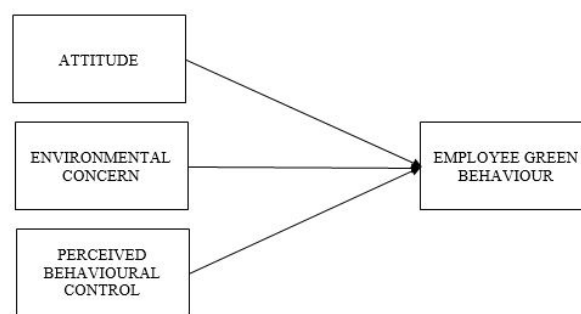H3: Perceived behavioural control is significantly related to employee green behaviour.



Figure 1. Research framework

## 3. Methods

### 3.1 Participants and Procedure

Data were collected from academics in Malaysian research universities via a self-administered survey between December 2019 and March 2020 using a convenience sampling technique. A total of 665 questionnaires were distributed, 483 questionnaires were returned, and however, 425 questionnaires were valid (63.91% response rate). The minimum sample size was determined using the sampling size table of Krejcie and Morgan, (1970) and Raosoft.com (2019), which indicated a minimum sample size of 375 and 373. Hence, 425 returned, and useable questionnaire is sufficient for this study.

### 3.2 Measurements

The first part of the questionnaire focused on the actual EGB in the workplace. The seven items were adapted from Blok et al. (2014), which originally contained 20 items. However, based on the fact that this study focused on specific behaviour, seven items were adapted. This approach is similar to Wesselink et al. (2017) who also adapted items from Blok et al. (2014). Responses were captured on a 5-point Likert-type scale with potential responses ranging from 1 (never) to 5 (always). The second part of the questionnaire focused on attitude toward environmental sustainability in the HEIs. The ATT was measured by a 4-item scale, which was adapted from Blok et al. (2014) with internal consistency reliability of 0.86. The measurement scales were scored on a 5-point Likert-type scale with responses to statements ranging from (1) "Strongly disagree" to (5) "Strongly agree".

Next, the environmental concern was measured. EC was measured by a 5-item scale adapted from Urban and Scasny (2012) with an internal consistency reliability of 0.85. The measurement scales were scored on a 5-point Likert-type scale with responses to statements ranging from (1) "Not at all concerned" to (5) "Extremely concerned". Lastly, PBC was measured by a 5-item scale adapted from Swaim et al. (2014) with an internal consistency reliability of 0.80. The measurement scales were scored on a 5-point Likert-type scale with responses to statements ranging from (1) "Strongly disagree" to (5) "Strongly agree". The last part of the questionnaire was the demographic section which contained general questions such as, age, gender, race/ethnicity, marital status, the highest level of education, monthly income and current designation.

**3.3 Data Analysis**

For analysing the research model, SPSS 25 and Smart PLS 3.0 were used. The measurement model was examined, followed by an analysis of the structural model (see Hair, Hult, Ringle, & Sarstedt, 2016).

## 4. Findings

### 4.1 Demographic Profile of Respondents

A total of 665 questionnaires were distributed; however, only 425 respondents` data was relevant for the analysis. Hence the response rate was 63.91%. The participants comprised 289 (68 percent) women and 136 (32 percent) men. Their mean age was 41.21 years (SD = 1.67; range 39–43 years). 84.9 percent held a PhD degree while 0.7 percent had other advanced degrees. 56.7 percent were senior lecturers while 6.6 percent were professors.

### 4.2 Statistical analysis

The descriptive statistics of the constructs are as shown in Table 1. Attitude is recorded a mean value of 4.58 (on a 5-point Likert scale), and standard deviation (SD) of 0.51. Environmental concern has a mean of 4.66, with SD of 0.48. 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' attitude toward environmental sustainability is high, indicating that they have a favourable disposition toward environmental-friendly practices in the HEIs. Environmental concern is shown to be heightened in the mind of academics. Also, PBC is shown to be indicated to be high among academics. However, academics' EGB was average, which could be attributed to the lack of proper employees centred environmental policies in HEIs.

Table 1. Descriptive statistics

| Variables (N= 425) | Mean | Standard Deviation |
|---|---|---|
| Attitude | 4.58 | 0.51 |
| Environmental concern | 4.66 | 0.48 |
| Perceived behavioural control | 4.04 | 0.69 |
| EGB | 3.52 | 0.84 |

### 4.3 Measurement Model

The model is examined by checking the convergent validity, followed by discriminant validity. According to Hair, Hult, Ringle, Sarstedt, and Thiele, (2017), the factor loading, average variance extracted (AVE) and composite reliability (CR) are used to test the convergent validity. Further, for the factor loadings, it has been cited that factor loading of 0.4 to 0.7 is acceptable as long as the CR and AVE are satisfactory (Hair, Hult, Ringle, & Sarstedt, 2014). As indicated in Table 2, most of the factor loadings are above 0.7, except for EGB, which has factor loading between 0.683 and 0.779. Nevertheless, it is satisfactory, as well. 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 & Larcker, 1981).

Table 2. The result of Construct Validity and Reliability

| Construct | Items | Factor Loading | CR | AVE |
|---|---|---|---|---|
| EGB | "I make sure that air-conditioning is switched off when not in the office". | 0.776 | 0.858 | 0.549 |
| | " I print and photocopy double-sided". | 0.779 | | |
| | "I switch off my computer/notebook when I leave my office for a considerable period". | 0.771 | | |
| | "I switch off the lights when I leave my office for a considerable period of time, and there is no one else". | 0.690 | | |
| | "I recycle plastics." | 0.683 | | |
| Attitude | I am in favour of behaving pro-environmentally in the workplace. | 0.851 | 0.913 | 0.777 |
| | I think it's a good idea for this university as an employer to support the pro-environmental Behaviour in the workplace. | 0.875 | | |
| | The pro-environmental Behaviour in the workplace is important to me. | 0.917 | | |
| Environmental concern | I am concerned about air pollution. | 0.867 | 0.942 | 0.765 |
| | I am concerned about climate change. | 0.896 | | |
| | I am concerned about natural resources depletion. | 0.893 | | |

| | | | | |
|---|---|---|---|---|
| PBC | I am concerned about water pollution. | 0.872 | | |
| | I am concerned about waste generation. | 0.843 | | |
| | It is easy for me to perform pro-environmental activities in the workplace. | 0.813 | 0.914 | 0.681 |
| | 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. | 0.781 | | |
| | I have the ability to perform pro-environmentally in the workplace. | 0.875 | | |
| | I have control over performing pro-environmental activities in the workplace. | 0.812 | | |

Note: EGB 6 and 7; ATT 4 were deleted because of low factor loading

For testing the discriminant validity, a study by Gholami, Sulaiman, Ramayah, and Molla (2013) have posited that discriminant validity is attained when a clear distinction among different constructs. Also, how many indicators characterise only on a single construct. Precise assessment on discriminant validity is vital to confirm that the constructs are statistically unique and differ from other constructs (Hair, Risher, Sarstedt, & Ringle, 2019). As proposed by Henseler, Ringle, and Sarstedt, (2015), at this stage, the study will report it using the HTMT ratio. It is posited that if the HTMT value is greater than 0.85, this indicates a severe issue in discriminant validity (Franke & Sarstedt, 2019). As shown in Table 3, the HTMT criterion is below 0.85 thresholds, demonstrating that the discriminate validity was established.

Table 3. Discriminant validity (HTMT)

| | ATT | EC | EGB | PBC |
|---|---|---|---|---|
| ATT | | | | |
| EC | 0.562 | | | |
| EGB | 0.396 | 0.346 | | |
| PBC | 0.457 | 0.310 | 0.322 | |

## 4.4 Structural Model

Before commencing the hypothesis testing, it is necessary to confirm no problematic issue with lateral collinearity in the structural model. According to Diamantopoulos & Siguaw, (2006), the variance inflation factor (VIF) which measures the collinearity must be lower than 3.3. Table 4 indicates that all the VIF values are lower than the threshold value set by Diamantopoulos and Siguaw (2006), thus confirming the collinearity is not a problem for this study. For the hypothesis testing, using the bootstrapping technique with a re-sampling of 5000, the resolution to accept the hypothesis is established on value of the t-value, p-value and also confidence interval bias corrected. According to the analysis, all three hypotheses developed, were supported. The study found that attitude was positively related to EGB (ß =0.186, t = 3.468: LL = 0.093, UL = 0.269, P < 0.001), hence H1 was supported. Further, environmental concern was positively related to EGB (ß =0.142, t = 2.391: LL = 0.047, UL = 0.240, P < 0.05), hence H2 was supported. Likewise, PBC was positively related to EGB (ß = 0.172, t = 3.205: LL = 0.080, UL = 0.257, P < 0.05). Hence H3 is supported.

Table 4. Hypothesis Testing

| | Beta | SE | T Stat | P Values | LL | UL | Decision | VIF |
|---|---|---|---|---|---|---|---|---|
| ATT -> EGB | 0.186 | 0.053 | 3.468 | 0.000 | 0.093 | 0.269 | Supported | 1.473 |
| EC -> EGB | 0.142 | 0.059 | 2.391 | 0.008 | 0.047 | 0.240 | Supported | 1.353 |
| PBC -> EGB | 0.172 | 0.054 | 3.205 | 0.001 | 0.080 | 0.257 | Supported | 1.214 |

Table 5 shows the calculation of the coefficient of determination ($R^2$), the effect size ($f^2$) and the predictive relevance ($Q^2$) of predictive variables on criterion variables of EGB. Based on the table, the $R^2$ of 0.196 indicated that attitude, PBC and environmental concern explain 19.6% of the overall variance of EGB. In this discipline of study regarding EGB, with three independent variables, $R^2$ value of 19.6% is acceptable. For analysing the predictive accuracy, the study used the $Q^2$ by Geisser, (1974). A blindfolding procedure was conducted to assess the predictive power of the model. Analysing using a distance of 7, the $Q^2$ indicates the predictive significance for definite criterion variables if the $Q^2$ assessment is more than 0 (Fornell & Cha, 1994; Hair et al., 2017). The

$Q^2$ of the criterion variables, EGB is 0.101, indicating an acceptable predictive relevance. According to Cohen (1992), effect size, for effect size; 0.35, 015, and 0.02, is considered large, medium, and small effect sizes, respectively. The study found that attitude, environmental concern, and PBC has a small effect size on the EGB (0.029; 0.019; 0.030), respectively.

Table 5. Coefficient of Determination (R2), and Effect Size (f2)

| Construct | $R^2$ | $Q^2$ | $F^2$ | Decision |
|---|---|---|---|---|
| EGB | 0.196 | 0.101 | | |
| ATT | | | 0.029 | Small |
| EC | | | 0.019 | Small |
| PBC | | | 0.030 | Small |

## 5. Discussion

The findings of this study have been outstanding. It was discovered that the attitude toward environmental sustainability significantly impacts EGB. This finding is aligned with previous studies (Muniandy & Anuar, 2020), narrated that employees' favourable disposition toward environmental sustainability behaviour will lead them to perform EGB. The finding showed that EC significantly predicted EGB, which is aligned with previous results (Kura, 2016; Okumus et al., 2019). Highly concerned employees regarding the environment's state are depicted to have increased willingness and motivation to perform EGB. Finally, PBC is shown to influence EGB significantly. This finding is in tandem with previous studies (Esfandiar et al., 2020; Van den Broek et al., 2019). It is declared that the confidence of carrying out green behaviour and the provision of facilities to aid the execution of such green behaviour, will lead to the practice of EGB.

### 5.1    Theoretical and Practical Contribution

This study contributes to understanding the blend of TPB and VBN in explaining the practice of EGB. This study further clarifies the attitude-behaviour link, as suggested by Ajzen and Fishbein (2005). It shows that the behaviour-specific attitude will directly impact a specific behaviour. Also, EC derived from VBN is highlighted to have a great impact in addition to TPB. This study clarifies the important role of environmental concern in stimulating EGB among employees. PBC reiterates the argument of Ajzen (1991) that PBC will directly impact behaviour. The finding of this study also contributes to understanding how employees can be encouraged to practise EGB. Policymakers and top management should encourage a positive attitude toward environmental sustainability behaviour, heightened environmental concern, and PBC among employees. Top management should consistently make employees aware of the degradation of the environment.

The top management should convey a clear understanding of the need to alleviate environmental degradation because of the impending danger to the world and how this can be carried out to the employees. It is pivotal because of the need to understand the disastrous effect of irresponsibly disposing of batteries, papers, plastic, and glass on the eco-system. Not properly recycled batteries may end up in the landfill, thus contaminating the soil and water through toxic chemicals leakage into the ground. It adversely affects aquatic animals, plants, and human health. Further burning batteries creates air pollution, which could adversely affect human health. Recycling glass can reduce the energy that should have been expended on making a new glass and also evade water pollution during its manufacturing process.

Further, top management should make provisions for facilities that would ease the performance of EGB. It consists of labelled recycling bins, stickers reminding employees to switch off all electronics when leaving office, access to shuttle buses, encouragement, and provision for online conferences. Further, top management should lead by example by portraying environmental friendly behaviours, so that employees can be encouraged to practise such green behaviours. Finally, top management should recognise and reward employees' green performance so that employees can be encouraged and so that the green values can be instilled in employees.

### 5.2    Limitations, Future Research Directions, and Conclusion

This study has some limitations which can serve as the basis for future studies. Future studies should investigate further the attitude-behaviour relationship by understanding the characteristics of attitude. It will be great to understand the mediating role of attitude between environmental concern and EGB. Other variables such as environmental knowledge and personal moral norms should be examined in predicting EGB in future studies. Further, this study cannot be generalised to other countries due to different cultural contexts. Future studies should be carried out in other countries, especially in emerging and developed economies.

Finally, this study used a quantitative method, with an administered questionnaire to collect data. Future studies may use qualitative methods through structured and semi-structured interviews to investigate how the role

of attitude, environmental concern, and PBC impacts EGB of academics in the short and long term. This study examines the direct link between attitude, EC, and PBC with EGB. It shows that employees' attitudinal disposition, their environmental concern, and PBC significantly impacts the EGB. It shows the importance of psychological variables in stimulating EGB, and this should be highly encouraged in the HEIs and other organisations.

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