

Pro-Environmental Behaviour of Big City Employees in Rasch Model and SEM Outlook: A Preliminary Finding

Maria Grace Herlina^{1*}, Erma Lusia², Rivaldo¹

¹Management Department, BINUS Business School Undergraduate Program, Bina Nusantara University, Jakarta, Indonesia 11480

²Tourism Department, Faculty of Digital Communication and Hotel & Tourism, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract. Human activity significantly contributes to many of the world's current environmental concerns. Pro-environmental behaviors (PEBs) at the workplace can help organizations improve their environmental performance. Therefore, the goal of this study is to provide an explanation for employees' ecologically beneficial conduct in large cities. The three hypotheses of this study were proven significantly. Rasch Model Analysis and structural equation modeling (SEM) with second-order confirmatory factor analysis confirmed all the hypotheses. Eco initiatives significantly influence pro-environmental behavior, and eco-helping influences pro-environmental behavior significantly. The final one, eco-civic involvement, significantly impacts pro-environmental behavior. According to the findings of two statistical approaches used to analyze data, the environmentally friendly behaviors of employees in big cities are still limited to the behavior of good employees within the firm. It implies that pro-environmental behavior among city workers has not yet been motivated by personal initiative. On the other hand, the Rasch Model and SEM analysis results suggest that employees in big cities are environmentally sensitive as part of their organization's good citizenship.

1 Introduction

Sustainability and environmental, social, and governance (ESG) issues have become increasingly important in how all organizations do business in recent years. Organizations are being actively called on to adopt more responsible production patterns that align with the United Nations' Sustainable Development Goals (SDGs). The SDGs, which must be met by 2030, serve as a framework for urgent action at various levels of sustainability [1].

Organizations, particularly businesses, increasingly recognize the need for corporate sustainability to achieve business sustainability [2]. More companies and investors see sustainability as a strategic issue with significant business risks and potential [3]. Sustainability initiatives frequently make good business sense, offering revenue increases, cost savings, and other benefits that increase corporate value. Business organizations achieve small to large value from sustainability [3]. Sustainability is a component of the business culture. Employee involvement is also a crucial component of the sustainability goal in this company [1], [3].

Sustainability must be entrenched throughout the organization to be carried out in existing businesses [4]. Several scholars have noted a shortage of research on organizations and sustainability, particularly at the individual employee level and their behavior [1], [4], [5]. All workers who receive training on implementing sustainable principles into their work and that employees understand how sustainability efforts match with the company's goal [1], [3], [6].

The success of sustainability programs frequently depends on employee behavior [1], [4]. Therefore, encouraging employee environmental behavior (PEB) could be one of the factors that aid in dealing with these immense societal challenges [1], [4].

Human activity significantly contributes to many of the world's environmental concerns, such as biodiversity loss, water and air pollution, and climate change [1], [4], [7]. These environmental issues are partially exacerbated by environmental behavior, which is any behavior that influences the environment. As a result, Throughout the 1980s and 1990s, establishing environmental attitudes and knowledge, behavioral change has been recognized as a critical component of initiatives aimed at resolving these issues by researchers, practitioners, and lawmakers alike [6], [8]. Encouragement of pro-environmental behaviors in people's daily lives is essential [6], [8]. Nonetheless, people spend a large portion of their lives at work, and encouraging pro-environmental behavior at work or inside organizations can considerably reduce environmental problems [1], [4], [7].

Pro-environmental behaviors (PEBs) at the workplace can help organizations improve their environmental performance [9][10]. Conserving energy and resources, reducing waste, increasing recycling, or encouraging eco-friendly behaviors in coworkers are examples of PEBs in this context [1], [11].

Companies need to encourage their employees to promote environmental management techniques more actively. Employees who engage in pro-environmental behavior (PEB) on a large scale can have a major effect

* Corresponding author: herlina01@binus.edu

on reducing negative environmental impacts, including climate change [12].

Much research has been undertaken on understanding and supporting pro-environmental behavior [7].

A study by [13] aimed to explore the determinants of Pro-Environmental Behaviour in the workplace. Specifically, the research aims to promote and foster more sustainable behavior. In addition, the study aims to examine the factors that influence employees' pro-environmental behavior at work. According to the findings of this study, green lifestyles have a significant positive influence on pro-environmental behavior.

Another study by Mouro and Duarte (2021) examined pro-environmental behaviors (PEBs) in the workplace. It might boost the expected beneficial impact of an organization's environmental performance and foster more sustainable transitions. The findings emphasize the relevance of organizational-level activities in promoting employee behavioral change, which can positively impact businesses' growth to sustainability. This research also found the importance of organizations not just promoting pro-environmental activities and norms but also increasing the visibility of workplace PEBs in which employees actively participate [1].

A meta-analysis was conducted by [8]. This bibliometric examines the factors influencing pro-environmental behavior regarding resource conservation and recycling from 1987 to 2017. The primary goal of this work is to review the literature (i.e., published studies). The study searched the impact, relationships, and mutual impacts on pro-environmental behavior. It identified the drivers of valuable pro-environmental behavior in developing the most appropriate and successful strategies for enhancing the public's attitude toward environmental protection.

A study conducted by [14] using bibliometric analysis provided a summary. It defined several types of pro-environmental behavior and the theoretical frameworks used to explain such behavior. Finally, using a comprehensive search of relevant literature, examine empirical research on pro-environmental behavior in the workplace. A similar study by [4] aimed to identify characteristics that influence individual employees' pro-environmental behavior (PEB).

To the best of our knowledge, few previous research has proposed an empirical study exploring pro-environmental behavior among employees, especially employees in the big city. Therefore, the study aims to offer a quantitative descriptive analysis by utilizing The Rasch Model approaches and Structural Equation Modelling (SEM) Analysis. Furthermore, this study wants to enrich the current studies about pro-environmental behavior. There are still very few studies about the pro-environmental behavior of big city employees, specifically in the Rasch Model Analysis perspective.

The second analysis method is Structural equation modeling (SEM) with second-order confirmatory factor analysis. Therefore, this paper, in this sense, provides a novel perspective on pro-environmental behavior in the workplace. Furthermore, its distinctive qualities can be explained as no research has still studied pro-

environmental workplace behavior with two statistical methods.

2 Literature Review

In the 1960s, scholars' studies on environmental concerns gave rise to pro-environmental behavior (PEB). Maloney and Ward defined an ecological disaster as a crisis of maladaptive behavior. They stressed the role of humans in the ecosystem. They recommended researchers to watch for changes in human environmental behavior [1], [12].

Workplace PEB refers to various environmental acts related to climate change, such as learning more about the environment, producing eco-friendly procedures and goods, sorting and recycling objects, reusing items, and inquiring about ecologically detrimental actions. Organizations encouraging and rewarding such behavior will reduce their negative environmental impact [1], [7], [12].

Scholars have recently defined PEB as environmentally responsible behavior, environmentally sustainable behavior, environmentally significant behavior, green behavior, ecological behavior, and environmentally friendly conduct. These words have the same or similar meaning in that they imply that PEB helps to improve the natural environment [1], [8], [12].

PEB is a person's voluntary behavior contributing to organizational sustainability. For example, preserving office materials, sorting garbage by kind, open discussion, and information sharing among employees about environmental sustainability [4], [12], [15].

Employees' pro-environmental behavior (PEB) is widely acknowledged as one of the most effective approaches to enhance enterprises' long-term development. Employees' PEB refers to employees' proactive, environmentally friendly behaviors at the workplace, which may be considered "extra-role" behavior. According to existing research, employees' PEB is a beneficial habit that preserves resources, reduces labor costs, and ensures a competitive advantage for teams and businesses [8], [12], [16].

Employee pro-environmental behaviors, known as Organizational Citizenship Behaviour towards Environment (OCBE). Individual voluntary acts lead to good environmental performance in an organization [17]–[19]. Therefore, employees' environmental behavior is becoming increasingly important for all organizations, regardless of industry.

Various lines of research can be selected as relevant to achieve the purpose of this work. The findings of PEB and organizational citizenship behavior related to the environment (OCB-E) are viewed as two sides of the same coin. Whereas PEB is based on research on household environmental behavior, OCB-E is based on socio-psychological organizational research). Individuals' behaviors that actively aim to decrease the harmful impact of their actions on the natural and built environment are defined as PEB. Examples of such workplace behaviors are double-sided printing and switching off lights when leaving a room. OCB-E is described as voluntary behavior that contributes to the sustainability of an organization and/or society, whereas

voluntary meaning that it is not mentioned in an official job description. Employees engage in this behavior because they believe it benefits their organization or society [4], [17], [18].

OCBE is essential for successfully implementing environmental management systems and integrating environmental policy into workplace practices [18], [19]. Previous scholars classified pro-environmental behavior into three main categories [18], [19]: eco-helping, eco-civic engagement, and eco-initiatives.

First, eco-initiatives are personal-level initiatives employees take to reduce negative environmental impacts at the workplace. Second, eco-civic engagement includes employee initiatives at the organizational level. Finally, eco-helping entails encouraging coworkers to be environmentally conscious. This behavior is based on employees' mutual aid for an organization's environmental concerns [18], [19]. After conducting a comprehensive literature review, the researchers developed the following hypotheses.

- H1 Eco Initiatives significantly influence pro-environmental behavior.*
- H2 Eco Helping significantly influences pro-environmental behavior.*
- H3 Eco Civic Engagement significantly influences pro-environmental behavior.*

3 Methodology

3.1 Research Design and Approaches

The study aims to empirically analyze pro-environmental behavior (PEB) among employees of major cities such as Jakarta, Indonesia's capital city. The study's purpose was explanatory. The study was conducted just one time. It indicates that research was conducted in portions. As a result, the study used a cross-sectional sample survey and a field study to collect data for a specific point in time. It is beneficial to collect large volumes of information from the population and maximize the population's representative sampling to improve the generalization of the results. The study began with the theoretical foundation, then hypothesis generation, sample data collecting, and confirmation of the analytical outcomes using the Rasch Model technique and Structural Equation Modeling (SEM) analysis.

3.2 Data Collection and Data Analysis

The study employed judgemental non-probability sampling because it selects the most conveniently placed or in the best position to give the required information. It is applied when there is no reliable population size and location data. Furthermore, purposive sampling comprises the researcher selecting sampling units based on experience and judgment. Data were gathered using a Google Forms survey questionnaire.

The respondents were employees of various kinds of companies. Therefore, the sample should be "ten times the largest number of formative indicators used to

measure one construct." Otherwise, "ten times the largest number of inner model paths directed at a specific construct in the inner model," whichever is greater [20]. As a result, the minimum number of respondents required for this study is 100, meeting the minimal sample size requirement.

The data collected via the survey questionnaire was processed using Rasch Model analysis with WINSTEPS 5.2.1.0 software. The Rasch model is the most suited tool for quantitative analysis in human sciences since the research instruments will yield ordinal data [21], [22]. According to the measurement model, Rasch model analysis is based on probability and reliably predicts respondents' replies to all items. In addition, the Rasch Model translates ordinal data such as Likert rating scale item scores to an interval scale known as "unit of opportunity logarithms" (logit) [21], [22].

Structural equation modeling (SEM) with second-order confirmatory factor analysis is the second method. This second-order test has two levels, the first of which is an analysis of the latent construct dimensions of the indicators. Second, the research is performed from the latent to the dimensional construct. This method employs a repeated indicators approach, a hierarchical component model. SEM analysis will be utilized with SMARTPLS 3.2.9 software [23], [24].

3.3 Common Method Bias

Furthermore, to prevent common method bias, Rasch Model Analysis can assist in reducing the number of biased responses on self-report questionnaires [21], [22]. Person Measure Analysis is used to test for the responses' bias, with the MNSQ value should be higher than 0.5 and lower than 1.5 [21], [22].

4 Findings and Discussion

4.1 Descriptive Analysis

The study wants to evaluate the pro-environmental behaviors of big city employees, specifically in Jakarta, the capital city of Indonesia. It is a one-dimensional study that is also a descriptive quantitative study. It took about six months to complete the research, started in February to June 2022.

This study used quantitative design to conduct empirical research. All items were graded on a five-point Likert scale, one indicating strongly disagree and five indicating strongly agree. The questions used to measure pro-environmental behavior were adapted from [12], [13], [16], [18], consisting of 10 indicators.

The sampling technique used in this study was non-probability sampling with a purposive sampling technique, that is, a sampling technique with specific considerations. The selected sample is adjusted to specific criteria due to concern. This study uses the sample chosen as employees living in Tangerang and Jakarta.

The minimum number of respondents required for this study is 100. Still, a total of 221 respondents completed the survey questionnaire, therefore, it meets the minimal sample size requirement.

There are 62% male and 38% female employees among the respondents. Their age ranges from 19 to 30 years old for 54.3%, and 31 to 50 years old for the rest. Their educational level is 84.1% bachelor's degree and the rest diploma. 93.2% of respondents have less than five years of experience. Their functional level is 86.4% staff up to management.

As the data was collected through personal references or self-report questionnaires, Rasch Model Analysis, specifically Person Measure Analysis used to test for the responses' bias. The test found that only 191 responses are bias-free because the MNSQ value is higher than 0.5 and lower than 1.5 [21], [22]. The data collected from the questionnaire was processed using Rasch Model analysis with WINSTEPS 5.2.1.0 software.

4.2 Rasch Model Analysis

The pro-environmental behavior (PEB) instrument's reliability suggests that all replies are very good (0.89), and the research instrument items are excellent (0.98). Furthermore, both research instruments have a high Cronbach alpha (0.91). It implies that these values are responsible for the high correlations between the items and the respondents' responses [21], [22].

Table 1. Reliability Test Result

Variable	Alpha Cronbach	Reliability	
		Person	Item
Sustainability Leadership	0.91	0.89	0.98

The validity test results (table 2) indicate one item (PEB1) is an outlier as the logit value is above 1.5 [22]. Therefore, the item was subtracted from the pro-environmental behavior instrument [21], [22].

Table 2. Validity Test Result

Dimensions	Items	Logit	Result
Eco-Initiatives	EI1	2.03	Declined
	EI2	1.04	Accepted
	EI3	1.07	Accepted
Eco-Helping	EH1	0.92	Accepted
	EH2	0.99	Accepted
	EH3	1.02	Accepted
Eco-Civic	EC1	0.98	Accepted
	EC2	0.64	Accepted
	EC3	1.07	Accepted
	EC4	0.86	Accepted

The following analysis is a Person Wright Map. Item-person map (or Wright Map or Variable Map) is a Rasch model measurement tool that provides a comprehensive outlook of the data [21], [22]. This map, also called a construct map, illustrates person abilities and item preferences using the same logit ruler that provides information about the research result [21], [22].

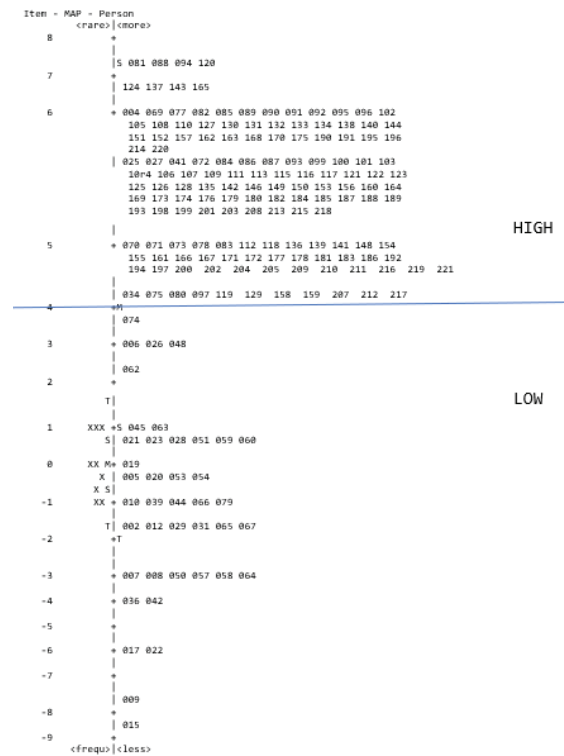


Fig. 1. Pro-Environmental Map

Figure 1 shows that 77% of city employees are environmentally conscious. It suggests they understand the significance of pro-environmental behavior in their daily activities at work. Rasch Model Analysis also provides a detailed descriptive analysis of pro-environmental behaviors, beginning with the most favorable indicators and progressing to the least favorable indicators. The most favorable pro-environmental behavior is upholding the company's image by participating in environmental care activities. On the contrary, the least favorable is taking the initiative to update environmental information at the workplace.

Table 3. Pro Environmental Behaviours

Rank	Logit	Code	PE Behaviors
1	-1.14	EC3	I contribute to upholding the company's image by participating in environmental care activities.
2	-0.91	EH1	I invite colleagues who care about the environment to participate spontaneously.
3	-0.83	EH3	I actively engage in environmental discussions with my coworkers.
4	-0.38	EC1	I actively participate in the company's environmental care events.
5	0.7	EH2	I encourage my coworkers to practice environmentally friendly behaviour.
6	0.15	EI3	I take the initiative to effectively protect the workplace environment.

Rank	Logit	Code	PE Behaviors
7	0.98	EI2	I voluntarily take steps to protect the environment at work.
8	1.01	EC4	I help an environmental project at work.
9	1.04	EC2	I took the initiative to update environmental information at work.

According to the item measure analysis, employees in big cities engage in environmentally friendly behavior. Consequently, it benefits the company's reputation; in other words, environmentally friendly behavior is still requested by external parties, in this case, the company. It is not yet at the self-initiative stage. In addition, today's large corporations use environmental issues as promotional tools. It's not surprising that employees in major cities have environmentally conscious behavior conditioned by the company to improve its image.

4.3 Structural Equation Modelling Analysis

According to [23], [24], the loading factor should be more than 0.70. The reliability of internal consistency must then be assessed. Two indicators corroborate this: composite reliability and Cronbach's alpha. The value must be equal to or greater than 0.50 [23], [24]. An indicator of convergent validity is the average variance extended (AVE). The lowest and maximum threshold values are 0.50 and higher [23], [24]. Tables 4 show the outer-loading value and the reliability and validity scores that meet the measurement's standards.

Table 4. Loading Factor

	EC	EH	EI	PEB
EC1	0.904			
EC2	0.900			
EC3	0.895			
EC4	0.889			
EH1		0.892		

	EC	EH	EI	PEB
EH2		0.860		
EH3		0.877		
EI1			0.752	
EI2			0.760	
EI3			0.771	
PE10				0.854
PE4				0.834
PE5				0.787
PE6				0.864
PE7				0.876
PE8				0.886
PE9				0.874

Based on the results of the loading factor, it can be seen that all indicators have a value of > 0.70 after removing two indicators, namely PE1 and PE2, which have a loading factor of <0.70. Therefore, it implies that all indicators are valid [23], [24].

Table 5. Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
EC	0.919	0.919	0.943	0.805
EH	0.849	0.851	0.909	0.768
EI	0.638	0.638	0.805	0.579
PEB	0.938	0.939	0.950	0.729

Based on the AVE value results, all constructs are greater than 0.50, indicating that they meet the requirements for construct validity. It is also supported by the Composite Reliability value greater than 0.70, implying that all construct indicators are reliable [23], [24].

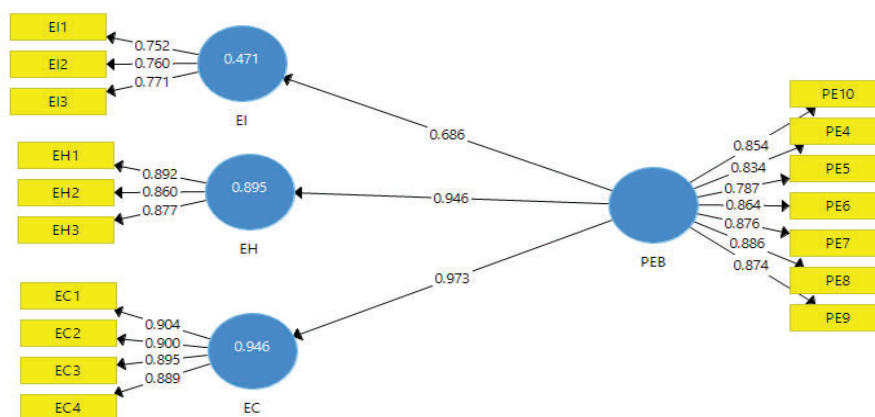


Fig. 2. Path Coefficients

Based on the results of the outer loadings (Table 6 below), all construct indicators in the model are valid. The result shows T-Statistics values >1.96 and is significant at the 0.05 level [23], [24].

The path coefficient results (Table 7 below) also

The item measure analysis approach has shown that the most favorable activity for big city employees is contributing to upholding the company's image. They are willing to participate in environmental activities (eco-civic engagement dimension). It indicates that as

Table 6. Outer Loadings

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
EC1 <- EC	0.904	0.902	0.016	57.936	0.000
EC2 <- EC	0.900	0.900	0.018	49.774	0.000
EC3 <- EC	0.895	0.894	0.019	46.599	0.000
EC4 <- EC	0.889	0.888	0.018	48.081	0.000
EH1 <- EH	0.892	0.891	0.019	47.793	0.000
EH2 <- EH	0.860	0.858	0.025	34.385	0.000
EH3 <- EH	0.877	0.877	0.021	40.989	0.000
EI1 <- EI	0.752	0.750	0.064	11.714	0.000
EI2 <- EI	0.760	0.756	0.047	16.055	0.000
EI3 <- EI	0.771	0.770	0.041	18.785	0.000
PE10 <- PEB	0.854	0.853	0.026	33.356	0.000
PE4 <- PEB	0.834	0.833	0.029	28.319	0.000
PE5 <- PEB	0.787	0.785	0.036	22.089	0.000
PE6 <- PEB	0.864	0.864	0.029	29.814	0.000
PE7 <- PEB	0.876	0.875	0.020	44.821	0.000
PE8 <- PEB	0.886	0.885	0.019	47.502	0.000
PE9 <- PEB	0.874	0.873	0.025	35.546	0.000

show that all first-order constructs significantly affect the second-order pro-environmental behaviors construct. The result proves T-statistics values are >1.96 and significant at 0.05 for all first-order constructs [23], [24].

It means that eco-initiatives, eco-helping, and eco-civic have all proven to be significant facets of pro-environmental behavior. In other words, all first-order constructs are dimensional constructs that form pro-environmental behavior constructs.

an employee, pro-environmental behavior is confined to performing as a good employee by keeping the company's good name by engaging in an ecologically responsible manner. The least favorable behavior is taking the initiative to update environmental information at work. This suggests that city workers are not yet wholly engaged in environmentally conscious conduct on their own initiative. Other data on eco-initiatives indicate that employees in big cities are less eager to help the environmental projects at work. They

Table 7. Path Coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
PEB -> EC	0.973	0.973	0.006	173.025	0.000
PEB -> EH	0.946	0.946	0.010	90.278	0.000
PEB -> EI	0.686	0.689	0.054	12.771	0.000

The Second Order Confirmatory Factor Analysis SEM analysis results show that hypotheses 1, 2, and 3 are statistically significant. It implies that Eco Initiatives, Eco Helping, and Eco Civic Engagement significantly impact pro-environmental behavior. The research findings align with previous research findings about pro-environmental behavior dimensions: eco-initiatives, eco-civic engagement, and eco-helping [18].

also have a low willingness to protect the environment at work and initiatives to preserve it.

A similar thing is demonstrated by the findings of the path coefficient analysis from SEM (figure 2), which reveal that eco-civic engagement has the most significant influence on PEB by 97.3%. On the contrary, eco-initiatives have the most negligible impact of 68.6% on PEB.

The researchers propose making environmentally conscious behavior a habit. It can be reinforced further by including environmentally friendly behavior questions in candidate interviews. Other suggestions include environmentally friendly behavior items in employee work assessments. It may also be advantageous to provide significant rewards for employees who have actively taken the initiative in environmentally conscious workplace behavior.

5 Conclusion

The purpose of this research is to provide an explanation regarding employees' environmentally friendly behavior within big cities. The three hypotheses of this study proved significant; namely, eco initiatives significantly influence pro-environmental behavior; eco helping significantly influences pro-environmental behavior. The last one, eco-civic engagement, significantly influences pro-environmental behavior.

Following the data analysis findings using two statistical methodologies, the environmentally friendly behaviors of employees in big cities are still limited to the behavior of good employees within the organization. It suggests that the pro-environmental behavior of city workers has not been driven by personal initiative. Nevertheless, the results of the Rasch Model and SEM analysis show that employees in big cities are conscious of the environment as good citizen of the organization.

There are still limitations in this research. Future studies should examine the effects of pro-environmental behavior on individual and organizational performance. It's also beneficial to test the pro-environmental behavior variable's outcomes in different industrial sectors, including manufacturing and services.

References

- [1] C. Mouro and A. P. Duarte, "Organisational Climate and Pro-environmental Behaviours at Work: The Mediating Role of Personal Norms," *Front. Psychol.*, vol. 12, no. September, pp. 1–9, 2021, doi: 10.3389/fpsyg.2021.635739.
- [2] R. Wesselink, V. Blok, and J. Ringersma, "Pro-environmental behaviour in the workplace and the role of managers and organisation," *J. Clean. Prod.*, vol. 168, pp. 1679–1687, 2017, doi: 10.1016/j.jclepro.2017.08.214.
- [3] S. Smit *et al.*, "Toward a sustainable, inclusive, growing future: The role of business," *McKinsey Co.*, no. November 2022, pp. 1–32, 2022, [Online]. Available: https://www.mckinsey.com/~media/mckinsey/featured_insights/sustainable_inclusive_growth/toward_a_sustainable_inclusive_growing_future_the_role_of_business/toward-a-sustainable-inclusive-growing-future-the-role-of-business.pdf?shouldIndex=false
- [4] R. Wesselink, V. Blok, and J. Ringersma, "Pro-environmental behaviour in the workplace and the role of managers and organisation," *J. Clean. Prod.*, vol. 168, no. August, pp. 1679–1687, 2017, doi: 10.1016/j.jclepro.2017.08.214.
- [5] M. Y. Yusliza *et al.*, "An investigation of pro-environmental behaviour and sustainable development in Malaysia," *Sustain.*, vol. 12, no. 17, pp. 1–21, 2020, doi: 10.3390/su12177083.
- [6] L. K. Lades, K. Laffan, and T. O. Weber, "Do economic preferences predict pro-environmental behaviour?," *Ecol. Econ.*, vol. 183, no. January, p. 106977, 2021, doi: 10.1016/j.ecolecon.2021.106977.
- [7] A. Ruepert *et al.*, "Environmental considerations in the organizational context: A pathway to pro-environmental behaviour at work," *Energy Res. Soc. Sci.*, vol. 17, pp. 59–70, 2016, doi: 10.1016/j.erss.2016.04.004.
- [8] D. Li, L. Zhao, S. Ma, S. Shao, and L. Zhang, "What influences an individual's pro-environmental behavior? A literature review," *Resour. Conserv. Recycl.*, vol. 146, no. March, pp. 28–34, 2019, doi: 10.1016/j.resconrec.2019.03.024.
- [9] S. pei Tsai, "Innovative behaviour of knowledge workers and social exchange attributes of financial incentive: implications for knowledge management," *J. Knowl. Manag.*, vol. 22, no. 8, pp. 1712–1735, 2018, doi: 10.1108/JKM-07-2017-0293.
- [10] C. L. Chen and C. H. Tsai, "Marine environmental awareness among university students in Taiwan: a potential signal for sustainability of the oceans," *Environ. Educ. Res.*, vol. 22, no. 7, pp. 958–977, 2016, doi: 10.1080/13504622.2015.1054266.
- [11] B. Bin Saeed, B. Afsar, S. Hafeez, I. Khan, M. Tahir, and M. A. Afridi, "Promoting employee's proenvironmental behavior through green human resource management practices," *Corp. Soc. Responsib. Environ. Manag.*, vol. 26, no. 2, pp. 424–438, 2019, doi: 10.1002/csr.1694.
- [12] L. Omarova and S. J. Jo, "Employee Pro-Environmental Behavior: The Impact of Environmental Transformational Leadership and GHRM," *Sustain.*, vol. 14, no. 4, 2022, doi: 10.3390/su14042046.
- [13] B. Foster *et al.*, "Determinants of Pro-Environmental Behaviour in the Workplace," *Sustain.*, vol. 14, no. 8, pp. 1–18, 2022, doi: 10.3390/su14084420.
- [14] Y. Inoue and P. Alfaro-Barrantes, "Pro-environmental behavior in the workplace: A review of empirical studies and directions for future research," *Bus. Soc. Rev.*, vol. 120, no. 1, pp. 137–160, 2015, doi: 10.1111/basr.12051.
- [15] P. Hanna, S. Wijesinghe, I. Paliatsos, C. Walker, M. Adams, and A. Kimbu, "Active engagement with nature: outdoor adventure tourism, sustainability and wellbeing," *J. Sustain. Tour.*, vol. 27, no. 9, pp. 1355–1373, 2019, doi: 10.1080/09669582.2019.1621883.
- [16] Z. Zhang, H. Shi, and T. Feng, "Why Good Employees Do Bad Things: The Link between Pro-Environmental Behavior and Workplace Deviance," *Int. J. Environ. Res. Public Health*, vol. 19, no. 22, 2022, doi: 10.3390/ijerph192215284.
- [17] R. P. Setyaningrum, "Achieving employee

- environmental performance through perceived organizational support towards the environment: a mediated-moderation analysis,” *J. Siasat Bisnis*, vol. 27, no. 1, pp. 17–30, 2022, doi: 10.20885/jsb.vol27.iss1.art2.
- [18] N. Anwar, N. H. Nik Mahmood, M. Y. Yusliza, T. Ramayah, J. Noor Faezah, and W. Khalid, “Green Human Resource Management for organisational citizenship behaviour towards the environment and environmental performance on a university campus,” *J. Clean. Prod.*, vol. 256, p. 120401, 2020, doi: 10.1016/j.jclepro.2020.120401.
- [19] M. Lin, A. A. Effendi, and Q. Iqbal, “The Mechanism Underlying the Sustainable Performance of Transformational Leadership: Organizational Identification as Moderator,” *Sustain.*, vol. 14, no. 23, 2022, doi: 10.3390/su142315568.
- [20] C. Barclay, D., Thompson, R., dan Higgins, “The Partial Least Squares (PLS) Approach to Causal Modeling: Personal Computer Adoption and Use an Illustration,” *Technol. Stud.*, vol. 2, no. 2, pp. 285–309, 1995.
- [21] W. J. Boone, M. S. Yale, and J. R. Staver, *Rasch analysis in the human sciences*. 2014. doi: 10.1007/978-94-007-6857-4.
- [22] B. Sumintono, *Model Rasch untuk Penelitian Ilmu-Ilmu Sosial*, November 2. Trim Komunikata, 2014.
- [23] M. Sarstedt, C. M. Ringle, and J. F. Hair, *Partial Least Squares Structural Equation Modeling*. 2021. doi: 10.1007/978-3-319-05542-8_15-2.
- [24] I. Ghozali, *Partial Least Squares Menggunakan Program SmartPLS 3.2.9*. Jakarta: Badan Penerbit Universitas Diponegoro, 2021.