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Impact of Environmental Awareness on Environmental Performance

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Abstract. This study is aimed for finding out the impact of environmental awareness on environmental performance. Data were collected from 317 students at Universitas Negeri Jakarta in East Jakarta in the province of DKI Jakarta. Data were analyzed by implementing the structural equation model (SEM). Result confirmed that positive relationship between environmental awareness on environmental performance was not supported in this study. Findings also stated that student having noble values of sustainability, student environmental practices and student environmental attitudes has significantly positive association with student environmental awareness. Quality of life, environmental burden, environmental commitments, and environmental risks predict environmental performance. However, sustainability as predictor of environmental performance was not supported in this study.

INTRODUCTION

Environmental performance is essential to be done in order to have a good quality of environment. Treatment of waste management can be improved environmental performance [1-2]. The policy related to prevention and management of waste consisting of reuse and recycling can reduce environmental problems. One of factors describing variety of performance level in treating waste is community's environmental awareness. Community's attitude towards environment, concern about protecting environment, and concern about waste recycling influences environmental awareness. The greater concern of society towards environment affects environmental performance relate to treating waste. The better government quality is related to higher level of environmental performance. Further, higher education level positively influences ecological efficiency in waste management leading to higher quality of environmental performance. Harmonization in having relationship with external natural environment must be maintained continuously [3]. Proactive environmental strategies belonged to individuals continually enhance environmental performance. In addition, green innovation focusing on environmentally friendly products and processes utilizing eco-design principles, diminishing emissions of carbon and reducing water and electricity. Organizations should do investment with innovative processes and technologies allowing to effect environment positively in order that they are deeply engaged in sustainable development. Environmental education can improve individual environmental awareness [4-8]. Enhancement of individuals' environmental awareness is supported by higher level of their awareness towards taking care and not destructing environment, and keeping up environmental cleanliness. Individuals' pro-conservation values can be strengthened by continuing to keep up environmental values, be responsible of managing environment, and conserving. However, most previous studies don't present a more detail explanation about indicator measurement of environmental awareness and environmental performance as well as its impact on another.

Environmental performance may be stimulated by environmental awareness [1-2]. Environmental practices, environmental attitudes, and noble values of sustainability are positively related to environmental awareness. Sustainability, quality of life, environmental burden, environmental commitments, and environmental risks are positively connected with environmental performance. However, this study doesn't examine about detail measurement of environmental performance and environmental awareness completed with their indicators. The summary of relationships hypothesized is described in a model shown in Fig. 1.
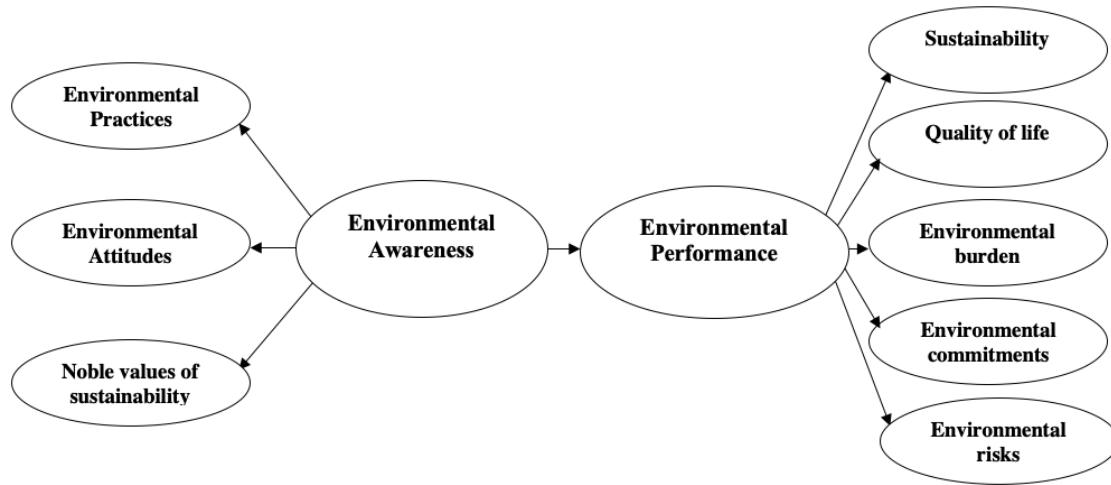

FIGURE 1. Theoretical framework of the study

METHODS

This research conducted the survey method to 317 students at Universitas Negeri Jakarta in East Jakarta in the province of DKI Jakarta in Indonesia. Data collected in this study were associated with environmental awareness and environmental performance. Analysis of content was utilized to the literature of environmental awareness consisting of student having noble values of sustainability, student environmental practices and student environmental attitudes, whereas environmental performance involving sustainability, quality of life, environmental burden, environmental commitments, and environmental risks [1-2]. These dimensions were derived into the questionnaire distributed to 317 students at Universitas Negeri Jakarta in East Jakarta in the province of DKI Jakarta in Indonesia.

The three aspects of environmental practices include comprehending the meanings of environmental issues, being in charge of environmental problems at one's place, discussing about environmental problems with others, and getting involved in environmental awareness activities. The three dimensions predict environmental attitudes are feeling disappointed with air pollution, feeling disappointed with river pollution, appreciating biodiversity, and being aware of responsibility towards environment. The indicators of noble values of sustainability consist of trying to reduce amount of waste by collecting materials recycled, not using plastic bag to wrap things, conserving the use of electric energy, and composting the food residue to become fertilizer.

The three indicators of sustainability involve economic sustainability, social sustainability and environmental sustainability. Energy savings, using renewable energy, and proper waste-water management are predictors of quality of life. Preventing hazardous substance to the environment, reduce the contamination to acceptable risk level, and reducing dust from open ground are predictors of environmental burden. The three dimensions of environmental commitments are willingness to sacrifice personal enjoyment, reducing waste of resources, and using environmentally friendly new products. The three dimensions of environmental risks are better control risks impacting environment, prevent harm to the environment, and keep chemicals out of stormwater drains.

In this study, data were analyzed using Structural Equation Modeling (SEM) with IBM SPSS Statistics 24 and SPSS AMOS 24 with 2017 Edition [9-26]. SEM was applied to predict the association of environmental awareness with environmental performance. Data were collected from 317 students at Universitas Negeri Jakarta in East Jakarta in the province of DKI Jakarta inputted in excel using responses with "strongly agree" scored 5, "agree" scored 4, "neutral" scored 3, "disagree" scored 2, "strongly disagree" scored 1 for positive questions, and "strongly agree" scored 1, "agree" scored 2, "neutral" scored 3, "disagree" scored 4, "strongly disagree" scored 5 for negative questions.

RESULTS AND DISCUSSION

The goodness of fit statistical analysis results shows that Normed Fit Index (NFI) value attained 0.656 pointing out that the model proposed is good fit. Root Mean Square Residual (RMR) value reached 0.064 meaning that the model offered is good fit. The value of Comparative Fit Index (CFI) reached 0.767 showing that the model suggested is good fit. Incremental Fit Index (IFI) value reached 0.771 indicating that the model is good fit. Relative Fit Index (RFI) value gained 0.619 showing that the model is good fit. Goodness of Fit Index (GFI) value reached 0.845 indicating that the model is good fit. Adjusted Goodness of Fit Index (AGFI) value attained 0.816 pointing out the model hypothesized is good fit. Based on SEM measurement, the model proposed in this study is a fit model.

Table 1 and 2 showing measurement model test of observed variables present that predictor of environmental awareness on environmental performance was not supported in this research. Environmental practices, environmental attitudes, and noble values of sustainability has positive relationship with environmental awareness of 0.779, 1.192, and 0.730, respectively. Comprehending the meanings of environmental issues, being in charge of environmental problems at one's place, discussing about environmental problems with others, and getting involved in environmental awareness activities encourage environmental practices of 0.472, 0.744, 0.658, and 0.593. Feeling disappointed with air pollution, feeling disappointed with river pollution, appreciating biodiversity, and being aware of responsibility towards environment stimulate environmental attitudes of 0.478, 0.362, 0.325, and 0.400, respectively. Trying to reduce amount of waste by collecting materials recycled, not using plastic bag to wrap things, conserving the use of electric energy, and composting the food residue to become fertilizer have significant positive association with noble values of sustainability of 0.583, 0.663, 0.719, and 0.204. However, association between conserving the use of water supply and noble values of sustainability was not supported in this study. Quality of life, environmental burden, environmental commitments, and environmental risks support environmental performance of 0.787, 0.986, 0.735, and 0.703, respectively. However, sustainability as predictor of environmental performance was not supported in this study. Economic sustainability has significant relationship with sustainability of 0.031. However, social sustainability and environmental sustainability were not predictor of sustainability.

Energy savings, using renewable energy, and proper waste-water management are significantly related to quality of life of 0.550, 0.622, and 0.735, respectively. Prevent hazardous substance to the environment, reduce the contamination to acceptable risk level, and reducing dust from open ground are significantly correlated with environmental burden of 0.652, 0.597, and 0.442, respectively. Willingness to sacrifice personal enjoyment, reducing waste of resources, and using environmentally friendly new products are significantly associated with environmental commitments of 0.672, 0.379, and 0.434, respectively. Better control risks impacting environment, prevent harm to the environment, and keep chemicals out of stormwater drains are significantly positively related to environmental risks of 0.499, 0.778, and 0.658. These results were in line with the study found that environmental willingness to do productive activities can lessen environmental problems [1-2]. It can be highlighted that the higher level of students' knowledge about environment leads to the higher level of student awareness to take care the environment. These findings were also supported by the study indicating that student interests in the environmental issues explains their awareness towards taking care environment [22]. The structural model is shown in Fig. 2.

TABLE 1. Measurement model test (Regression weights: Group number 1 – Default model)

			Estimate	S.E.	C.R.	P	Label
EPFM	<---	EWRS	-,138	,204	-,679	,497	
EAT	<---	EWRS	3,852	1,376	2,800	,005	
EPC	<---	EWRS	3,223	1,109	2,905	,004	
NVS	<---	EWRS	1,000				
STB	<---	EPFM	,073	,155	,471	,637	
QOL	<---	EPFM	1,265	,236	5,360	***	
EVB	<---	EPFM	1,655	,271	6,098	***	
EVC	<---	EPFM	1,336	,241	5,547	***	
EVR	<---	EPFM	1,000				
EA4	<---	EPC	1,000				
EA3	<---	EPC	1,041	,125	8,335	***	
EA2	<---	EPC	1,310	,149	8,811	***	
EA1	<---	EPC	,799	,121	6,601	***	
EA8	<---	EAT	1,000				

Table 1. Cont.

EA7	<---	EAT	,789	,179	4,410	***
EA6	<---	EAT	,829	,175	4,737	***
EA5	<---	EAT	1,143	,206	5,553	***
EA13	<---	NVS	1,000			
EA12	<---	NVS	,703	,411	1,713	,087
EA11	<---	NVS	4,082	1,315	3,105	,002
EA10	<---	NVS	3,556	1,151	3,090	,002
EA9	<---	NVS	3,155	1,033	3,054	,002
EP1	<---	STB	1,000			
EP2	<---	STB	22,426	47,495	,472	,637
EP3	<---	STB	11,347	24,080	,471	,637
EP4	<---	QOL	1,000			
EP5	<---	QOL	1,034	,140	7,415	***
EP6	<---	QOL	1,100	,139	7,898	***
EP7	<---	EVB	1,000			
EP8	<---	EVB	,905	,107	8,496	***
EP9	<---	EVB	,663	,100	6,595	***
EP10	<---	EVC	1,000			
EP11	<---	EVC	,575	,119	4,839	***
EP12	<---	EVC	,664	,125	5,327	***
EP13	<---	EVR	1,000			
EP14	<---	EVR	1,444	,197	7,340	***
EP15	<---	EVR	1,200	,169	7,122	***

Source: AMOS Results 2019

TABLE 2. Measurement model test (Standardized regression weights: Group number 1 – Default model)

			Estimate
EPFM	<---	EWRS	-,051
EAT	<---	EWRS	1,192
EPC	<---	EWRS	,779
NVS	<---	EWRS	,730
STB	<---	EPFM	,865
QOL	<---	EPFM	,787
EVB	<---	EPFM	,986
EVC	<---	EPFM	,735
EVR	<---	EPFM	,703
EA4	<---	EPC	,593
EA3	<---	EPC	,658
EA2	<---	EPC	,744
EA1	<---	EPC	,472
EA8	<---	EAT	,400
EA7	<---	EAT	,325
EA6	<---	EAT	,362
EA5	<---	EAT	,478
EA13	<---	NVS	,204
EA12	<---	NVS	,131
EA11	<---	NVS	,719
EA10	<---	NVS	,663
EA9	<---	NVS	,583
EP1	<---	STB	,031
EP2	<---	STB	,772
EP3	<---	STB	,356
EP4	<---	QOL	,550

Table 2. Cont.

EP5	<---	QOL	,622
EP6	<---	QOL	,735
EP7	<---	EVB	,652
EP8	<---	EVB	,597
EP9	<---	EVB	,442
EP10	<---	EVC	,672
EP11	<---	EVC	,379
EP12	<---	EVC	,434
EP13	<---	EVR	,499
EP14	<---	EVR	,778
EP15	<---	EVR	,658

Source: AMOS Results 2019

Notes:

EWRS = Environmental awareness
EPFM = Environmental performance
EPC = Environmental practices
EAT = Environmental attitudes
NVS = Noble values of sustainability
STB = Sustainability
QOL = Quality of life
EVB = Environmental burden
EVC = Environmental commitments
EVR = Environmental risks
EA1 = Comprehending the meanings of environmental issues
EA2 = Being in charge of environmental problems at one's place
EA3 = Discussing about environmental problems with others
EA4 = Getting involved in environmental awareness activities
EA5 = Feeling disappointed with air pollution
EA6 = Feeling disappointed with river pollution
EA7 = Appreciating biodiversity
EA8 = Being aware of being responsibility towards environment
EA9 = Trying to reduce amount of waste by collecting materials recycled
EA10 = Not using plastic bag to wrap things
EA11 = Conserving the use of electric energy
EA12 = Conserving the use of water supply
EA13 = Composting the food residue to become fertilizer
EP1 = Economic sustainability
EP2 = Social sustainability
EP3 = Environmental sustainability
EP4 = Energy savings
EP5 = Using renewable energy
EP6 = Proper waste-water management
EP7 = Prevent hazardous substance to the environment
EP8 = Reduce the contamination to acceptable risk level
EP9 = Reducing dust from open ground
EP10= Willingness to sacrifice personal enjoyment
EP11= Reducing waste of resources
EP12= Using environmentally friendly new products
EP13= Better control risks impacting environment
EP14= Prevent harm to the environment
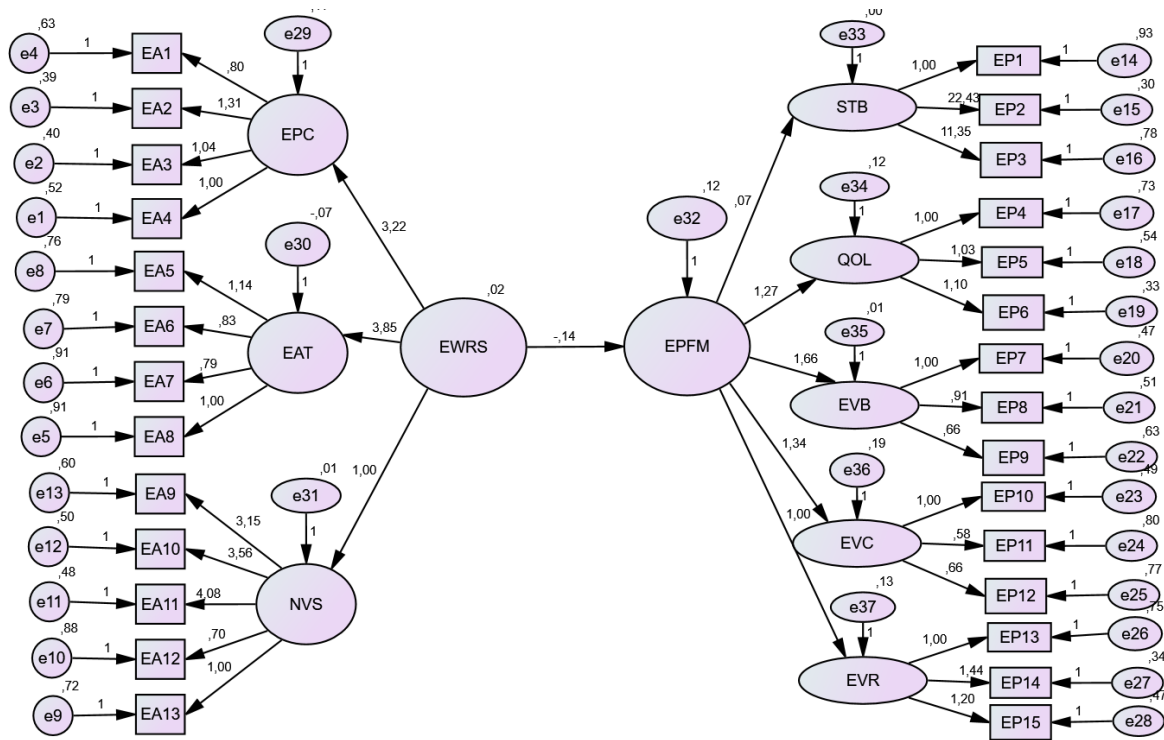EP15= Keep chemicals out of stormwater drains

FIGURE 2. The structural model

CONCLUSION

Environmental performance model based on environmental awareness is proposed by this study. Environmental practices, environmental attitudes, and noble values of sustainability has positive relationship with environmental awareness. Quality of life, environmental burden, environmental commitments, and environmental risks have positive association with environmental performance. However, the relationship between sustainability and environmental performance was not supported in this research. Association between environmental awareness and environmental performance was not supported in this research

ACKNOWLEDGEMENTS

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