

Going Green in the Workplace: Through the Lens of the Extended Theory of Planned Behaviour

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ABSTRACT

The success of green organisational initiatives depends completely on individual employees' behaviour. Therefore, the current study aimed to examine the determinants of green workplace behaviour in the Malaysian governmental work settings. The study's theoretical framework was based on the theory of planned behaviour. PLS-SEM was utilised to analyse data collected from 460 respondents from Malaysian public organisations, which revealed the following results: (1) green workplace behavioural intention positively influences green workplace behaviour; (2) attitude towards green workplace behaviour, supervisor's green workplace behaviour, colleagues' green workplace behaviour, and perceived behavioural control have positive effects on green workplace behavioural intention; (3) environmental knowledge positively influences attitude towards green workplace behaviour. This study's findings enhance the theoretical foundation of green workplace behaviour and can assist public organisations in promoting green workplace behaviour.

Keywords: Attitude, colleagues, green workplace behaviour, knowledge, Malaysia, perceived behavioural control, PLS-SEM, supervisors, Theory of Planned Behaviour

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INTRODUCTION

Environmental issues have gradually become woven into the organisational context following the increase in the public consciousness of the role and responsibility

of organisations in handling environment-related issues (Rayner & Morgan, 2018). Governments are also driving organisations to fulfil ecological enactments and guidelines; as a result, many organisations have set up formal and informal environmental administrative settings (Darnall & Sides, 2008). Furthermore, as more environmental rules and regulations are being introduced, coupled with pressures from the market, engaging in pro-environmental practices has become inevitable for organisations.

Besides that, stakeholders are becoming more alert about the consequences of business activities on the environment (Shen et al., 2018). Therefore, as an essential feature of corporate social responsibility, the movement towards green initiatives and sustainability has received overwhelming interest from various organisations, from for-profit to non-profit organisations (Sabri & Wijekoon, 2020). For the former, the notion of “being greener is good for business” is upheld because an organisation that practise green behaviour can generate more sales, increase its recognition, foster a good reputation, and be positively perceived by internal and external stakeholders (Dumont et al., 2017). Therefore, engagement in green initiatives is a responsibility and a form of competitive advantage for the organisation (Shen et al., 2018).

The practice of green human resource management has been widely adopted in various organisations to promote green workplace behaviour among employees (Tom & Soumyaja, 2019). In general, the success of organisational initiatives for green practices depends on individual

employees' behaviour (Norton et al., 2015). To explain, employees spend more than one-third of their daily time in the organisation; thus, their green behaviour at the workplace is impactful (Iqbal et al., 2018). The management of organisations has implemented various measures to meet the relevant requirements and expectations. Many organisations have started to regularly disclose reports of their environmental sustainability performance and allocate more funds to accomplish ecological sustainability (Iqbal et al., 2018).

Accordingly, De Roeck and Farooq (2018) described employees' green workplace behaviour as employees' involvement in environmentally friendly behaviour at the workplace, such as recycling and practising sustainable policies and rational use of resources (Fawehinmi et al., 2020). Furthermore, recent studies have encouraged the need to identify and understand the antecedents of employees' green workplace behaviour (Suganthi, 2019). For instance, Norton et al. (2015) urged future research to study individual-related predictors, such as employee perception and attitude, in determining employees' green workplace behaviour. Unfortunately, limited studies have undertaken such a perspective to study green workplace behaviour (Iqbal et al., 2018; Safari et al., 2018), thus, motivating the present study to address this gap. Furthermore, only a few previous studies identified antecedents of pro-environmental workplace behaviour (Razak & Sabri, 2019; Sabri et al., 2019; Wiernik et al., 2018), and inconsistencies were found (Sabri & Wijekoon, 2020).

Moreover, the effects of lower-level employees and leaders on green behaviour in the workplace can be rather substantial but have been poorly understood (Kim et al., 2017). In terms of managerial implications, identifying the role of lower-level employees and leaders within the context of green behaviour at the workplace is deemed important for employee engagement and commitment toward environmental sustainability. The study's findings may be the spark that ignites leaders' passion for creating environmentally sustainable organisations. Besides that, most past studies used the theory of planned behaviour as the underlying theory, but its adoption within the context of pro-environmental workplace behaviour has remained very limited. In terms of theoretical ramifications, the current study contributed to the knowledge in this field of research to a certain extent.

Therefore, the main objective of the current study is to identify the determinants of public employees' pro-environmental workplace behaviour using an extended model of the Theory of Planned Behaviour (TPB). More specifically, the study aims to test the inter-relationships between employees' environmental knowledge empirically, attitude towards green workplace behaviour, social norm (i.e., colleagues' green workplace behaviour and supervisor's green workplace behaviour), perceived behavioural control, green workplace behavioural intention, and green workplace behaviour. Thus, this study is one of the few studies investigating the antecedents of green behaviour in work

settings. More importantly, this study successfully addressed the gap in assessing public employees' intention to behave pro-environmentally, particularly within green human resource management. In other words, this study presented additional empirical evidence in the growing body of literature on the intention to go green in the workplace and the theory of planned behaviour from green human resource management perspectives.

Overall, this paper is structured as follows: after a thorough conceptual development, the study's methodology is explained, followed by the presentation and discussion of empirical results. Finally, the direction for future research and the study's limitations are presented at the end of this paper.

LITERATURE REVIEW

Conceptual Development

Theory of Planned Behaviour (TPB).

According to the Theory of Reasoned Action (TRA), behavioural intention is largely a function of attitude and social norms (Ajzen & Fishbein, 1980). The greater the intensity of one's positive attitude towards a behaviour, the higher the likelihood of performing the behaviour. Meanwhile, social norm refers to the opinions of other individuals who are essential to the individual, such as family, friends, and colleagues, which can also influence one's behavioural intention. TPB originated from the TRA, which explicates that behavioural intention can predict a large part of human behaviour, assuming that the behaviour is

volitional (Ajzen & Fishbein, 1980). As an extension of TRA, TPB argues that one's behavioural intention is often restricted by non-volitional factors (e.g. resources), and there is a need to consider the role of control beliefs (Ajzen, 2002), which explains the addition of perceived behavioural control.

In a recent study, Sabri et al. (2019) examined Malaysian public employees' pro-environmental workplace behaviour and examined attitude, social norms, and perceived behavioural control as the antecedents of pro-environmental workplace behaviour. Based on the results, the study revealed that attitude and perceived behavioural control were directly included in the theoretical framework but opted to replace social norms with the roles of colleagues and supervisors based on the evidence presented by previous studies. For instance, Ndubisi (2004) applied TPB to examine the intention to adopt e-learning and replaced social norms with course supervisors. In another study, Firing et al. (2012) studied the effect of peers in Norwegian cadets' military training and used colleagues as one of the variables under the social norm. Meanwhile, Tilikidou (2007) observed the effect of environmental knowledge on the formation of pro-environmental attitudes in Greeks. In the study, the attitude was translated into pro-environmental purchase behaviour via pro-environmental purchase intention.

Previous studies presented evidence on the positive relationship between supervisors and behavioural intention (Ndubisi, 2004), the positive relationship

between colleagues and behavioural intention (Firing et al., 2012), the positive relationship between perceived behavioural control and behavioural intention (Sabri et al., 2019), the positive relationship between perceived behavioural control and behaviour (Wijayaningtyas et al., 2019), and the positive relationship between behavioural intention and behaviour (Sabri et al., 2019). Furthermore, previous studies validated the applicability of TPB in explaining green behaviour, either in workplace settings or non-workplace settings (Razak & Sabri, 2019; Sabri et al., 2019). Thus, TPB and its constructs were used in the current study's theoretical framework.

Green Workplace Behaviour. Ones and Dilchert (2012, p. 452) described green workplace behaviour as "scalable actions and behaviours that employees engage in that are linked with and contribute to or detract from environmental sustainability." In general, individuals are said to be involved in pro-environmental behaviour when they behave positively toward the environment; and green workplace behaviour is a form of pro-environmental behaviour (Safari et al., 2018).

The employees are the core that determines the success of the green workplace movement. Therefore, it is paramount for organisations to redirect their focus on them despite all the efforts from the management to foster green workplace behaviour. Studies have demonstrated the substantial influence of employees' voluntary participation on organisational greening efforts (Kim et al.,

2017). Furthermore, it is significant to note that employees have different financial interests at the workplace and home and, consequently, exhibit different patterns and intensities of green behaviour (Manika et al., 2015). For example, employees would normally be more engaged in energy-saving practices at home but less concerned about energy usage at the workplace since they are not bearing the costs. More research attention is needed considering the comparatively fewer studies on green behaviour in the workplace (Wells et al., 2016). Thus, understanding antecedents of green workplace behaviour from employees' perspectives can yield fruitful insights and contribute to the literature on management practices and interventions that promote employees' green workplace behaviour (Kim et al., 2017).

Meanwhile, green workplace behavioural intention refers to employees' intention to behave in environmentally responsible ways at the workplace. Therefore, identifying the relationship between green workplace behavioural intention and actual green workplace behaviour is vital in environmental psychology and organisational sustainability literature (Norton et al., 2015).

Therefore, adhering to the suggestion of Norton et al. (2015), the current study incorporated both behavioural intention and actual behaviour and examined the relationships between both constructs:

H₁: Employees' green workplace behavioural intention is positively linked to green workplace behaviour.

Attitude. Attitude is one's beliefs about the consequences of a particular behaviour (Ajzen, 1991). It corresponds to one's judgment towards a specific behaviour, influencing future behavioural intention (Aw & Chong, 2019). The greater the intensity of one's positive attitude towards a particular behaviour, the higher the likelihood of performing the behaviour (Ajzen, 2002). Money-related attitude is particularly important to enhance the financial well-being of employees (Sabri & Aw, 2019; Sabri et al., 2020). Therefore, attitude is significant to building employees' eagerness to participate in organisational green workplace behaviour.

Past studies discovered a positive relationship between employees' attitude and their intention to perform green workplace behaviour. For example, using a sample of Malaysian public employees, prior studies demonstrated the significant role of attitude in determining pro-environmental workplace behaviour (Razak & Sabri, 2019; Sabri et al., 2019).

Therefore, the following hypothesis was proposed for testing in the current study:

H₂: Attitude towards green workplace behaviour is positively related to employees' green workplace behavioural intention.

Social Norm. Social norm denotes the standards recognised by fellows of a group that can significantly direct and influence one's behaviour (Ajzen, 1991). In the context of the current study, social norm within the organisational context is related

to the perception of what is typically witnessed among colleagues and supervisors (Schneider et al., 2013). Wang et al. (2011) found that individuals are likely to follow the advice on electricity conservation from other individuals close to them. Similarly, a colleague's green workplace behaviour can evoke one's intention to perform green workplace behaviour. Employees tend to conform to electricity conservation practices when they observe or know that their colleagues behave similarly (Wang et al., 2019). Besides that, in the green workplace behaviour context, leaders who engage and encourage employees to perform green behaviour should demonstrate their support to employees, thus, elevating the likelihood of employees performing green workplace behaviour (Manika et al., 2015).

Thus, the following hypotheses were established for testing in the current study:

H₃: Colleague's green workplace behaviour is positively related to employees' green workplace behavioural intention.

H₄: Supervisor's green workplace behaviour is positively related to employees' green workplace behavioural intention.

Perceived Behavioural Control. Perceived behavioural control denotes one's perception of how difficult it would be to perform a particular behaviour (Ajzen, 1991). Employees may be constrained by many factors at the workplace that impede them from engaging in green workplace behaviour. Therefore, employees are more

inclined to perform green behaviour in the workplace when relevant infrastructures and facilities are available (Manika et al., 2015). Previous studies (Razak & Sabri, 2019; Sabri et al., 2019) supported the importance of perceived behavioural control in predicting green workplace behaviour.

Thus, the following hypotheses were formulated:

H₅: Perceived behavioural control is positively related to employees' green workplace behavioural intention.

H₆: Perceived behavioural control is positively related to employees' green workplace behaviour.

Knowledge. Individuals tend to avoid certain behaviours and situations when they have inadequate knowledge of the behaviour and situation (Saeed et al., 2019). Many employees are not aware of the implications of their seemingly non-environmental-related behaviour on the environment (Iqbal et al., 2018). Theoretically, possessing strong knowledge about green workplace behaviour induces high passion and emotional involvement, which activates personal disposition (i.e., attitude) towards the behaviour (Afsar et al., 2016). For instance, Safari et al. (2018) found that employees with enhanced environmental knowledge are more committed to engaging in green initiatives at their workplace. In addition, Ojo et al. (2019) highlighted that employees with new knowledge are more likely to develop a positive attitude towards green information technology practices.

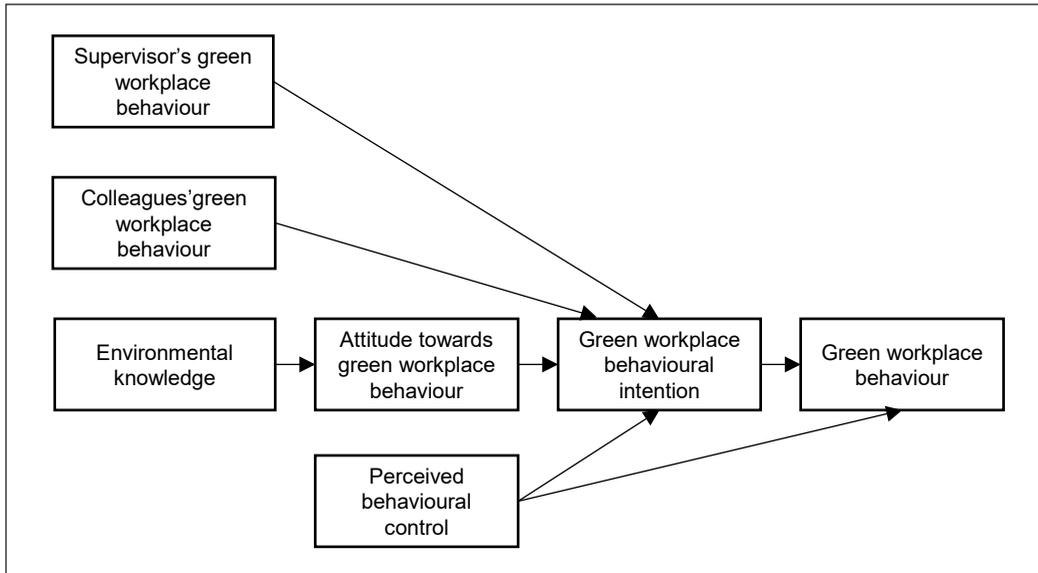


Figure 1. Proposed conceptual model

Therefore, the following hypothesis was formulated for testing in this study:

H₇: Environmental knowledge is positively related to attitude towards green workplace behaviour.

Figure 1 presents the study’s proposed model based on the above literature.

MATERIALS AND METHODS

Data Collection

A cross-sectional design was applied in the current study, where all data were gathered via self-administered questionnaires. First, similar to the approach used by Aw and Sabri (2020), five government ministries situated in the Federal Territory of Putrajaya, Malaysia, were selected using the simple random sampling procedure. Following that, the systematic sampling method was utilised to select employees from the existing directories from each government

ministry. Finally, 500 self-administered questionnaires were distributed, and only 460 completed questionnaires were received.

As presented in Table 1, 60.7% of the total respondents in this study were female. Furthermore, about 82.8% of the total respondents were 25 to 44, followed by the older age category of 45 and above (12.2%). In addition, 45.2% of the total respondents reported having at least a bachelor’s degree.

Instrumentation

The developed instrument consisted of a different number of survey items to measure different constructs: (1) attitude towards green workplace behaviour (six items); (2) environmental knowledge (10 items); (3) colleagues’ green workplace behaviour (four items); (4) supervisor’s green workplace behaviour (four items); (5) perceived behavioural control (five items); (6) green workplace behavioural intention (six items).

Table 1
Demographic profile of respondents

Variables	Frequency (n = 460)	Percentage (%)
Gender		
Male	181	39.3
Female	279	60.7
Age Group (years)		
24 and below	23	5.0
25–34	209	45.4
35–44	172	37.4
45–54	39	8.5
55 and above	17	3.7
Education Level		
Secondary School	115	25.0
Diploma	137	29.8
Bachelor’s Degree	168	36.5
Postgraduate	40	8.7
Occupational Categories		
Professional White Collar	24	5.2
Skilled White Collar	56	12.2
Light Blue Collar	155	33.7
Skilled Blue Collar	180	39.1
Unskilled Heavy Blue Collar	45	9.8

Accordingly, the measurement items on attitude towards green workplace behaviour, colleagues’ green workplace behaviour, supervisor’s green workplace behaviour, perceived behavioural control, and green workplace behavioural intention was adopted from previous studies (Blok et al., 2015; Hargreaves, 2011) and altered to fit the settings of green workplace behaviour in Malaysia. The responses for the constructs (except for green workplace behaviour) were anchored on a five-point Likert scale, with the endpoints of “strongly disagree”

(1) and “strongly agree” (5). Meanwhile, the scale of green workplace behaviour was adapted from Lee et al. (1995) and Francoeur et al. (2019), ranging from “never” (1) to “regularly” (3) (Appendix 1).

On the other hand, the measurement items on environmental knowledge were adopted from Dunlap et al. (2000). The environmental knowledge construct was measured based on understanding the guidelines for green workplace activity in Malaysian public organisations. A Yes/No format was used for these questions on environmental knowledge.

Data Analysis

PLS-SEM was utilised for the testing of the suggested hypotheses in this study. PLS-SEM was deemed fitting for the current study due to its soft-modelling approach, with less stringent data distribution assumption, which is often seen as unrealistic in the social science field. Moreover, numerous past studies on green behaviour employed PLS-SEM as their data analysis tool (Al-Ghazali & Afsar, 2020; Chuah et al., 2020).

RESULTS AND DISCUSSION

In the initial phase, the measurement model was assessed in terms of factor loadings, composite reliability (CR), discriminant validity, and average variance explained (AVE) (Hair et al., 2021). As shown in Table 2, all constructs exhibited a CR of greater than 0.7 and an AVE value of greater than 0.5 (Hair et al., 2021). This study had to drop one item for the green workplace behaviour construct as it did not achieve the

threshold value of AVE. The recorded factor loadings ranged from 0.496 to 0.884, above the minimum requirement proposed by Hair et al. (2021). Subsequently, discriminant validity was calculated using the heterotrait-monotrait ratio of correlations (HTMT)

criterion by Henseler et al. (2015). As exhibited in Table 3, the HTMT ratios were lower than the threshold value of 0.85 (Kline, 2011), thus, demonstrating discriminant validity.

Table 2
Measurement model: Factor loadings, composite reliability (CR), and average variance explained (AVE)

Constructs	Loadings	CR	AVE
1) Attitude towards green workplace behaviour		0.913	0.637
I support green activities in the office.	0.820		
I think the information kiosk promoting green activities provided by the management is essential to support green workplace behaviour.	0.815		
Green activities in the office are very important to me.	0.806		
I think green activities in the office are good.	0.853		
I think green behaviour in the office can reduce solid waste.	0.774		
I feel happy to work in an office that supports green activities.	0.716		
2) Environmental knowledge		0.925	0.657
Humans have the right to modify the natural environment to suit their needs.	0.725		
When humans interfere with nature, it often produces disastrous consequences.	0.821		
Human ingenuity will ensure that we do not make the earth unliveable.	0.787		
Humans are severely abusing the environment.	0.931		
The earth has plenty of natural resources if we just learn how to develop them.	0.854		
Plants and animals have as much right to exist as humans.	0.789		
The balance of nature is strong enough to cope with the impacts of modern industrial nations.	0.851		
Despite our special abilities, humans are still subject to the laws of nature.	0.748		
The balance of nature is very delicate and easily upset.	0.964		
If things continue their present course, we will soon experience a major ecological catastrophe.	0.981		
3) Colleagues' green workplace behaviour		0.897	0.688
My colleagues print documents on both sides of the paper.	0.873		
My colleagues photocopied documents on both sides of the paper.	0.884		
My colleagues use recycled paper in the office.	0.842		
My colleagues switch off computers before leaving the office.	0.706		
4) Supervisor's green workplace behaviour		0.882	0.651
My supervisor supports green behaviour in the office.	0.847		
My supervisor uses recycled paper as notes.	0.814		
My supervisor always reminds me of the long-term benefits of green behaviour.	0.796		

Table 2 (continue)

Constructs	Loadings	CR	AVE
My supervisor always challenges me to think of ways to recycle and reuse resources in the office.	0.768		
5) Perceived behavioural control		0.873	0.541
Printing documents on both sides of the paper is an easy task.	0.834		
Photocopying documents on both sides of the paper is an easy task.	0.837		
I have time to cut recycled paper to reuse as small notes.	0.496		
I can prepare my box to collect recycled paper.	0.690		
Reporting water leaking issues to management is an easy task.	0.790		
I can do green activities in the office if I want.	0.709		
6) Green workplace behavioural intention		0.918	0.653
I will print documents on both sides of the paper.	0.877		
I will photocopy documents on both sides of the paper.	0.871		
I will use recycled paper to make notes.	0.700		
I will collect recycled paper.	0.778		
I will report the leaking water issue (if any) to management.	0.796		
I will participate in green activities in the office.	0.813		
7) Green workplace behaviour		0.823	0.539
I print documents on both sides of the paper.	0.733		
I photocopy documents on both sides of the paper.	0.738		
I use recycled paper to make notes.	0.672		
I report the leaking water issue (if any) to management.	0.681		

Table 3
Discriminant validity (HTMT criterion)

	1	2	3	4	5	6	7
1. Attitude towards green workplace behaviour							
2. Green workplace behaviour	0.336						
3. Colleagues' green workplace behaviour	0.452	0.472					
4. Green workplace behavioural intention	0.661	0.464	0.494				
5. Environmental knowledge	0.092	0.185	0.055	0.165			
6. Perceived behavioural control	0.612	0.466	0.479	0.842	0.192		
7. Supervisor's green workplace behaviour	0.425	0.457	0.606	0.509	0.157	0.577	

In the second phase, the structural model was evaluated. Based on the suggestion by Hair et al. (2021), the multicollinearity issue was examined. The results indicated that the highest variance inflation factor (VIF) was 1.596, below the threshold value

of 3.3. The model exhibited R² values of 0.601 for green workplace behavioural intention and 0.215 for green workplace behaviour. The blindfolding procedure returned Q² values of greater than 0 for both green workplace behavioural intention

and green workplace behaviour, thus, implying sufficient predictive accuracy of the structural model. The model exhibited a good fit, indicated by the standardised root mean square residual (SRMR) value of 0.072, below the threshold value of 0.08 (Hair et al., 2021).

Subsequently, a bootstrapping procedure with 5000 sub-samples was applied to examine the significance of the hypothesised effects. As shown in Table 4, the results showed that green workplace behavioural intention ($\beta = 0.250, p < 0.05$) and perceived behavioural intention ($\beta = 0.178, p < 0.05$) positively influenced green workplace behaviour. Based on the results, attitude towards green workplace behaviour ($\beta = 0.253, p < 0.05$), supervisor's green workplace behaviour ($\beta = 0.064, p < 0.05$), colleagues' green workplace behaviour ($\beta = 0.091, p < 0.05$), and perceived behavioural control ($\beta = 0.527, p < 0.05$) significantly

influenced green workplace behavioural intention in this study. Lastly, environmental knowledge significantly influenced attitude towards green workplace behaviour ($\beta = 0.088, p < 0.05$). In sum, all hypotheses in this study were supported. In a previous study's review on the determinants of green behavioural intention and green behaviour, Wijekoon and Sabri (2021) found similar constructs as significant determinants of green behaviour.

According to Ajzen (1991), behavioural intention is an immediate antecedent if performing a specific behaviour, and the formation of positive behavioural intention towards the actual behaviour is vital for performing the behaviour. For example, positive intention toward pro-environmental workplace behaviour directs employees to perform green organisational behaviour (Sabri et al., 2019). Hosseinpour et al. (2015) also revealed the importance of

Table 4
Results of hypotheses testing

Hypothesis	Relationship	Std. Beta	t-value	Decision
H ₁	Green workplace behavioural intention → Green workplace behaviour	0.250	3.420**	Supported
H ₂	Attitude towards green workplace behaviour → Green workplace behavioural intention	0.253	6.144**	Supported
H ₃	Colleagues' green workplace behaviour → Green workplace behavioural intention	0.091	2.119*	Supported
H ₄	Supervisor's green workplace behaviour → Green workplace behavioural intention	0.064	1.780*	Supported
H ₅	Perceived behavioural control → Green workplace behavioural intention	0.527	11.245**	Supported
H ₆	Perceived behavioural control → Green workplace behaviour	0.178	2.248*	Supported
H ₇	Environmental knowledge → Attitude toward green workplace behaviour	0.088	1.853*	Supported

Notes: **p < 0.01; *p < 0.05

intention toward green behaviour among Malaysians. Thus, H₁ was also confirmed.

Moreover, a positive attitude influences the formation of one's intention to form a specific behaviour. For example, in a Malaysian study, Sabri et al. (2019) found a positive relationship between employees' pro-environmental attitudes and pro-environmental intention; in other words, employees' positive feelings direct them to perform green behaviour in the workplace. Thus, H₂ in this study was also validated.

One of the most significant green workplace behaviours includes inspiring people to protect the environment through green practices (Francoeur et al., 2019). Furthermore, colleagues would perform certain pro-environmental practices at the workplace, for example, electricity conservation practices, if others practise similar behaviour (Wang et al., 2019). Supervisors can encourage other employees to perform green practices in the workplace (Manika et al., 2015). Their green practices at the workplace can also significantly influence other employees. Thus, the execution of green workplace behaviour at the workplace among the supervisors and colleagues is important, which further confirms H₃ and H₄ in this study.

If one perceives that performing the behaviour of interest is easy, then the positive intention is initiated, and the behaviour is performed (Ajzen, 1991). This fact was further confirmed by the current study results on the significance of perceived behavioural control, in which H₅ and H₆ were accepted. Razak and Sabri

(2019) and Sabri et al. (2019) also revealed similar findings.

According to Ojo et al. (2019), the employees' positive attitude towards green information technology practices accelerated with the acquisition of new knowledge. In addition, employees with an enhanced environmental knowledge were more committed to engaging in green initiatives at the workplace (Safari et al., 2018). Therefore, environmental knowledge plays an important role in forming a favourable attitude towards the appropriate behaviour, thus, supporting H₇ in this study.

By addressing the call for action of previous studies, this study contributed to the literature by exploring beyond external factors to identify individual factors that influence green workplace behaviour (Rezapouraghdam et al., 2018). Firstly, most prior studies focused on domestic settings (Gao et al., 2017). However, studies have shown that the environmental consequences caused by the workplace settings are far greater than that of residential consumption (Greaves et al., 2013). Thus, the current study took a step further by examining green behaviour in workplace settings.

Secondly, prior studies largely focused on employees' intention to perform green workplace behaviour and overlooked the inconsistency between behavioural intention and actual behaviour (Ajzen, 1991). Referring to the recommendation by Wang et al. (2019), the current study addressed the gap by examining both behavioural intention and actual behaviour and subsequently validated their inter-relationships.

Thirdly, prior studies that employed TPB to comprehend environmental behaviour rarely explored the additional antecedents of attitude and intention (Greaves et al., 2013), resulting in suboptimal ideas for practitioners. The current study extended the theory by examining and identifying the role of environmental knowledge in forming attitudes towards green workplace behaviour, which was rarely explored in prior studies. Besides that, social norms (i.e., colleagues' and supervisor's green workplace behaviour) were often overlooked in literature (Haouari et al., 2019), addressed in the current study. The obtained results in the current study revealed an interesting fact on the importance of the supervisors' green workplace behaviour in stimulating the employees' intention to perform green workplace behaviour. It suggests valuable insights into green workplace behaviour, suggesting the extended effects of high-power distance belief characteristics in Malaysia (Hofstede, 2001) within the green workplace context. In addition, the influence of colleagues' green workplace behaviour has been largely unexplored despite its significance (Norton et al., 2015), implying the essential role of colleagues in fostering green workplace behaviour in a collectivist culture.

Nonetheless, the current study encountered several drawbacks. Firstly, the current study mainly considered the direct effects of the selected constructs. Therefore, future studies should consider exploring potential heterogeneity within the proposed model. Secondly, the present study

was largely grounded on the theoretical lens of TPB. Hence, it is recommended that future research undertake and integrate other theoretical foundations, such as social exchange theory, to enhance the current model further. Moreover, individual differences have been considered a vital determinant of green behaviour (Brick & Lewis, 2016). Hence, future studies should include personal characteristics of employees, such as personality, in exploring their green workplace behaviour.

CONCLUSION

Green practices within an organisation are becoming increasingly important. However, many employees show less interest in engaging in green behaviour at the workplace. Therefore, organisations' employment of green initiatives would potentially fail without effective cooperation from the employees. Grounded on TPB, the current study identified green workplace behavioural intention as a predictor of actual green workplace behaviour. In addition, green workplace behavioural intention is predicted by attitude towards green workplace behaviour, colleagues' green workplace behaviour, supervisor's green workplace behaviour, and perceived behavioural control. On top of that, environmental knowledge positively and significantly influences attitudes towards green workplace behaviour.

Managerially, the study's findings present useful implications that can benefit various organisations, particularly within the Malaysian context. The proposed constructs

may provide practical interventions for the organisations to improve employees' green workplace behaviour. Firstly, given the importance of environmental knowledge in forming a positive attitude towards green workplace behaviour, relevant lectures and programmes on environmental protection need to be conducted to impart environmental knowledge and raise employees' concern towards green behaviour. Secondly, the members of the top management of organisations in Malaysia rarely provide sufficient incentives or rewards for employees who engage in green behaviour (Fernando et al., 2016). However, given the significant and positive effects of perceived behavioural control, it would be helpful if the management empowers employees to perform green behaviour by providing them with essential resources, such as recycling bins. Thirdly, supervisors need to play an exemplary role by proactively engaging in green workplace behaviour. It ensures that employees feel the urge to perform similar behaviour. Lastly, the significant role of colleagues' green workplace behaviour suggests the need for the human resource department to recruit and hire employees who can proactively initiate green behaviour at the workplace. Their actions can then stimulate other employees' intention to perform green behaviour in the workplace setting.

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REFERENCES

- Afsar, B., Badir, Y., & Kiani, U. S. (2016). Linking spiritual leadership and employee pro-environmental behavior: The influence of workplace spirituality, intrinsic motivation, and environmental passion. *Journal of Environmental Psychology, 45*, 79-88. <https://doi.org/10.1016/j.jenvp.2015.11.011>
- Ajzen, I. (1991). Theory of planned behavior. *Organization Behavior and Human Decision Process, 50*, 179-211.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology, 32*(4), 665-683.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Prentice-Hall.
- Al-Ghazali, B. M., & Afsar, B. (2020). Green human resource management and employees' green creativity: The roles of green behavioral intention and individual green values. *Corporate Social Responsibility and Environmental Management, 28*(1), 1-18. <https://doi.org/10.1002/csr.1987>
- Aw, E. C. X., & Chong, H. X. (2019). Understanding non-private label consumers' switching intention in emerging market. *Marketing Intelligence and Planning, 37*(6), 689-705. <https://doi.org/10.1108/MIP-11-2018-0514>.
- Aw, E. C. X., & Sabri, M. F. (2020). Single mothers' subjective well-being: Empirical evidence from Malaysia. *Health Care for Women International, 42*(4-6), 756-777. <https://doi.org/10.1080/07399332.2020.1744148>

- Blok, V., Wesselink, R., Studynka, O., & Kemp, R. (2015). Encouraging sustainability in the workplace: A survey on the pro-environmental behavior of university employees. *Journal of Cleaner Production*, *106*, 55-67. <https://doi.org/10.1016/j.jclepro.2014.07.063>
- Brick, C., & Lewis, G. J. (2016). Unearthing the “green” personality: Core traits predict environmentally friendly behavior. *Environment and Behavior*, *48*(5), 635-658. <https://doi.org/10.1177/0013916514554695>
- Chuah, S. H. W., El-Manstrly, D., Tseng, M. L., & Ramayah, T. (2020). Sustaining customer engagement behavior through corporate social responsibility: The roles of environmental concern and green trust. *Journal of Cleaner Production*, *262*, 121348. <https://doi.org/10.1016/j.jclepro.2020.121348>
- Darnall, N., & Sides, S. (2008). Assessing the performance of voluntary environmental programs: Does certification matter? *Policy Studies Journal*, *36*(1), 95-117. <https://doi.org/10.1111/j.1541-0072.2007.00255.x>
- De Roeck, K., & Farooq, O. (2018). Corporate social responsibility and ethical leadership: Investigating their interactive effect on employees’ socially responsible behaviors. *Journal of Business Ethics*, *151*(4), 923-939. <https://doi.org/10.1007/s10551-017-3656-6>
- Dumont, J., Shen, J., & Deng, X. (2017). Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values. *Human Resource Management*, *56*(4), 613-627. <https://doi.org/10.1002/hrm.21792>
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). New trends in measuring environmental attitudes. *Journal of Social Issues*, *56*(3), 425-442. <https://doi.org/10.1111/0022-4537.00176>
- Fawehinmi, O., Yusliza, M. Y., Mohamad, Z., Faezah, J. N., & Muhammad, Z. (2020). Assessing the green behavior of academics. *International Journal of Manpower*, *41*(7), 879-900. <https://doi.org/10.1108/IJM-07-2019-0347>
- Fernando, Y., Wah, W. X., & Shaharudin, M. S. (2016). Does a firm’s innovation category matter in practicing eco-innovation? Evidence from the lens of Malaysian companies practicing green technology. *Journal of Manufacturing Technology Management*, *27*(2), 208-233. <https://doi.org/10.1108/JMTM-02-2015-0008>
- Firing, K., Karlsdottir, R., Laberg, J. C., & Wicklund, R. A. (2012). An experimental study of social norms in situation. *Military Psychology*, *24*(6), 542-550. <https://doi.org/10.1080/08995605.2012.742841>
- Francoeur, V., Paillé, P., Yuriev, A., & Boiral, O. (2019). The measurement of green workplace behaviors: A systematic review. *Organization & Environment*, *32*(2), 1-25. <https://doi.org/10.1177/1086026619837125>
- Gao, L., Wang, S., Li, J., & Li, H. (2017). Application of the extended theory of planned behavior to understand individual’s energy saving behavior in workplaces. *Resources, Conservation and Recycling*, *127*, 107-113. <https://doi.org/10.1016/j.resconrec.2017.08.030>
- Greaves, M., Zibarras, L. D., & Stride, C. (2013). Using the theory of planned behavior to explore environmental behavioral intentions in the workplace. *Journal of Environmental Psychology*, *34*, 109-120. <https://doi.org/10.1016/j.jenvp.2013.02.003>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd ed.). SAGE Publications Ltd.
- Haouari, N., Makan, A., & El Ghmari, A. (2019). Building an environmental communication from

- environmental intention and its determinants: Case of Moroccan companies. *International Journal of Environment, Workplace and Employment*, 5(1), 90-105. <https://doi.org/10.1504/IJEWE.2019.097180>
- Hargreaves, T. (2011). Practice-ing behavior change: Applying social practice theory to pro-environmental behavior change. *Journal of Consumer Culture*, 11(1), 79-99. <https://doi.org/10.1177/1469540510390500>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hofstede, G. H. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage.
- Hosseinpour, M., Mohamed, Z., Rezai, G., Shamsudin, M. N., & AbdLatif, I. (2015). How go green campaign effects on Malaysian intention towards green behavior. *Journal of Applied Sciences*, 15(6), 929-933. <https://doi.org/10.3923/jas.2015.929.933>
- Iqbal, Q., Hassan, S. H., Akhtar, S., & Khan, S. (2018). Employee's green behavior for environmental sustainability: A case of banking sector in Pakistan. *World Journal of Science, Technology and Sustainable Development*, 15(2), 118-130. <https://doi.org/10.1108/WJSTSD-08-2017-0025>
- Kim, A., Kim, Y., Han, K., Jackson, S. E., & Ployhart, R. E. (2017). Multilevel influences on voluntary workplace green behavior: Individual differences, leader behavior, and coworker advocacy. *Journal of Management*, 43(5), 1335-1358. <https://doi.org/10.1177/0149206314547386>
- Kline, R. B. (2011). *Principles and practice of Structural Equation Modeling* (3rd ed.). Guilford Press.
- Lee, Y. J., De Young, R., & Marans, R. W. (1995). Factors influencing individual recycling behavior in office settings: A study of office workers in Taiwan. *Environment and behavior*, 27(3), 380-403. <https://doi.org/10.1177/0013916595273006>
- Manika, D., Wells, V. K., Gregory-Smith, D., & Gentry, M. (2015). The impact of individual attitudinal and organizational variables on workplace environmentally friendly behaviors. *Journal of Business Ethics*, 126(4), 663-684. <https://doi.org/10.1007/s10551-013-1978-6>
- Ndubisi, N. O. (2004, July 4-7). *Factors influencing e-learning adoption intention: Examining the determinant structure of the decomposed theory of planned behaviour constructs*. Proceedings of the 27th Annual Conference of HERDSA, Miri, Sarawak. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.461.1976&rep=rep1&type=pdf>
- Norton, T. A., Parker, S. L., Zacher, H., & Ashkanasy, N. M. (2015). Employee green behavior: A theoretical framework, multilevel review, and future research agenda. *Organization & Environment*, 28(1), 103-125. <https://doi.org/10.1177/1086026615575773>
- Ojo, A. O., Raman, M., & Downe, A. G. (2019). Toward green computing practices: A Malaysian study of green belief and attitude among Information Technology professionals. *Journal of Cleaner Production*, 224, 246-255. <https://doi.org/10.1016/j.jclepro.2019.03.237>
- Ones, D. S., & Dilchert, S. (2012). Environmental sustainability at work: A call to action. *Industrial and Organizational Psychology*, 5(4), 444-466. <https://doi.org/10.1111/j.1754-9434.2012.01478.x>
- Peng, J., Hou, N., & Pang, Y. (2019). Employees' green behavior: Summarizing the concept and the theoretical explanation. *Advances in Psychological Science*, 27(7), 1297-1306. <https://doi.org/10.3724/SP.J.1042.2019.01297>

- Rayner, J., & Morgan, D. (2018). An empirical study of 'green' workplace behaviors: Ability, motivation and opportunity. *Asia Pacific Journal of Human Resources, 56*(1), 56-78. <https://doi.org/10.1111/1744-7941.12151>
- Razak, N. F., & Sabri, M. F. (2019). Pro-environmental workplace intention behavior in the Malaysian public organization. *Asian Social Science, 15*(4), 60-68. <https://doi.org/10.5539/ass.v15n4p60>
- Rezapouraghdam, H., Alipour, H., & Darvishmotevali, M. (2018). Employee workplace spirituality and pro-environmental behavior in the hotel industry. *Journal of Sustainable Tourism, 26*(5), 740-758. <https://doi.org/10.1080/09669582.2017.1409229>
- Sabri, M. F., & Aw, E. C. X. (2019). Financial literacy and related outcomes: The role of financial information sources. *International Journal of Business & Society, 20*(1), 286-298.
- Sabri, M. F., Razak, N., & Wijekoon, R. (2019). The mediation effect of intention in the pro-environmental workplace (PEW) behavior of Malaysian public employees. *Management Science Letters, 9*(10), 1567-1576. <https://doi.org/10.5267/j.msl.2019.5.029>
- Sabri, M. F., & Wijekoon, R. (2020). Understanding pro-environmental behavior (PEB) in the workplace: A systematic review. In U. Sumarwan, F. Tjiptono, G. C. Premananto, & M. F. Sabri (Eds.), *Green consumer and marketing* (1st ed., pp. 1-49). PT Penerbit IPB Press.
- Sabri, M. F., Wijekoon, R., & Rahim, H. A. (2020). The influence of money attitude, financial practices, self-efficacy and emotion coping on employees' financial well-being. *Management Science Letters, 10*, 889-900. <https://doi.org/10.5267/j.msl.2019.10.007>
- Saeed, B. B., Afsar, B., Hafeez, S., Khan, I., Tahir, M., & Afridi, M. A. (2019). Promoting employee's pro-environmental behavior through green human resource management practices. *Corporate Social Responsibility and Environmental Management, 26*(2), 424-438. <https://doi.org/10.1002/csr.1694>
- Safari, A., Salehzadeh, R., Panahi, R., & Abolghasemian, S. (2018). Multiple pathways linking environmental knowledge and awareness to employees' green behavior. *Corporate Governance, 18*(1), 81-103. <https://doi.org/10.1108/CG-08-2016-0168>
- Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational climate and culture. *Annual Review of Psychology, 64*, 361-388. <https://doi.org/10.1146/annurev-psych-113011-143809>
- Shen, J., Dumont, J., & Deng, X. (2018). Employees' perceptions of green HRM and non-green employee work outcomes: The social identity and stakeholder perspectives. *Group & Organization Management, 43*(4), 594-622. <https://doi.org/10.1177/1059601116664610>
- Suganthi, L. (2019). Examining the relationship between corporate social responsibility, performance, employees' pro-environmental behavior at work with green practices as mediator. *Journal of Cleaner Production, 232*, 739-750. <https://doi.org/10.1016/j.jclepro.2019.05.295>
- Tilikidou, I. (2007). The effects of knowledge and attitudes upon Greeks' pro-environmental purchasing behaviour. *Corporate Social Responsibility and Environmental Management, 14*(3), 121-134. <https://doi.org/10.1002/csr.123>
- Tom, M., & Soumyaja, D. (2019). Determinants of employee eco-initiatives in Indian hotel industry. *International Journal of Environment, Workplace and Employment, 5*(1), 51-69. <https://doi.org/10.1504/IJEWE.2019.097150>
- Wang, S., Wang, J., Ru, X., Li, J., & Zhao, D. (2019). Understanding employee's electricity conservation behavior in the workplace: Do normative, emotional, and habitual factors

- matter? *Journal of Cleaner Production*, 215, 1070-1077. <https://doi.org/10.1016/j.jclepro.2019.01.173>
- Wang, Z., Zhang, B., Yin, J., & Zhang, Y. (2011). Determinants and policy implications for household electricity-saving behavior: Evidence from Beijing, China. *Energy Policy*, 39(6), 3550-3557. <https://doi.org/10.1016/j.enpol.2011.03.055>
- Wells, V. K., Taheri, B., Gregory-Smith, D., & Manika, D. (2016). The role of generativity and attitudes on employees' home and workplace water and energy-saving behaviors. *Tourism Management*, 56, 63-74. <https://doi.org/10.1016/j.tourman.2016.03.027>
- Wiernik, B. M., Ones, D. S., Dilchert, S., & Klein, R. M. (2018). Individual antecedents of pro-environmental behaviors: Implications for employee green behaviors. In *Research handbook on employee pro-environmental behavior*. Edward Elgar Publishing. <https://www.elgaronline.com/view/edcoll/9781786432827/9781786432827.00010.xml>
- Wijayaningtyas, M., Handoko, F., & Hidayat, S. (2019). The millennials' perceived behavioral control on an eco-friendly house purchase intention. *Journal of Physics: Conference Series*, 1375(1), 012060. <https://doi.org/10.1088/1742-6596/1375/1/012060>
- Wijekoon, R., & Sabri, M. F. (2021). Determinants that influence green product purchase intention and behavior: A literature review and guiding framework. *Sustainability*, 13(11), 6219, 1-40. <http://dx.doi.org/10.3390/su13116219>
- Wikipedia. (2021a). Colleague. Retrieved November 3, 2021. [https://en.wikipedia.org/wiki/Coworker_\(company\)](https://en.wikipedia.org/wiki/Coworker_(company))
- Wikipedia. (2021b). Knowledge. Retrieved November 3, 2021. <https://en.wikipedia.org/wiki/Knowledge>.
- Wikipedia. (2021c). Supervisor. Retrieved November 3, 2021. <https://en.wikipedia.org/wiki/Supervisor>.

APPENDIX

Research instrument

Constructs

1) Attitude - “a set of emotions, beliefs, and behaviors toward a particular object, person, thing, or event” (Ajzen, 1991, p. 180).

- I support green activities in the office.
- I think an information kiosk to promote green activities provided by management is essential to support green workplace behavior.
- Green activities in the office are very important to me.
- I think green activities in the office are good.
- I think green behavior in the office can reduce solid waste.
- I feel happy to work in an office that supports green activities.

2) Knowledge – “a familiarity, awareness, or understanding of someone or something, such as facts (descriptive knowledge), skills (procedural knowledge), or objects (acquaintance knowledge)” (Wikipedia, 2021b).

- Humans have the right to modify the natural environment to suit their needs.
- When humans interfere with nature it often produces disastrous consequences.
- Human ingenuity will ensure that we do not make the earth unlivable.
- Humans are severely abusing the environment.
- The earth has plenty of natural resources if we just learn how to develop them.
- Plants and animals have as much right as humans to exist.
- The balance of nature is strong enough to cope with the impacts of modern industrial nations.
- Despite our special abilities, humans are still subject to the laws of nature.
- The balance of nature is very delicate and easily upset.
- If things continue on their present course, we will soon experience a major ecological catastrophe.

3) Colleagues – “a person with whom one works in a profession or business” (Wikipedia, 2021a).

- My colleagues print documents on both sides of the paper.
- My colleagues photocopy documents on both sides of the paper.
- My colleagues use recycled paper in the office.
- My colleagues switch off computers before leaving the office.

4) Supervisor – “the job title of a management position that is primarily based on authority over workers or workplace” (Wikipedia, 2021c).

- My supervisor supports green behavior in the office.
- My supervisor uses recycled paper as notes.
- My supervisor always reminds me benefits of green behavior in the long term.
- My supervisor always challenges me to think of ways to recycle and reuse resources in the office.

5) Perceived behavioral control – “a person's perception of the ease or difficulty of performing the behavior of interest” (Ajzen, 1991, p. 183).

- Printing documents on both sides of the paper is an easy task.
- Photocopying documents on both sides of the paper is an easy task.
- I have time to cut recycled paper to reuse as small notes.
- I can prepare my own box to collect recycled paper.
- Reporting water leaking issues to management is an easy task.
- I can do green activities in the office if I want.

6) Intention – “the immediate antecedent that influences a given behavior where the stronger the intention to perform the behavior, the more likely the behavior will be performed” (Ajzen, 1991, p. 186).

- I will print documents on both sides of the paper.
- I will photocopy documents on both sides of the paper.
- I will use recycled paper to make notes.
- I will collect recycled paper.
- I will report water leaking issues (if any) to management.
- I will participate in green activities in the office.

7) Green workplace behavior – “a series of behaviors implemented by employees that aim at reducing the negative effect on the environment and contributing to environmental sustainability” (Peng et al., 2019, p. 1299).

- I print documents on both sides of the paper.
 - I photocopy documents on both sides of the paper.
 - I use recycled paper to make notes.
 - I report water leaking issues (if any) to management.
-