

HOW ATTITUDE TOWARD BEHAVIOR, PERCEIVED BEHAVIORAL CONTROL, PERSONAL NORM, AND PRO-ENVIRONMENTAL IDENTITY AFFECT WASTE REDUCTION BEHAVIOR AMONG FEMALE WORKERS

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ABSTRACT

This study aims to determine the Waste Reduction Behavior (WRB) of female workers by developing a theory of planned behavior with Attitude toward Behavior (AtB) and Perceived Behavioral Control (PBC) variables, value belief norm theory with Personal Norm (PN) variable, and contextual consistency theory with Pro-environmental Identity (PEI) variable. The population in this study are female lecturers at universities around Malang Raya. It employs a purposive sampling with the criteria of female lecturers and a minimum master's degree with at least one year of work. The study is participated by 128 respondents. The results show that AtB and PBC do not bring about any effect on IRB, but PBC affects WRB. PN and PEI affect IRB, but PEI does not affect WRB. Meanwhile, IRB affects WRB. The study results imply that the identity of pro-environmental behavior by waste reduction among women workers has not reached the stage of factual behavior yet, in contrast to their perceived behavioral control in the form of difficulties and conveniences that directly affect their waste reduction behavior.

Keywords: Attitude toward Behavior; Perceived Behavioral Control; Personal Norm; Pro-Environmental Identity; Waste Reduction Behavior

INTRODUCTION

Data from the Ministry of Environment and Forestry (MoEF) show an increase in the amount of waste during the Covid-19 pandemic. Among the causes are the work from home and distance school policies, as well as an increase in people's online shopping habits. From these two causes, there have been an increase of 36% in plastic waste, cardboard, Styrofoam, and waste from materials commonly used to wrap other packages (Liputan6.com, Jakarta). The Ministry of Environment's statistical data on the composition of national waste, based on waste sources in 2020, show that 37.3% of waste in Indonesia comes from household activities, as depicted in Figure 1.

In addition to business and government actors who play a significant role in reducing waste, individuals are also determinants. They are actors who consume and use materials that produce waste directly. According to Qiang Wang (2013), individuals can solve environmental problems by environmentally responsible behavior. Besides, Varotto and Spagnolli (2017) identify that waste reduction behavior is influenced by individual and contextual factors.

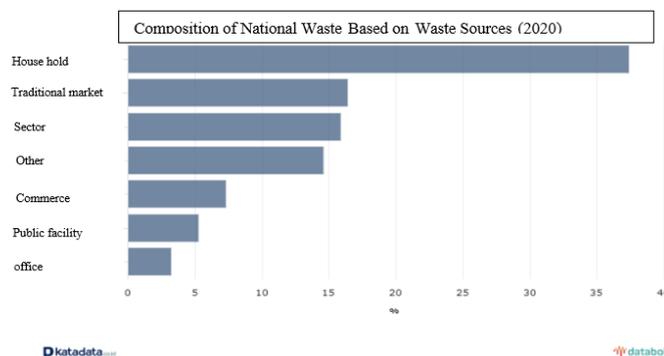


Figure 1. Composition of National Waste Based on Waste Sources
Source: Katadata Website, (2020)

Several studies adopt Theory of Planned Behavior (TPB) to predict recycling behavior, such as Khan et.al, (2019), Vina & Mayangsari (2020), and Si, et.al. (2019). However, it is possible to include additional variables to predict behavior (Ajzen, 1991) better. Huffman et al. (2014) and Schultz et. al (1995) argued that pro-environment identity influences waste reduction behavior. Meanwhile, Thomas and Sharp (2013) suggested that personal norm, which is the perception of what most people do and what to do, shows an increase in society, and in turn, positively affects the recycling absorption.

This research is expected to contribute to the changes in waste reduction behavior due to the COVID-19 pandemic, so it can be used as a reference for policymakers from business and government stakeholders. A different finding in the organizational context is demonstrated by Tudor et. al (2007) that personal beliefs about the benefits of recycling in hospital employees can influence their waste reduction behavior by adapting TPB as a predictor of behavior in the workplace. On the other hand, Holland et al. (2006) found that behavioral intention does not affect the behavior of reducing waste or recycling, but recycling habits and facilities strongly influence the behavior of reducing waste or recycling among employees at telecommunication companies in the Netherlands.

Some researchers found a phenomenon that women have a greater concern on the environment than men do. Zelezny, Chua, and Aldrich (2000) conduct a study on gender differences in pro-environmental attitudes and behavior, and it concludes that women are more concerned about the environment than men. Why are women more environmentally friendly? From a theoretical perspective, gender differences in environmentalism have implications for socialization and values. According to Giligan (1982), it happens because women have been naturally created to respect the needs of others, so they show more helpful behavior and are more altruistic. Interestingly, there found still little research on what predicts other waste reduction behaviors, including prevention and reuse (Whitmarsh et. al, 2018).

Therefore, developing research on the behavior of reducing waste in educational organizations, such as universities, is a lot prominent considering that the human resources within have a higher level of knowledge (Whitmarsh et. al, 2018). So, this research discovers the behavior of reducing waste by female lecturers at home and on campus. The study results are expected for use as a reference to figure out the environmentally friendly behavior of female lecturers at home and on campus as individuals who have a major domestic role in making decisions about household waste management while working on campus. Likewise, it is also projected for supports of the SDGs free waste program in 2030 and efforts to maintain environmental sustainability and the Green Campus program.

LITERATURE REVIEW

Theory of Planned Behavior (TPB)

The theory of planned behavior (TPB) is developed based on the theory of reasoned action (TRA) (Fishbein, 1979), which proposes that behavioral intention is a function of attitude and subjective norm. However, TRA is limited in predicting only behavior under volitional control (i.e., actions based on one's volitional strength). When it comes to the behavior other than volitional control, TRA becomes less useful (Eagly & Chaiken, 1993). Therefore, to improve the prediction of TRA, Ajzen (1991) proposes TPB by adding perceived behavioral control as another determinant variable of behavioral intention.

According to Ajzen, (1991), attitude refers to the extent to which people evaluate the target behavior as favorable or unfavorable; subjective norm is the social pressure encountered by people to perform the behavior or not, while PBC refers to the perceived difficulty or ease upon performing the behavior.

Value Belief Norm (VBN)

VBN theory establishes the relationship between norms, beliefs, values, and behavior in a causal chain. According to the VBN theory, environmentally friendly behavior is primarily stimulated by personal norms. Meanwhile, personal norms are strongly influenced by beliefs about human-environment relations, their consequences, individual responsibility to take corrective action, and beliefs are created by societal values (Stern, 2000). Value refers to a concept with some

components, including coping with certain situations, and guiding the selection and evaluation of certain behaviors according to their relative significance, leading to the desired end state or behavioral outcome (Schwartz and Bilsky, 1990). Several attempts have been made to expand the VBN model by considering additional predictors to capture larger variance in explaining eco-friendly behavior Nordlund and Garvill, (2003). Therefore, to improve the ability to predict the waste reduction behavior of female workers, this study is designed to combine personal norms and knowledge to better explain the behavioral intentions of female workers in reducing their waste.

Contextual Consistency

Chaiken & Baldwin (1981) develop research on the consistency of individuals who are well-defined by looking at the affective and cognitive components of their attitudes through the past pro-ecological or anti-ecological behavior. The results show that individuals with low consistency pose a low pro-ecological or anti-ecological behavior, while those with high consistency have a well-defined or high pro-ecological or anti-ecological behavior, known as pro-environmental identity. Individuals with high consistency demonstrate a greater tendency to assimilate inconsistent information by generating discrediting thoughts or minimizing the importance of inconsistent information (Chaiken & Yates, 1985).

Pro-environmental identity is generally perceived as a label used to describe oneself and is influenced by personal motivation in the form of self-esteem, self-improvement, and self-understanding as well as social interaction through demands and expectations of other people and the roles we play (Whitmarsh & O'Neill, 2010). Self-identity serves to distinguish oneself from others and to conform to the values, beliefs, and behavior of the social group to which the individual belongs.

Effect of Attitude toward Behavior (AtB) on Intention to Reduce Waste Behavior (IRB)

Attitude toward Behavior (AtB) is one's evaluation of something he likes or dislikes (Ajzen, 1991). In the context of pro-environmental behavior, several studies show a positive influence of attitudes on intention, for example Khan et.al, (2019) proving that attitudes have no effect on recycling or reducing intentions, Ohtomo & Ohnuma (2014) suggesting the positive effect on reducing the use of plastic bags in supermarkets, and Ma et. Al. (2018) that attitudes affect intention. Therefore, the current study proposes a hypothesis 1.

H₁ Attitude toward Behavior (AtB) affects Intention to Reduce Waste Behavior (IRB).

Effect of Perceived Behavioral Control (PBC) on Intention to Reduce Waste Behavior (IRB) and Waste Reduction Behavior (WRB)

Perceived Behavioral Control (PBC) is defined as the level of control that individuals have over their actions (Ajzen, 1991). Individuals' perception of control and self-efficacy are factors related to behavior. Several studies show a positive influence of PBC and behavioral intention (Lizin et.al, 2017, Khan et.al, 2019). However, Chen and Tung (2010) and Ma et al. (2018) show the other way around. Therefore, this study proposes hypothesis 2.

H_{2a} Perceived Behavioral Control (PBC) affects Intention to Reduce Waste Behavior (IRB).

H_{2b} Perceived Behavioral Control (PBC) affects Waste Reduction Behaviour (WRB)

Influence of Personal Norm (PN) on Intention to Reduce Waste Behavior (IRB)

Personal Norm (PN) refers to the feeling of a moral obligation to perform or refrain from certain actions (Schwartz, 1977). It is a self-expectation based on the internalization of values, personality, and habits on certain activities in particular situations developed by individuals, as a feeling of moral obligation to behave well. PN is different from the subjective norm which focuses more on the normative influence of other people and groups considered significant. Previous research shows the positive influence of Personal Norm (PN) in sorting and managing household waste on intention. According to Setiawan et. al (2021), Personal Norm (PN) affects the intention of pro-environmental behavior. Besides, PN is found to be the main factor influencing the intention of the Chinese population toward temporary waste sorting (Zhang, et al, 2019). So, the next hypothesis is:

H₃ Personal Norm (PN) affects Intention to Reduce Waste Behavior (IRB).

Influence of Pro-environmental identity (PEI) on Intention to Reduce Waste Behavior (IRB) and Waste Reduction Behavior (WRB)

Identity is the essence of the whole personality that remains the same even though the surrounding environment changes. In the NAM theory, pro-environmental behavior refers to the awareness of the consequences of others' behavior and a sense of personal responsibility for the environment. Therefore, pro-environmental identity is the consistent behavior of individuals who have self-awareness that includes pro-environmental actions (Steg et al, 2014). Huffman et al., (2014) and Schultz et. al (1995) found that pro-environment identity influences waste reduction behavior. Besides, Whitmarsh et al., (2017) suggested differences in pro-environment identity among Brazilian and UK respondents. Pro-environment identity affects the behavior of reducing consumption in the form of avoidance from buying new goods and packaging or recycling. Therefore, the next hypothesis:

H_{4a} Pro-environmental identity (PEI) affects Intention to Reduce Waste Behavior (IRWB);

H_{4b} Pro-environmental identity (PEI) affects the Waste Reduction Behavior (WRB).

Influence of Intention to Reduce Waste Behavior (IRB) on Waste Reduction Behaviour (WRB)

Khan et. al (2019) identified WRB in 4 categories, namely reuse, resell, donate, and dispose. The findings show that consumers' intention to reduce plastic waste affects behavior in the form of reselling, reusing, donating, and disposing. Reuse is the main predictor of consumer intention to reduce waste. Marangon et. al (2014) found that the frequency of shopping in supermarkets also affects the final waste. Shopping once a week may produce greater waste than shopping twice, three times, or more because people who buy less frequently tend to buy more food than they do frequently. Therefore, the next hypothesis is:

H₅ Intention to Reduce Waste Behavior (IRB) affects Waste Reduction Behavior (WRB) of female workers.

Based on the relationship between variables and hypotheses described previously, the conceptual framework in this study is depicted in Figure 2 below:

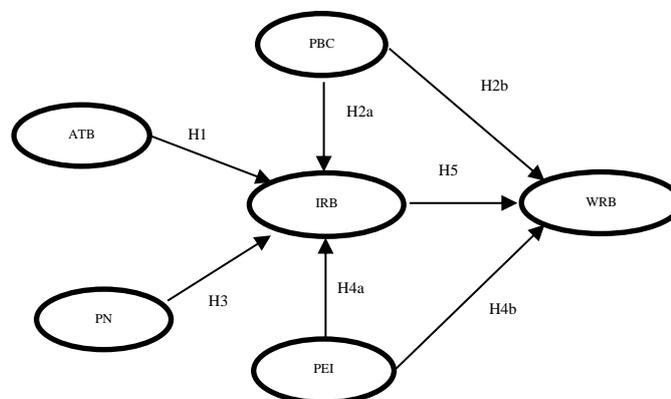


Figure 2. Conceptual Framework
Source: Author Analysis (2022)

METHODS

The population in this study were female lecturers at 4 State Islamic Universities around East Java, using purposive sampling with the criteria of female lecturers with at least one year experience and minimum of master's degree in education. From the questionnaire spread within 3 months from January to March 2022, 128 respondents participated. After the data were collected, they were tested for validity and reliability. Then, they were analyzed using SEM with Stata 13. The operational definitions of variables and construct measurements are presented in Table 1.

Table 1 Measurement of Constructs

Constructs	Items	Item Means	SD	Item-test correlation	Sources	Cronbach alpha
Attitude toward Behavior (AtB): "Beliefs about certain behaviors and their consequences" (Ajzen, 1991)	1. ATB1	5.265	0.798	0.717	Whitmarsh et al., (2018) Likert Scale 1-6	0.806
	2. ATB2	4.992	1.031	0.686		
	3. ATB3	2.766	1.360	0.728		
	4. ATB4	2.641	1.215	0.7367		
	5. ATB5	5.281	0.841	0.7465		
	6. ATB6	5.391	0.816	0.7628		
Perceived Behavioral Control (PBC): "perceived as an encouragement or obstacle perceived by a person to show behavior" (Ajzen, 1991)	1. PBC1	3.094	1.371	0.7863	Whitmarsh et al., (2018) Likert Scale 1-6	0.777
	2. PBC2	3.164	1.379	0.8044		
	3. PBC3	3.352	1.412	0.7818		
	4. PBC4	3.453	1.516	0.7767		
Personal Norm (PN): "self-expectations are based on the internalization of values, personality, and habits, on certain activities in certain situations developed by individuals, as a feeling of moral obligation to behave well or to perform or refrain from certain actions" (Schwartz, 1977)	1. PN1	5.000	0.922	0.8512	Wang et al (2019) Tonglet et al (2004) Likert Scale 1-6	0.955
	2. PN2	5.023	0.926	0.8654		
	3. PN3	4.805	1.116	0.8184		
	4. PN4	5.102	0.895	0.8840		
	5. PN5	4.820	0.976	0.8897		
	6. PN6	4.852	0.965	0.9129		
	7. PN7	4.727	1.002	0.8893		
	8. PN8	4.969	0.896	0.8832		
Pro-environmental identity (PEI): "consistent behavior of individuals who have self-awareness that includes pro-environmental actions" (Keizer et al, 2014)	1. PEI1	4.727	0.953	0.8593	Whitmarsh et al., (2017) dan Wang et al (2019) Likert Scale 1-6	0.9010
	2. PEI2	4.914	0.930	0.8919		
	3. PEI3	4.602	1.060	0.8759		
	4. PEI4	4.563	1.228	0.6839		
	5. PEI5	4.461	0.979	0.7945		
	6. PEI6	4.734	0.900	0.8694		
Intention to Reduce Waste Behavior (IRWB): "individual determinations about how hard people are willing to try and how much effort they are willing to show in their behavior" (Ajzen, 2006)	1. IRB1	5.031	1.049	0.8063	Whitmarsh et al., (2018) dan Zhang (2019) Likert Scale 1-6	0.8948
	2. IRB2	4.922	1.062	0.8398		
	3. IRB3	4.851	1.109	0.8020		
	4. IRB4	4.508	1.143	0.8613		
	5. IRB5	4.796	0.942	0.8377		
	6. IRB6	4.375	1.236	0.7382		
Waste Reduction Behavior (WRB): "Actions or activities that a person does in reducing waste, such as avoiding products with excessive packaging, consuming fewer products" (Whitmarsh et al., (2018))	1. WRB1	5.031	0.963	0.7620	Whitmarsh et al., (2018) dan Zhang (2019) Likert Scale 1-6	0.8352
	2. WRB2	4.531	1.143	0.8088		
	3. WRB3	4.789	0.977	0.7530		
	4. WRB4	4.242	1.208	0.8130		
	5. WRB5	4.117	1.295	0.7643		

Source: Author Analysis (2022)

Table 2 shows that all the indicator variables in the study are above 0.6, so the conclusion is valid, and the Cronbach Alpha value of each variable also concludes that all variables are reliable.

RESULTS

The analysis of the respondents' descriptions is presented in table 2. Most of the respondents are 31-40 years old (around 42.19%). For the category work experience, they mostly have been working for more than 10 years (around 32.81%).

Table 2. Description of Respondents (N=128)

	Frequency	Percentage
Gender		
Male	0	0%
Female	128	100%
Age		
25-30 years old	31	24.22%
31-40 years old	54	42.19%
41-50 years old	34	26.56%
> 50 years old	9	7.03%
Length of work		
1-3 years	33	25.78%
4-6 years	33	25.78%
7-10 years	20	15.63%
>10 years	42	32.81%
Last education		
Master's Degree	106	83%
Doctoral Degree	22	17%

Source: Author Analysis (2022)

The results of the hypothesis test are presented in table 3 and Figure 3. Table 3 suggested that the Attitude toward Behavior (AtB) of the female lecturers measured by indicators believes that reducing, reusing, and recycling waste at home is beneficial. They also believe that the attitude poses a risk to them, family, and co-workers. Besides, the idea is also believed to be a good idea, yet it does not affect Intention to Reduce Waste Behavior (IRWB) with a coefficient of 0.115 (t statistic = 1.12 with P-value 0.265 not statistically significant at $p < 0.05$). So, it does not support hypothesis H₁. It means that Attitude toward Behavior (AtB) does not affect Intention to Reduce Waste Behavior (IRB).

Perceived Behavioral Control (PBC) for female lecturers as measured by reducing, reusing, recycling waste at home (PBC1), reducing, reusing, recycling waste at work (PBC2), avoiding reducing, reusing, recycling waste at home due to lack of time (PBC3), and avoiding reducing, reusing, and recycling waste at work due to lack of time (PBC4) do not affect Intention to Reduce Waste Behavior (IRWB) with a coefficient of -0.069 (t statistic = -1.56 with P value of 0.120 is not statistically significant at $p < 0.05$), so it does not support the hypothesis H_{2a}, Perceived Behavioral Control (PBC) does not affect Intention to Reduce Waste Behavior (IRB).

Meanwhile, Perceived Behavioral Control (PBC) among female lecturers affects Waste Reduction Behavior (WRB) with a coefficient of -0.072 (t statistic = -1.89 with a P-value of 0.049 statistically significant at $p < 0.05$). Therefore, it supports hypothesis H_{2b}, Perceived Behavioral Control (PBC) affects Waste Reduction Behavior (WRB).

Personal Norm (PN) among Female lecturers with indicators that they feel responsible to reduce, reuse, and recycle waste at home (PN1); feel they have to help others by reducing waste at home (PN2); feel guilty if they don't reduce waste at home (PN3), cares about protecting the environment by reducing waste at home (PN4); feel they have a moral obligation to reduce, reuse, recycle waste in the office (PN5); feel they have to help others by reducing waste at the office (PN6); feel guilty if they don't reduce waste at the office (PN7); and care for the environment by reducing waste in the office (PN8) affect Intention to Reduce Waste Behavior (IRB) with a coefficient of 0.481 (t statistic = 4.01 with P-value 0.000 statistically significant at $p < 0.001$). Therefore, it supports the hypothesis H₃, that Personal Norm (PN) affects Intention to Reduce Waste Behavior (IRB).

Pro-environmental identity (PEI) of female lecturers with indicators that they consider themselves environmentally conscious (PEI1); consider being environmentally friendly is an important part of the respondents (PEI2); consider themselves as the ones who care about environmental issues (PEI3); are embarrassed to be seen as the ones with environmentally unfriendly lifestyle (PEI4); consider that being involved in recycling is significant (PEI5); and consider as people who are aware of waste (PEI6) affect Intention to Reduce Waste Behavior (IRB) with a coefficient of 0.280 (t statistic) = 1.50 with a P-value of 0.004 which is statistically significant at $p < 0.05$, so it supports the hypothesis, H_{4a} Pro-environmental identity (PEI) affects Intention to Reduce Waste Behavior (IRB).

Meanwhile, Pro-environmental Identity (PEI) among female lecturers affects Waste Reduction Behavior (WRB) with a coefficient of 0.117 (t statistic = 1.97 with P-value 0.134 statistically insignificant at $p < 0.05$), so it does not support hypothesis H4b, Pro-environmental Identity (PEI) does not affect Waste Reduction Behavior (WRB).

The Intention to Reduce Waste Behavior (IRB) is measured by indicators of the willingness to bring our own bag during shopping (IRWB1), the desire to choose products with simple packaging (IRWB2), to buying new goods until they are completely damaged (IRWB3), to recycle old unused goods into things reusable (IRWB4), to reuse used goods that can still be used (IRWB5), to recycle waste into useful goods that can be sold (IRWB6), to positively affect Waste Reduction Behavior (WRB) with a coefficient of 0.599 (t statistic = 5.35 with P-value 0.000 statistically significant at $p < 0.001$). Therefore, it supports hypothesis H5, Intention to Reduce Waste Behavior (IRB) affects Waste Reduction Behavior (WRB).

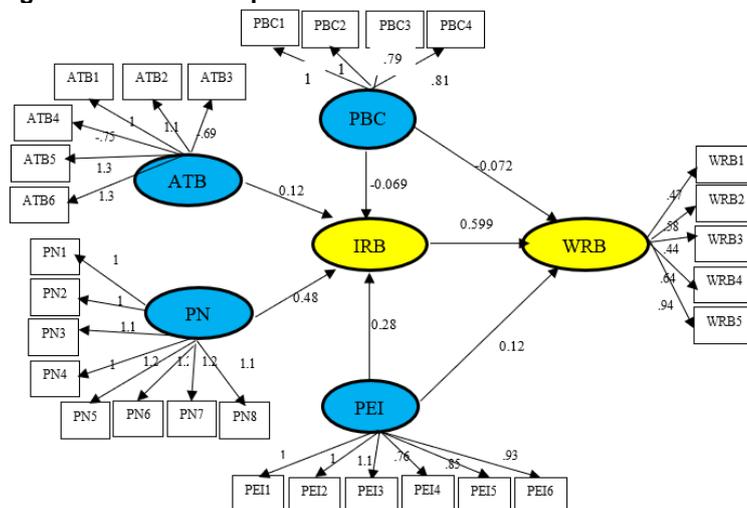
Table 3. Hypothesis Effect

Hypothesis	Hypothesis effect	Coefficient	Z value	P value	Decision
H1 ATB → IRB	Attitude toward behavior affects Intention to reduce waste behavior	0.115	1.12	0.265	Not Suported
H2a PBC → IRB	Perceived Behavioral Control affects Intention to reduce waste behavior	-0.069	-1.56	0.120	Not Suported
H2b PBC → WRB	Perceived Behavioral Control affects waste reduction behavior	-0.072*	-1.89	0.049	Suported
H3 PN → IRB	Personal norm affects Intention to reduce waste behavior	0.481***	4.01	0.000	Suported
H4a PEI → IRB	Pro-environmental identity affects Intention to reduce waste behavior	0.280*	2.89	0.004	Suported
H4b PEI → WRB	Pro-environmental identity affects waste reduction behavior	0.117	1.50	0.134	Not Suported
H5 IRB → WRB	Intention to reduce waste behavior affects waste reduction behavior	0.599***	5.35	0.000	Suported

Source: Author Analysis (2022)

Note: *coefficient is statistically significant at $p < 0.05$, ** coefficient is statistically significant at $p < 0.01$, ***coefficient is statistically significant at $p < 0.001$

Figure 3. Structural Equation Model



Source: Author Analysis (2022)

DISCUSSION

This study examines the waste reduction behavior of female workers by developing TPB, VBN theory, and contextual consistency. All variables are obviously expected to predict the waste reduction behavior of the female lecturer. However, the result is surprisingly different from the fact that the attitude of the lecturer does not affect the desire to behave in reducing waste. The result supports previous research, such those conducted by Lizin et. al (2017) and Wan et. al (2014) that attitude does not affect recycling intentions.

Another interesting result is also found in the perceived behavioral control variable of the female lecturers, which does not affect the behavioral intention of reducing waste. This is partly due to the distribution of authority for women's waste disposal behavior to their household assistants, where they have the perception that reducing and recycling are not hassles and are wasting their time because the waste has been handled by their household assistants. The study result supports the research result of Ma et al. (2018) that PBC has no significant effect on the behavioral intention. Likewise, a research by Chen and Tung (2010) shows that PBC does not affect consumers' recycling intentions in Taiwan.

However, it is different from the effect of PBC on the Waste Reduction Behavior of female lecturers in this study. The study result shows that PBC affects WRB, which indicates that the actual behavior of reducing waste by female lecturers is directly influenced by attitudes or beliefs about certain behaviors, in this case waste reduction and its consequences (Ajzen, 1991). For the personal norm, which is a feeling of moral obligation to do or refrain from certain actions (Schwartz, 1977), the environmentally friendly lifestyle of the lecturers affects the intention to behave in reducing waste. It supports the research result of Setiawan (2021) that personal norms play a significant role as an intrinsic factor that influences the behavior of sorting and recycling household waste. Correspondingly, Zhang, et al. (2019) suggest that personal norms affect household waste sorting intentions.

PEI, which is the consistent behavior of individuals with high awareness of environmentally friendly behavior, shows an influence on the intentions of the female lecturers to behave in reducing waste. In contrast, this study shows that pro-environmental identity has no effect on women's waste reduction behavior. It suggests that that PEI can only predict the intention but not the factual behavior of waste reduction. The study result contradicts to that of the research by Huffman et. al (2014) and Schultz et. al (1995). Meanwhile, the last hypothesis is that IRB has a significant effect on the WRB of the female lecturers, which is in line with study result of Khan et. al (2019) and Marangon et. al (2014). The higher the desire of female workers to reduce waste in the form they will recycle old items that are not used into something that is used again (IRB4) will affect the frequency with which they recycle old items that are not used into something that is used again (WRB4).

CONCLUSION

Of the several hypotheses proposed, some variables exert an effect, and do the other way around. The ATB and PBC variables do not affect the IRB. Meanwhile, PN and PEI affect IRB. WRB predictor is influenced by PBC and IRB. Meanwhile, PEI does not affect WRB. The study results imply that the perceived behavioral control of female lecturers pose a direct effect on waste reduction behavior. Therefore, the encouragement or resistance felt by female workers to show waste reduction behavior is a prominent predictor. It could be due to the shift in the role of their waste reduction behavior to the household assistants. Likewise, the pro-environmental identity in fact only affects their intention but not their waste reduction behavior. It implies that the consistency of the female workers' behavior towards waste reduction is still limited to intentions, but it does not touch the factual waste reduction behavior.

Further research may develop the behavior of reducing waste for female workers by using a longitudinal approach to deeper analyze the factual behavior of female workers in reducing their waste. Also, a focus on female domestic workers is a recommendable point to examine.

The limitation of the current study lies on the low level of respondents from female lecturers in providing feedback. The fact that cross-sectional data cannot describe the actual waste reduction behavior could also be the weakness.

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