The mediation effect of intention in the pro-environmental workplace (PEW) behavior of Malaysian public employees

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CHRONICLE	ABSTRACT
	During the past few years, many studies associated with sustainability of the organizations have primarily analyzed the financial and performance related implications of sustainability of an organization, and perception of these practices by neglecting the role of the employees who might play a vital role through taking part in pro-environmental behavior in the workstation. Thus, this study focuses on the individual's pro-environmental workplace (PEW) intention to determine its mediating effect between the factors in the Theory of Planned Behavior (TPB) and the PEW behavior context among public workers in Malaysia. Random sampling on a list of ministries situated in Federal Territory of Putrajaya was used in the first stage followed by systematic sampling based on officer's list of the directory in those ministries. Cleaned data resulted in 460 questionnaires gathered on demographic characteristics, PEW intention, attitude towards environmental practice in the workplace, subjective norms, perceived environmental workplace control, and PEW behavior of public sector context in Malaysia. The results reveal significant influences of PEW subjective norms, and perceived PEW control on the PEW behavior. While a series of regression analyses show that the PEW intention mediated only the two relationships between PEW subjective norms, and perceived PEW control on PEW behavior.

1. Introduction

One of the greatest complications antagonizing mankind and a serious worldwide issue nowadays, is associated with climate change (Kazdin, 2009; Stern, 2011; Swim et al., 2011). Regardless of the way that ecological alterations are taken place either due to natural changes or anthropological activities, scientists infer that the major fact behind environmental change is, all things considered, anthropogenic (Swim et al., 2011). Moreover, workplaces may be also considered to be within the most noteworthy supporters of the climate change and accordingly, many organizations have started initial steps towards the adoption of formal and informal natural administration frameworks (Darnall et al., 2008). But, most of the achievements of natural projects frequently rely on employees' green practices (Daily et al., 2009) and, nurturing workers' pro-environmental behavior in the institutional environment is now critical. Empowering working environment pro-environmental behaviors for example, recycling, conservation, and

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waste management practices would not simply be enhancing the greening of workplaces yet will more-over decidedly influence ecological alteration, and anticipate further natural corruption (Robertson & Barling, 2013). Over the previous decade, much consideration has been oriented to the investigation of how people add to the accomplishment of ecological manageability in authoritative settings. The latest studies in the area of green management have discovered that authoritative individuals may be involved in various dimensions (Ones & Dilchert, 2012a). For instance, while higher administration may direct towards the green procuring (Yen & Yen, 2012), ecological administrators may encourage a natural market-oriented methodology (Rivera-Camino, 2012), and workforces might be influenced to work in a greener atmosphere with in their working place (Paillé & Raineri, 2015).

According to the ecological psychology literature, the pro-environmental behavior contains various types of behaviors and it is not a unidimensional factor (Clayton & Myers, 2009; Kazdin, 2009; Kempton et al., 1992; Stern et al., 1999). Specifically, Stern et al. (2000) proposed three categories of pro-environmental behavior; namely environmental activism, non-activist behavior in the public sphere, and private sphere environmentalism. To begin with, environmental activism alludes to people's dynamic commitment in ecological developments (Stern, 2000). Secondly, non-activist behavior is associated with people's environmental care in the public domain that is less concentrated, however it is as yet basic to the achievement of an ecological development, which could be split more into environmental citizenship, and policy support (Dietz et al., 1998). The private sphere environmentalism is the third kind of pro-environmental behavior which incorporates personal performance within an individual domain (Clayton & Myers, 2009). According to the Clayton and Myers (2009), private sphere environmentalism could be further classified into three groups of curtailment behavior, behavior choice, and technology choice. Curtailment behavior is the first group which is worried about people's push to diminish their consumption in buying items, and consumption of utilities. The behavior choice is the second type engaged with one's choice to take part in conducting the behavior that has minimal effect on nature, such as recycling and reusing items, procuring environmental friendly organic merchandises, and utilizing public transportation. The last level, technology choice, involves choices related to purchase, and the utilization of mechanical advancements, such as renewable energy sources, hybrid cars, and energy-efficient electrical equipment (Clayton & Myers 2009).

"Actions and behaviors that employees engage in that are linked with and contribute to or detract from environmental sustainability" is most acceptable definition of the term green behavior (Ones & Dilchert, 2012a, p. 87). As proposed by Ones and Dilchert (2012b), even though green practices are generally voluntary, it is likewise essential to take into consideration of behaviors connected to work related responsibilities (e.g., altering duty related techniques in mindful way). This order takes into account to identify the difference between green practices at office premises and green practices at household (Norton et al., 2015).

Nowadays researchers have recognized the requirements of the modification of human behaviors towards more PEW behavior. Further, they have pointed out the requirements of the observational investigations that explore the effects of PEW behaviors on the organizations. According to the previous literature, there have been a few endeavors to address this. Even though, past studies have investigated the behavior in environmental contexts, by far most have been accompanied with the studies based on domestic settings (Greaves et al., 2013). Moreover, it might entice to apply the outputs of studies based on the residential sector to the work environment, inspirations to carry in a pro-environmental style at house, and at office might be extraordinary. For instance, family units are normally aware on the expenses of power utilization, while at office these expenses are not generally noticeable by workforce (Carrico & Reimer, 2011). Some of the pro-environmental behaviors engaged with working environment might not usually exist at households, for example, the utilization of video-discussion instead of travelling (Greaves et al., 2013).

One manner by which psychologists explore pro-environmental behavior is to rely on communal psychological theories for example, the Theory of Planned Behavior (TPB; Ajzen, 1985, 1991; Ajzen, & Fishbein, 1980). As indicated by the TPB, the primary precursor of a person's behavior is his/her intention

towards the behavior, and thus the person's social goal is controlled by three antecedents; attitudes, subjective norms, and perceived behavioral control (see Fig. 1). The primary factor, addresses the person's attitudes towards the behavior which shows his/her general assessment of the behavior. The other variable is put together up with respect to an evaluation of the subjective norm; the degree to which a person trusts that he/she is influenced by social strain to play out the behavior. The last development is perceived behavioral control (PBC), which is one component of a person's awareness on how difficult it is to play out the behavior. The TPB is normally suitable for a wide scope of areas. However, only few investigations have utilized the TPB to investigate pro-environmental behavior in the workstation according to the best of the authors knowledge; for example, to understand air force officer's intentions to take part in pro-environmental behaviors (Laudenslager et al., 2004); use of the TPB to understand green behavioral goals in the workstation (Greaves et al., 2013) and role of executives, and institute on PEW behavior (Wesselink et al., 2017).
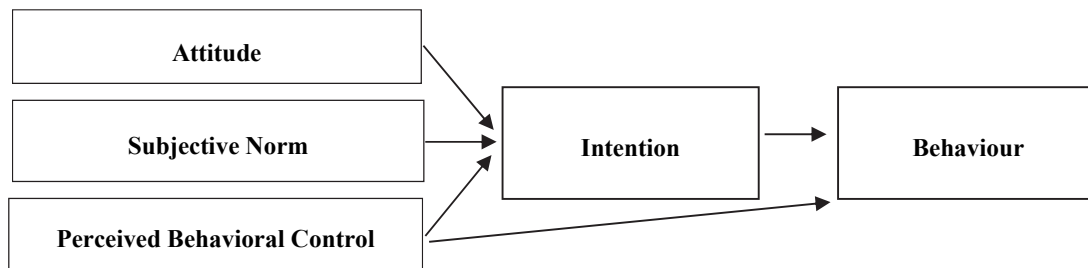

Fig. 1. The Theory of Planned Behavior (Ajzen, 1985, 1991)

In any case, while numerous associations have found some ways to decrease their vitality employment via updating infrastructures, for instance, illumination, heating, and chilling (Davis & Challenger, 2009), less attention has been devoted to worker's job conduct in transmission of ecological enhancements. Since natural concerns are believed to have a greater magnitude by human behavior (Oskamp, 2000), they might be controlled by doing alterations in mankind activities. As a forward step to understand how worker behavior could be utilized to accomplish ecological upgrades, this article offers a study that constructs, and utilizes a technique that is constructed by using the TPB to investigate intentions to expand pro-environmental behaviors in the work place settings.

However, worker participation in pro-environmental behavior within work environment is complex, because it is a rather voluntary behavior than an essential task. With the increase of environmental awareness in Malaysia, the TPB may contribute to realize the factors influencing PEW behavior in public institutes. In the PEW behavioral context, the three constructs that are PEW attitude, PEW subjective norms, and perceived PEW control are proposed as affecting antecedents of PEW behavior among public employees in Malaysia.
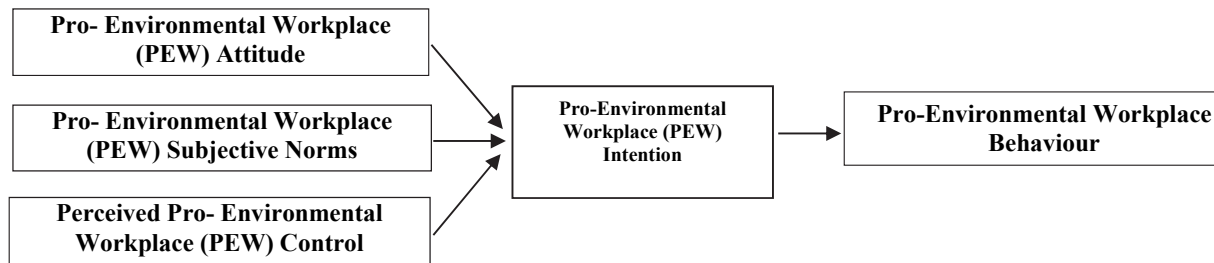

Fig. 2. PEW behavior framework based on the TPB

2. Research Methodology

2.1 Sampling

A cross-sectional design was followed in this survey where the data were collected by one-to-one discussions to draw opinions associated with the selected behaviors only once from each of the respondents.

A simple random sampling procedure was carried out using a list of ministries located in the Federal Territory of Putrajaya, and finally five ministries were chosen for the survey. Then, the respondents were selected by applying systematic sampling method from the list of directories from each and every ministry. A total of 500 self-administered questionnaires were distributed through appointed liaison officers in the human resources departments of each ministry which resulted in 460 completed questionnaires.

2.2 Instrumentation

Apart from the background details of the respondents, data on attitude, subjective norms, perceived behavior control, intention, and PEW behavior were collected by person to person contact using the self-administered questionnaire. Regarding the improvement procedure of the instrument, best practice guidelines were followed to improve the validity and reliability of the TPB questionnaire (as recommended by Ajzen, 2006; Francis et al., 2004). The constructs on PEW attitude, PEW subjective norms, perceived PEW control, PEW intention, and PEW behavior were adapted, and measured with scales from the past studies (Blok et al., 2015; Davis & Challenger, 2009; Robertson & Barling, 2013; Tonglet et al., 2004). Each and every item was altered to suit them for the PEW context of public institutions in Malaysia. Different constructs of the research framework were measured using different number of items, for example; PEW attitude (6), PEW subjective norms (13), perceived PEW control (9), and PEW intention (11). The answers for the above items were scored using a scale from 1 (strongly disagree) to 5 (strongly agree). Meanwhile, measures for PEW behaviour were tested with 13 items, and 3 scale of responses from "Never", "Sometimes", and "Often" were used to determine the extent of PEW behaviour being performed by the respondents. A higher scoring value indicates that the PEW in the workstation is great, and vice-versa. Regression analysis was used to analyse the data using SPSS software.

2.3 Validity and reliability of direct measurements

Reliability tests for the constructs were revealed high Cronbach alphas of more than 0.7 which are 0.881 for PEW attitude, 0.909 for PEW subjective norms, 0.857 for perceived PEW control, 0.882 for PEW intention, and 0.897 for PEW behavior. High-reliability coefficients for a measurement show that the measurements used are consistent, accurate and would be predicted the situation studied.

Table 1
Validity and reliability for main variables

Variable	Number of Items	Cronbach Alpha (α)
PEW attitude	6	0.881
PEW subjective norms	13	0.909
Perceived PEW control	9	0.857
PEW intention	11	0.892
PEW behavior	13	0.807

3. Results and discussion

3.1 Profile of respondent

As displayed in Table 2, among male (39.3%) and female (60.7%) respondents, two-thirds (69.1%) of them were married. The majority (82.8%) of the respondents involved for the study were young employees (25 years-34 years) and middle age employees (35 years – 44 years). Almost the majority (62.5%) of employees obtained a monthly income of RM 1,501 to RM 3,500. Furthermore, this may be contributed by the level of education that indicates the level of grade hierarchy. It was found that those working with the education level of bachelor and master/PhD were slightly less than half (45.2%) and diploma holders were almost one-third (29.8%). This has been reflected that some (12.5%) employees in the clerical support group were overqualified with at least diploma level. Slightly one-third of the respondents (32.4%) has received a monthly income less than RM 2,500, and among two-thirds (69.1%)

of them were married. This shows that more than one-third of the respondents who lived in federal administrative urban areas are struggling with their finances.

Table 2
Sample demographics of respondents

	Sample demographics of Respondents (N=304)	Frequency n, (Percentage, %)		Sample demographics of Respondents (N=304)	Frequency n, (Percentage, %)
Gender	Male	181 (39.3)		Single	142 (30.9)
	Female	279 (60.7)	Marital status	Married	318 (69.1)
	24 and below	23 (5.0)		RM1,500 and less	23 (5.0)
	25 - 34	209 (45.4)	Respondent's	RM1,501 – RM2,500	126 (27.4)
	35 - 44	172 (37.4)	monthly	RM2,501 – RM3,500	136 (29.6)
Age (years)	45 - 54	39 (8.5)	income	RM3,501 – RM4,500	79 (17.2)
	55 and above	17 (3.7)		RM4,501 – RM5,000	47 (10.2)
	Secondary	114 (25.0)		RM5,001 and more	51 (10.7)
	Diploma	137 (29.8)			
Education	Bachelor	168 (36.5)			
	Masters and PhD	40 (8.7)			

3.2 Descriptive of the Variables

3.2.1 Factors for PEW behaviour

The potential factors as stated in the TPB; PEW attitude, PEW subjective norms, perceived PEW control, PEW intention were measured as explained in the methodology. Thus, the descriptive statistics presented in Table 3 displays the overall statistics for each and every factor. The construct, PEW subjective norm displays the highest mean score of 50.99 followed by PEW intention (mean = 46.56), perceived PEW control (mean = 38.04), and PEW attitude (mean = 26.57). The lowest mean score of PEW attitude shows its least contribution towards the PEW intention, and to perform PEW behaviour. Meanwhile, according to the mean score values, the highest effect is shown by the construct, PEW subjective norm to perform the PEW behaviour, and followed by perceived PEW control.

Table 3
Descriptive statistics for the PEW behavioral factors

	PEW attitude	PEW subjective norms	Perceived PEW control	PEW intention
Mean	26.57	50.99	38.04	46.56
Standard deviation	2.93	7.64	4.63	5.83
Minimum	18	29	25	28
Maximum	30	65	53	55
Range of score	12	36	26	27

According to the correlation matrix data in Table 4 on the PEW behavior, a significant, and positive relationship has been found among the PEW attitude, PEW social norms, perceived PEW control, and PEW intention at the 0.01 level.

Table 4
Correlation metrics for the PEW behavioral factors

		Attitude	Norms	PBC	Intention	Behavior
Attitude	Pearson Correlation	1	.449**	.609**	.567**	.308**
	Sig. (2-tailed)		.000	.000	.000	.000
Norms	Pearson Correlation	.449**	1	.557**	.562**	.405**
	Sig. (2-tailed)	.000		.000	.000	.000
PCB	Pearson Correlation	.609**	.557**	1	.741**	.431**
	Sig. (2-tailed)	.000	.000		.000	.000
Intention	Pearson Correlation	.567**	.562**	.741**	1	.471**
	Sig. (2-tailed)	.000	.000	.000		.000
Behavior	Pearson Correlation	.308**	.405**	.431**	.471**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

3.2.2 PEW behavior

Table 5 displays various items of PEW behavior. The responses for all items are showing higher values than the mid-point of the scores of 1 to 3 which ranges from 1.813 to 2.77. The highest mean score among the items is associated with using the mug for drinks in the pantry while the lowest mean score is for bringing the small tree as a natural air filter in the office. The second highest mean is for switching off the computer when going home and switch off the light when no one in the room. The third highest mean is for printing, and photocopied documents using both sides of the paper and recycle paper as a small note. These results show that most respondents are focused on conserving energy, and recycle paper as a part of PEW behavior. The statement, bringing their food containers to buy food in the cafeteria is among the lowest responses. This may be due to the new regulations imposed by the Malaysian government since 1st September 2017 to offer the food in government office building premises with bio-degradable food containers for their customers by cafeteria owners. The total scores for this construct are computed and results are in the range from 28 to 70 with an overall mean of 54.1. The high overall mean value showed means high involvement of the respondents in PEW behavior.

Table 5

Items of PEW behavior

No.	Statement	Mean (1-3)	S.D.
1	Printing document both sided	2.68	.471
2	Photocopying document both sided	2.69	.475
3	Using a personal mug for drinking water in the pantry	2.77	.498
4	Bring recycle beg to buy food and drink in the cafeteria	2.06	.755
5	Bring recycle container to buy food in the cafeteria	1.86	.752
6	Switch off the light in the individual room when going for a meeting	2.53	.616
7	Switch off the computer's power plug to go home after work	2.76	.474
8	Switch off the light in the meeting room when is around	2.66	.571
9	Recycle bottle	2.35	.638
10	Recycle printer's cartridge	2.05	.818
11	Using note from recycle paper	2.61	.521
12	Bring a small plant as a natural air filter in the office	1.81	.842
13	Report water leaking to management	2.61	.561

3.2.3 PEW intention as a mediator

An alternate hypothesis was developed based on the theory before determining the influence of PEW intention as a mediator between the three factors which are derived from the TPB. According to the TPB, three constructs namely; attitude, subjective norms, and perceived behavioural control are the contructs that influence the behaviour, and intention has a mediation effect on them. Further, it has also suggested that the construct perceived behavioral control have the ability to influence the behavior directly without the mediation effect of intention. Therefore, the hypothesis developed in the context of PEW behavior is as follows:

Ha: PEW intention is a significant mediator in the influence of PEW attitude, PEW subjective norms, and perceived PEW behavior control on PEW behavior.

As stated in the literature, three conditions are required to analyse the mediation test. To establish intention as the mediator, the independent variables should significantly influence the PEW behaviour in the first regression model without the intention variable (Condition 1). Referring to the Table 6, the PEW behavior model has been revealed that only two factors; namely PEW subjective norms (t = 4.642, p = .000), and perceived PEW control (t = 4.981, p = .000) influenced the PEW behavior positively, and significantly. However, PEW attitude (t = 0.583, p = .560) has not significantly influenced the related behavior. The first condition is fulfilled only by two factors excluding PEW attitude. The PEW behavior model is valid (F = 44.3; p=.000) with the R^2 value of 0.226 where the model can explain 22.6 percent

of the variance in the PEW behavior. Thus, the results rejected that PEW intention acted as a mediator for the influence of attitude on PEW behavior.

Table 6

Regression for PEW behavior

Variables	B	Beta	t	Sig.	Tolerance	VIF
Constant	14.882		3.875	.000		
PEW Attitude	.099	.031	0.583	.560	.611	1.636
PEW subjective norms	.289	.234	4.642***	.000	.670	1.492
Perceived PEW control	.575	.283	4.981***	.000	.528	1.894

*** *significant at p≤0.001*

The second condition states that the factors must be significant on the intention as a dependent variable. This is proved by the output in the Table 7 which displays the results from the regression model having intention as the dependent variable. PEW subjective norms (t = 5.948, p = .000), and PEW workplace control (t = 16.988, p = .000) were found to exhibit significant influence on PEW intention. Hence, the second condition is fulfilled by only two factors. The PEW intention model is valid (F = 316.72; p=.000) with an R^2 value of 0.581 where the model can explain 58.1 percent of the variance in the PEW intention.

Table 7

Regression for PEW intention

Variables	B	Beta	t	Sig.	Tolerance	VIF
Constant	8.446		5.530	.000		
PEW norms	.166	.217	5.948***	.000	.689	1.451
Perceived PEW control	.780	.620	16.988**	.000	.689	1.451

*** *significant at p≤0.001*

When introducing intention in the regression model, the third condition requires the significant influence of the two factors would change to insignificant or significant reduction value while intention significantly influenced the behavior. Table 8 shows the results of the regression model to determine the third condition. The two factors that are found previously to be significantly influencing the behavior which are PEW subjective norms (t = 3.542, p = .000), and perceived PEW control (t = 2.057, p = .040) have exhibited a significant influence on behavior in the model having intention. PEW intention (t = 4.418, p = .000) at the same time is found to significantly influence the behavior. Thus, the results rejected the mediation effect of PEW intention on the association between the PEW subjective norms, and PEW behavior. However, in the case of perceived PEW control, the results have indicated that intention is a partial mediator on PEW behavior because of the significantly reduced value. Table 9 shows that the PEW intention acts as a partial mediator on the association between perceived PEW control, and PEW behavior. The PEW behavior model is valid (F = 52.6; p=.000) with an R^2 value of 0.252 where the model is able to explain 25.2 percent of the variance in the PEW behavior.

Table 8

Mediated regression for PEW behavior

Variables	B	Beta	t	Sig.	Tolerance	VIF
Constant	12.197		3.584	.000		
PEW intention	.446	.275	4.418	.000	.419	2.386
PEW subjective norms	.221	.179	3.542***	.000	.640	1.563
Perceived PEW control	.260	.128	2.057**	.040	.422	2.367

*** *significant at p≤0.001 ** significant at p≤0.01 ** significant at p≤0.05*

Table 9

Sobel's test

Effect	a	sa	b	sb	z	p
Perceived-Intention-Behavior	.260	.126	.446	.101	1.869	.063

* *significant at p≤0.01*

According to the earlier results the perceived PEW control has the strongest significant influence on PEW intention, and PEW behavior and it is confirmed that PEW intention acts only as a partial mediator between the constructs of perceived PEW control, and PEW behavior. The results are compatible with

the TPB where it posits that perceived behavioral control and intention are the two variables that have direct influence on behavior. The PEW attitude did not significantly influence on PEW behavior among public employees in Malaysia. Those having positive attitudes are not significantly important to show the PEW behavior in public organizations in Malaysia compared with PEW subjective norms, and perceived PEW control. PEW subjective norms have appeared to influence the PEW intention, and later to have an impact on the PEW behavior. Having high PEW subjective norms among public employees in Malaysia is a very important factor because most of them are following the habits that are doing by others around them in the organization, and perform the behavior even without any intention. On the other hand, perceived PEW control gives a direct effect on PEW intention, and PEW behavior. Those who perceived themselves having a control on their behavior in PEW context will continue to perform the activities even with little intention or without any intention. Montano and Kasprzyk (2008) stated that perceived behavioral control consists of internal skills, and external pressure. In the PEW behavioral context, having the skill related to perform pro-environmental activities and having the social pressure from colleagues promote the PEW activities. In the current study, the respondents were Malaysian public employees who are working in federal office ministry and department which create the community force from coworkers, and management to perform PEW activities to support the governmental policy on green environment.

4. Implications

The various theoretical, and practical implications have been offered based on the findings of the study. A theoretical point of view shows the benefit of connecting with the aiming group via the advancement procedure to guarantee that the practices focused on are essential to the workplaces. In tending to these particular practices, for example, "intentions to switch off the light in the meeting room when is around" as opposed to progressively broad practices, for example, "intentions to save energy", a huge extent of the variances in behavioral intentions are clarified by the TPB paradigms. Besides, this examination exhibits the significance of researching the forerunner convictions of the three TPB constructs. This was especially significant on the grounds that this not just replies the subject of whether the TPB paradigms represent variance in behavioral intentions, yet additionally to clarify the reasons around the situation. Furthermore, it facilitates the academics to see more noticeably why workers involve (or not) in specific environmental behaviors, and it is one of the significant theoretical implications of the study. Moreover, this investigation is under one of the few principal utilizations of the TPB to the context of environmental behavior in a workplace setting which has built up a measure via commitment with the host institute. Our study proposes that the TPB could conveniently be executed in workplace settings to distinguish how worker's contribution on an organization's endeavors in order to achieve more sustainability at the workplace environment. With the practical perspective, the discoveries are significant because the outputs have been helpful to the host institute. The constructs specifically may show focuses for explicit designing of practical interventions to improve pro-environmental behavior. For instance, the host organizations participated have been executed various changes based on the discoveries of this study, for example, the tasks to quicken the scanning process of printers, and to give a large number of copies without getting a longer period. Furthermore, the institute could find the way to execute all the significant discoveries in the process of environmental management. Further, this investigation gives a proof with respect to what human resource management (HRM) practices categorized under PEB subjective norms are presently being utilized by governmental public organizations in Malaysia to help employee PEW behavior, yet the discoveries seem to feature a gap between research, and practice. However, the research discoveries demonstrate that institutes are not utilizing HRM practices to a great extent. For all intents and purposes, it gives the idea that associations could utilize HRM to promote environmental behavior among staff. As per the outcomes that involve worker contribution has all the earmarks of being among the most predominant strategies for empowering pro-environmental behavior in the work place, therefore there might be an open door for the human resource to play a strategic role in order to achieve ecological goals in the working environment. Furthermore, institutes may consider recruiting employees who esteem the environment, and trainings ought to be made accessible to all workers of the organization in order to aware

them on PEW conduct in work place. This likewise demonstrates the esteem, and significance of building up a personalized measure, and demonstrates that the TPB could be a significant device that workplaces can apply to examine the particular obstructions to and the influencing factors of PEW behavior at work, and explicit how worker's personal behavior can support towards the more extensive ecological goals of the organization.

5. Conclusion

The analyses have shown that the PEW intention has been behaved only as a partial mediator between the relationships between perceived PEW behavioral control, PEW subjective norm, and the PEW behavior. However, it did not mediate the influence of attitude on the PEW behavior in the Malaysian federal office ministries and departments. Nevertheless, this results are in line with the TPB which posits that intention predicts specific behaviour with the influence by perceived PEW behavior control towards the behaviour.

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