

The Potential of Generation Z to Become Agent of Change to Prevent Environmental Degradation in Indonesia

Maharini Rahsilaputeri* Ujang Sumarwan Hartoyo Budi Suharjo
Business School, IPB University, Bogor, Indonesia

* E-mail of the corresponding author: maharini.rahsilaputeri@gmail.com

Abstract

Being the fourth populous country, Indonesia will need to use its resources sustainably, which takes a strong collaboration between all stakeholders. Generation Z as the future consumer in Indonesia has a key role to actively do pro-environmental behavior and become the change agent to prevent further environmental degradation. This research assessed the role of life experiences, media, knowledge, government support and motives to assess generation Z's willingness to become agent of change to prevent environmental degradation. It was an empirical study used a model using the theory of reasoned action approach and willingness to participate. Data were obtained using online questionnaire to 590 university students in greater area of Indonesia capital city and analyzed with descriptive method and PLS-SEM. The research found out that generation Z had the willingness to do more for the environment by becoming agent of change. It also found out that knowledge, attitude, intention to do pro-environmental behavior, the actual behavior, collective and social motive had a positive and significant influence. Additional analyses were carried out to assess the predictive power of the model including the analysis of its implication.

Keywords: reasoned action approach; theory of willingness to participate; agent of change; pro-environmental behavior; Partial Least Square-Structural Equation Model; PLSpredict.

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1. Introduction

Indonesia is facing environmental degradation. News about declining environmental quality or environmental problems appears daily and sometimes it becomes the main topic of coverage in the Indonesian media. In 2019, haze disasters due to forest and land fires in Sumatra (Muhardiansyah 2019) and Kalimantan affected not only Indonesia but also to neighbouring countries (Merdeka 2019). Also in 2019, Jakarta's deteriorating air quality was positioned Indonesian capital city as the city with the third worst air quality in the world (Yulika 2019) and the worst in June 2022 (Fatirahma 2022). Indonesia was the second biggest plastic waste producer in 2010 after China (Jambeck *et al.* 2015). In 2017, 14.2% plastic waste in the world was coming from Indonesia (Lebreton *et al.* 2017). The death / smuggling of protected endangered animals has happened from time to time (Associated Press 2019; Tribunnews 2019), and many other environmental degradation news. The deterioration of the environmental situation and the combination of climate change have believed as the cause of disasters like haze, floods, land slide, long drought, abrasion, etc.

Government of Indonesia has issued many regulations at all levels to regulate environmental aspects, injected environmental education and awareness in school in almost all subjects, created reward and punishment program for various stakeholders, built campaign and public facilities, which can support its citizens to do pro-environmental behaviour. Other stakeholders like industry and non-government organization have also participated in guarding the environment with various activities and programs. The efforts does not seem enough which represented by 2020 Environmental Performance Index (EPI). Indonesia ranked 116 out of 180 countries with a score of 37.8 (EPI 2020). Even though it was an increase in ranking from 133 in 2018 to 116 in 2020, it shows that Indonesia still needs to do many actions to improve its environmental quality.

As the fourth most populous country in the world with a projected population of 266.91 million in 2019 and a growth rate of 1.49%, there will be a population increase of 3.5 - 4 million per year in Indonesia (Databooks 2019). The government has to meet the living needs of its citizens since population growth will require resources to meet the increasing consumption. Consumers who have environmental concerns are expected to create demand for environmentally friendly goods and services. Moreover consumers who are willing to become agent of change in promoting pro-environmental behavior is hypothesized will help to slow down the environmental degradation.

A change agent is a change catalyst, an individual who can make change by inspiring and influencing others (Rachman & Jacob 2020). In this research, the agent of change is proven if an individual has implemented pro-environmental behavior then willing to do pro-environmental behavior that new to the individual, invite others to do the behavior or join an environmental organization. There fore this study postulates that for an individual to become agent of change in preventing further environmental degradation, it has to be preceded by frequent implementation of pro-environmental behaviours. The first objective of this study is to investigate the

willingness of generation Z as Indonesia's future consumers to become agent of change in preventing environmental degradation

Previous research has shown four important factors, which influence pro-environmental behaviour. These factors are significant life experience/SLE (Tanner 1980; 1998), media influence/MI (Patchen 2010), perceived environmental knowledge/PEK (Hines *et al.* 1987), and perception on authority or government support/PAGS (Tang & Zhou 2012). Since the willingness to become agent of change is postulated preceded by actual pro-environmental behavior, this study will investigate further the influence of the aforementioned factors to the willingness to become agent of change as the study's second objective.

This study will use two theories, reasoned action approach/RAA (Fishbein & Ajzen 2010) to investigate the pro-environmental behaviour. The study focusses on attitude as one of key construct in RAA as Fishbein & Ajzen (2010) has stated that attitude is the most important determinants of intentions and behavior. To measure the willingness to become agent of change after an individual applied the pro-environmental behaviour, the study used theory of willingness to participate from Klandermans [1984]. The combination of the two theories in predicting the willingness to become agent of change to prevent environmental degradation has not been studied before, therefore the third objective of this research is to investigate the predictive ability of the model and formulate the managerial implication of this study.

Generation Z becomes the target of the study because they are the future consumers of Indonesia and still in school or college at the time of this research. It makes their opinions considered neutral since not affected by economic interests. Moreover Broadbent *et al.* (2017) concluded that 65% of generation Z in Indonesia are afraid of climate change in the future and 78% of them say that they want to contribute to society. These 2 additional info add the possibility of Gen Z potential as agent of change for environmental in Indonesia.

2. Literature Review

2.1 Theoretical Foundation: Reasoned Action Approach and Willingness to Participate.

Many previous environmental behaviours studies have used theory of planned behaviours (TPB) the predecessor of the reasoned action approach (RAA) to examine pro-environmental behaviours (Mufidah *et al.* 2018; Persada *et al.* 2015; Klöckner 2013; Gifford & Sussman 2012). RAA as the updated version of TPB has considered better in learning about intention and behaviours than TPB (Elliott & Ainsworth 2012). While most of the research only examine up to intention or pro-environmental behaviour (PEB), this study continues with finding individual intention to do more for the environment than only to do pro-environmental behaviours.

In this study, the RAA model focusses only on attitude as the most important determinant of intention (Fishbein & Ajzen 2010) followed by the intention (IPEB) then the behaviour (ACPEB). Attitude comes from consideration of cost, benefit and consequences (Fishbein & Ajzen 2010). Builds from the behavioural beliefs and acquired from different background factors. The background factors are classified as individual, social and information (Fishbein & Ajzen 2010). The attitude in this study was called attitude toward pro-environmental behaviour (APEB), defined as a tendency that react with a degree of like or dislike to environmentally friendly behaviour. The APEB is the antecedent of intention to do pro-environmental behaviour (IPEB) and actual pro-environmental behaviour (ACPEB). ACPEB is the actual pro-environmental behaviour, which is carried out by individual consciously in an effort to minimize the negative impact of their actions on nature and the earth that has been built.

Lee (2011), De Leeuw *et al.* (2015), Maichum *et al.* (2016), Velnampy & Achuthan (2016), Eles & Sihombing (2017), Poudel & Nyaupane (2017), Liu *et al.* (2017), Mohamad & Majid (2017), Mufidah *et al.* (2018), Emekci (2019), Shukla (2019) and Kwistianus *et al.* (2020) who studied PEB using TPB has found that attitude has a positive and significant relationship with PEB intention. Furthermore, Lee (2011), Onwezen *et al.* (2013), De Leeuw *et al.* (2015), Trivedi *et al.* (2018) and Kwistianus *et al.* (2020) found that PEB intention has positive and significant relationship with PEB. Therefore this study hypothesized that APEB is positively influenced IPEB (H5) and IPEB is positively influenced ACPEB (H6).

As mentioned in the introduction, a change agent is an individual who can make changes by inspiring and influencing others (Rachman & Jacob 2020). In this study, an agent of change in environmental protection is similar with an individual with environmentally significant behaviour (Stern 2000). According to Melucci (1996) environmental movement is considered as a new social movement. Individual in this movement has the objectives to protect the environment and build a better quality of life. The purpose of this individual movement is not for economic gain, but generating benefits and profits for others and hoping for a reward from the movement (Melucci 1996). Based on the agent of change definition, this study uses theory of willingness to participant (TWP) from Klandermans (1984) to measure the willingness of generation Z to become agent of change.

Theory of willingness to participate (TWP) from Klandermans (1984) is part of the social psychology of contention. The study of why an individual participates or does not participate in a collective social movement. It is influenced by identity, cognition, motivation and emotions that mediate between collective identity and

collective action (Van Stekelenburg & Klandermans 2017). The basic concept of this model is an individual will participate in social movements if the individual knows the opportunity to participate, able to use one or more of these opportunities, and if the individual is willing to do so (Klandermans 1984). Furthermore, people participate in a social movement because they want to change something, or because they want to show their identity or because they want to express their views and gave meaning to their world (Klandermans & van Stekelenburg 2013). TWP consists of 4 steps: (1) people must be sympathetic to a movement to be part of the potential for mobilization, (2) become the target of mobilization efforts, (3) be motivated to participate in certain collective actions and (4) must be able to overcome obstacles to participation (Klandermans & Oegema 1987).

The basic principle of the theory of the willingness to participate (TWP) explains that participation in social movements is the result of a rational decision-making process in which people weigh the costs and benefits of participation (Klandermans 1984). This principle is stated in three types of motives based on different types of costs and benefits (Klandermans 1984). The first motive is the collective motive (CM) which is the multiplication of the subjective value of the social movement goals and the subjective expectations that this goal will be achieved. The second is the normative/social motive (SM) that comes from the multiplication of reactions expected from other people, which are meaningful to the individual if they know that the individual participates in a social movement with the degree of reaction importance to the individual concerned. The third is the reward motive (RM) which is derived from the loss or gain from participating in social movements multiplied by the expectation that such loss or gain will occur.

From the reference review, TWP have not yet applied for environmental movement participation. The previous study from Stürmer *et al.* (2003) was about fat acceptance movement & Simon *et al.* (1998) was about participation of older people movement in Germany and gay movement in United States. The study from Stürmer *et al.* (2003) and Simon *et al.* (1998) on older people movement has found that RM has positive and significant relationship with the willingness to participate (WTP). However, the second study from Simon *et al.* (1998) on gay movement has found that RM does not have significant relationship with WTP. Furthermore, Steinhorst & Klöckner (2018) study on PEB shows that RM has negative relationship to PEB performance. Both Simon *et al.* (1998) study has found that CM and SM have positive and significant relationship with WTP. However, Stürmer *et al.* (2003) has found that CM and SM did not have significant relationship with WTP. Based on the previous research, this study hypothesized that the three motivations (CM, SM and RM) is positively influenced willingness to become agent of change (WAC). The relationship of these motives to WAC is represented by H8, H9 and H10 consecutively.

From the combination of two theories, this study also postulates that for an individual to become agent of change in preventing further environmental degradation, it has to be preceded by frequent implementation of pro-environmental behaviour. Therefore, it is hypothesized that ACPEB has a positive and significant influence to WAC (H7).

2.2 Key Background Factors

This study tested four background factors, which are important for an individual based on previous researches explained below. The four factors are significant life experiences (SLE), media influence (MI), perceived environmental knowledge (PEK) and perceived authority/government support (PAGS).

Significant life experiences (SLE) is one factor that influence the behaviour and tendencies of an environmental actor or activist. Tanner (1998, 1980) first put this variable forward in the field of environmental science teaching. SLE is a person's (environmental activist) direct experience of an event that helps foster an individual's environmental concern. Previous studies concluded that various SLEs influence attitude to pro-environmental behaviour (Arnold *et al.* 2009; Li & Chen 2015; Lee & Jan 2015; Howell & Allen 2019; Murty *et al.* 2022). Therefore this study hypothesizes (H1) that significant life experiences (SLE) is positively influence attitude toward pro-environmental behaviour (APEB).

Media has an important role in increasing individual understanding of an environmental problem (Patchen 2010). There are two opinions regarding the media influence. The first opinion, media online/offline or both influences the pro-environmental behaviour (Östman 2014; Huang 2016; Jharothia 2018; Trivedi *et al.* 2018). The second opinion, media do not influence the pro-environmental behaviour and it is supported by Muralidharan *et al.* (2016). Some studies have shown that media has positive and significant influence to pro-environmental attitude (Keum *et al.* 2004; Östman 2014; Trivedi *et al.* 2018). Therefore this study hypothesizes (H2) that media influence (MI) has a positive and significant relationship to attitude toward pro-environmental behaviour (APEB).

Environmental knowledge involves what people know about the environment. Knowledge of several environmental aspects can differ significantly from one country to another due to cultural differences, different situations and due to limitations in obtaining environmental knowledge (Geiger *et al.* 2018). According to Hines *et al.* (1987), there are two types of knowledge: (1) knowledge of environmental issues/problems, (2) knowledge of available and effective actions for the situation at hands. Knowledge of the problem is a prerequisite for action.

Before an individual intends to take action on an environmental problem, one has to be aware of environmental problems (Hines *et al.* 1987).

There are two different opinions regarding the influence of environmental knowledge on the selection of environmentally friendly products. The research of Grankvist and Biel (2001) supports the opinion that a consumer will buy environmentally friendly products if he has a concern for the environment, is aware of the environmental problems or he understands that the product he will buy is environmentally friendly. This is in accordance with Patchen (2010) postulate that knowledge and personal characteristics influence individual behaviour. Individual who has knowledge (climate change in Patchen's research) has a tendency to take positive action in dealing with climate change. The positive influence of knowledge to pro-environmental behaviour is also supported by other previous studies (Goh & Balaji 2016; Kaiser & Fuhrer 2003; Levy *et al.* 2018; Vicente-Molina *et al.* 2013). As opposed to the above finding, research by Peschel *et al.* (2016) supports the opinion that knowledge of the environment does not affect consumer choices for environmentally friendly products. Some studies has shown that environmental knowledge has significant and positive influence to attitude toward pro-environmental behaviour (Masud *et al.* 2015; Maichum *et al.* 2016; Pothitou *et al.* 2016; Liu *et al.* 2020). Therefore, this study hypothesized that perceived environmental knowledge (PEK) positively influences attitude toward pro-environmental behaviour (ACPEB) for H3.

Perceived authority/government support PAGS can be defined as an individual's perception that every resource, regulation, facility and support/action provided by the government are to help one performs certain behaviours (Lin *et al.* 2017). The government is in the highest position to support, provide, or impede development activities with the aim of minimizing negative impacts that can affect the environment and society (Persada *et al.* 2015). It plays an important role in all parts of the business ecosystem. Governments must create public policies and incentives for companies and consumers to become more environmentally and socially responsible (Tang & Zhou 2012). Governments can influence development activities by establishing and enforcing physical rules and procedures that broadly cover issues such as safety, health, norms and the economy.

The studies which support the opinion that government or authority gives a positive influence to pro-environmental behaviour come from Kesari *et al.* (2018), Mufidah *et al.* (2018), Mohamad and Majid (2017), and Sohlberg (2016). Some studies have shown that government has a positive and significant influence to pro-environmental attitude (Yin 1999 & Sohlberg 2016). Based on these studies, perceived authority/government support (PAGS) is hypothesized to influence attitude toward pro-environmental behaviour positively (H4).

3. Research Method

3.1 Participant and Procedure

This study was part of a larger research project on the intention of generation Z to become agent of change in preventing environmental degradation in Indonesia. Generation Z was the target respondent and represented by universities and vocational schools students in Jabodetabek (Jakarta greater city, the Republic of Indonesia capital). The respondents' age was 18-22 years old. The survey was done during March-April 2020. It was a cross sectional study, convenient samples with snowball method. The data collection was done by filling out a questionnaire via Google form. The links of questionnaires were distributed through the WhatsApp application. Total respondents who participated in the research were 908 and after data cleaned up the valid data was 590 respondents

3.2 Instrumentation

The questionnaire was formed from a mix of new questions and questions from previous studies (Ellen & Cobb-Walgren 1991; Straughan & Roberts 1996; Fishbein & Ajzen 2010; Lee 2011; Milfont & Duckitt 2010; Enzler 2013; Östman 2013; Redman & Redman 2013; Carmi *et al.* 2015; Lee & Jan 2015; Li & Chen 2015; Muralidharan *et al.* 2015; Velnampy & Achchuthan 2016; Mufidah *et al.* 2018; Levy *et al.* 2016; Huang 2016). The original questions were translated to Indonesian language and adjusted to make it easier for respondents to understand without losing the purpose of the questions. It had been validated by experts and pilot tested to some respondents. The questionnaires consisted of demographic, psychographic, and the variables dimension. The variables questionnaire used 1-7 Likert scale with different attribute based on the requirement and semantic differential scale for some questions.

The motivations, which were collective motivation (CM), social motivation (SM) and reward motivation (RM), consisted of statements with combination of questions. To be included in the model, the value of CM, SM and RM were calculated from the answers of the constructs' question using formulas which were used by Klandermans (1984), Simon *et al.* (1998) and Stürmer *et al.* (2003)

3.3 Data Analysis

The respondents' data was analysed with descriptive method. Partial Least Square – Structural Equation Modelling (PLS-SEM) was used to analyse the model since the model was a combination of two theories

(Henseler 2009). Similar model has never been tested in the current population hence the application of PLS-SEM in this model was a low risk option to estimate the relationship between the construct (Hair & Sarstedt 2019; Sarstedt *et al.* 2016). The model contained single construct indicator (Henseler *et al.* 2009), which were CM, SM and RM. The analysis used Smart PLS 3.3.2. The significance level was 5%. The constructs, definition and indicators were explained in Table 1.

Table 1. Constructs, Definitions and Construct Indicators

No	Variables and definition	Code	Indicator	Source
1	Significant life experience (SLE) One's direct experience of an event that helps foster environmental concern for an individual.	SLE1	Experience in nature (activities, walks, etc.)	all are from Li dan Chen (2015)
		SLE2	Experience in environmental organizations	
		SLE3	Firsthand experience of pollution or environmental disasters	
		SLE4	Formal education / school	
		SLE5	Experience in student organizations	
		SLE 6	Experience in public organizations (non students)	
2	Media influences (MI) The influence of the media in increasing individual perceptions of environmental problems	MI1	Newspaper	all are from Muralidharan <i>et al.</i> (2015), Velnampy and Achchuthan, (2016)
		MI2	Magazine	
		MI3	Television	
		MI4	Radio	
		MI5	Website	
		MI6	Online media	
		MI7	Facebook	
		MI8	Twitter	
		MI9	Instagram	
		MI10	Youtube	
		MI11	Whatsapp	
		MI12	Blog	
3	Perceived environmental knowledge (PEK) Individual perceptions about the level of environmental knowledge	PEK1	I know the solution to environmental problems	Carmi <i>et al.</i> (2015)
		PEK2	How do you assess your knowledge of environmental issues ?	Ellen dan Cobb-Walgren (1991)
		PEK3	How do you assess your knowledge of pro-environmental behavior ?	Redman dan Redman (2013)
4	Perceived authority/government support (PAGS) Individual perceptions of every resource, regulation, facility and support / action provided by the government to help individuals to do pro-environmental behavior	PAGS1	Government regulations are sufficient to get people to protect the environment	Ellen dan Cobb-Walgren (1991)
		PAGS2	The government has sufficiently instructed related parties to facilitate environmentally friendly behavior (for example: the application of trash bins by type)	Mufidah <i>et al.</i> (2018)
5	Collective motive (CM) motives arising from the goals of the movement which are expected to be achieved due to individual participation	CM11	How important is the result of preventing further damage to nature ?	new
		CM21	How likely is it that further damage to nature is prevented ?	new
		CM12	How important is the result of reducing the damage of environmental disaster ?	new
		CM22	How likely is it that the damage to environmental disasters is reduced ?	new

No	Variables and definition	Code	Indicator	Source
6	Social motive (SM) motives arising from the expectation of reaction from other people who are meaningful to individuals participating in the movement	SM 11	The reaction of your parents when they find out you are a change agent for preventing environmental damage is ...very negative - very positive	new
		SM21	How important is the reaction of your parents when they find out that you are a change agent to prevent environmental damage ?	new
		SM12	The reaction of your friends when they find out you are a change agent for preventing environmental damage is... very negative - very positive	new
		SM22	How important is the reaction of your friends when they find out that you are a change agent to prevent environmental damage ?	new
7	Reward motive (RM) motives arising from estimates of losses and gains that will occur as a result of individuals participating in the movement	RM11	What do you think about the opinion because you are a change agent to prevent environmental damage then the environmental damage will slow down ?	new
		RM12	What do you think about the opinion because you are a change agent to prevent environmental damage then you will feel proud?	new
		RM21	What do you think about the opinion because you are a change agent to prevent environmental damage then you will feel complicated?	new
		RM22	What do you think about the opinion because you are a change agent to prevent environmental damage then you will lose time and money?	new
		RM31	How is the possibility that "because you are a change agent in preventing environmental damage then the environmental damage will slow down" will happen ?	new
		RM32	How is the possibility that "because you are a change agent to prevent environmental damage then you will feel proud" will happen ?	new
		RM41	How is the possibility that "because you are a change agent to prevent environmental damage then you will feel complicated" will happen ?	new
		RM42	How is the possibility that "because you are a change agent to prevent environmental damage then you will lose time and money" will happen?	new
8	Attitude toward pro-environmental behavior (APEB) tendency that react with a degree of liking or dislike to environmentally friendly behavior.	APEB1	Doing pro-environmental behavior in everyday life is ... bad - good	Fishbein and Ajzen, 2010
		APEB2	Doing pro-environmental behavior in everyday life is ... very difficult - very easy	

No	Variables and definition	Code	Indicator	Source
9	Intention to do pro environmental behavior (IPEB) Individual intention to do environmentally friendly behavior	IPEB1	I am interested in doing pro-environmental behavior in everyday life	Fishbein and Ajzen, 2010
		IPEB2	I plan to do pro-environmental behavior in my daily life	
		IPEB3	I will do pro-environmental behavior in my daily life	
10	Actual pro environmental behavior (ACPEB)	ACPEB1	I save water use by using water as needed	Lee and Jan (2015), Östman (2013)
		ACPEB2	I save electricity by turning off unnecessary lights	Lee and Jan (2015)
		ACPEB3	I save electricity by turning off unused electronic equipment	Enzler <i>et al.</i> (2013), Östman (2013), Levy et al. (2016)
	Actual pro-environmental behavior which is carried out by individuals consciously in an effort to minimize the negative impact of their actions on nature and the earth that has been built	ACPEB4	When I have to buy a product, I will choose the product that causes the least amount of waste / pollution	Muralidharan <i>et al.</i> (2015), Straughan and Roberts (1996)
		ACPEB5	To reduce plastic bag waste, I bring my own shopping bag when I shop	Huang (2016)
		ACPEB6	I brought my own drinking bottle	new
		ACPEB7	I avoid using disposable cutlery (example: spoons / forks / straws / plastic cups or styrofoam boxes)	Levy <i>et al.</i> (2016)
		ACPEB8	I use both sides of the paper	Lee (2011)
		ACPEB9	If I have trusted information, I will not buy products from companies that are not ecologically responsible	Lee (2011)
		ACPEB10	I always throw the trash in its place	new
11	Willingness to become agent of change (WAC) Willingness of individuals to become agents of change to prevent environmental damage	WAC1	I want to join an environmental group	Milfont & Duckitt (2010)
		WAC2	I want to invite others to do pro-environmental behavior	new
		WAC3	I'm going to do another pro-environmental behavior that I've never done	new

3.4. Research Design and Hypotheses Tested

The research design was based on two theories, the Reasoned Action Approach (RAA) and Theory of Willingness to Participate (TWP). The background factors tested were significant life experiences (SLE), media influences (MI), perceived environmental knowledge (PEK) and perceived authority/government support (PAGS). The constructs of RAA were attitude toward pro-environmental behavior (APEB), intention to do pro-environmental behavior (IPEB) and actual pro-environmental behavior (ACPEB). The constructs of TWP were collective motive (CM), social motive (SM), reward motive (RM) and willingness to become agent of change (WAC). The model is depicted in figure 1.

Hypotheses tested based on the explanation in literature review are:

- H1: SLE will have positive and significant influence to APEB
- H2: MI will have positive and significant influence to APEB
- H3: PEK will have positive and significant influence to APEB
- H4: PAGS will have positive and significant influence to APEB
- H5: APEB will have positive and significant influence to IPEB
- H6: IPEB will have positive and significant influence to ACPEB

- H7: ACPEB will have positive and significant influence to WAC
 H8: CM will have positive and significant influence to WAC
 H9: SM will have positive and significant influence to WAC
 H10: RM will have positive and significant influence to WAC

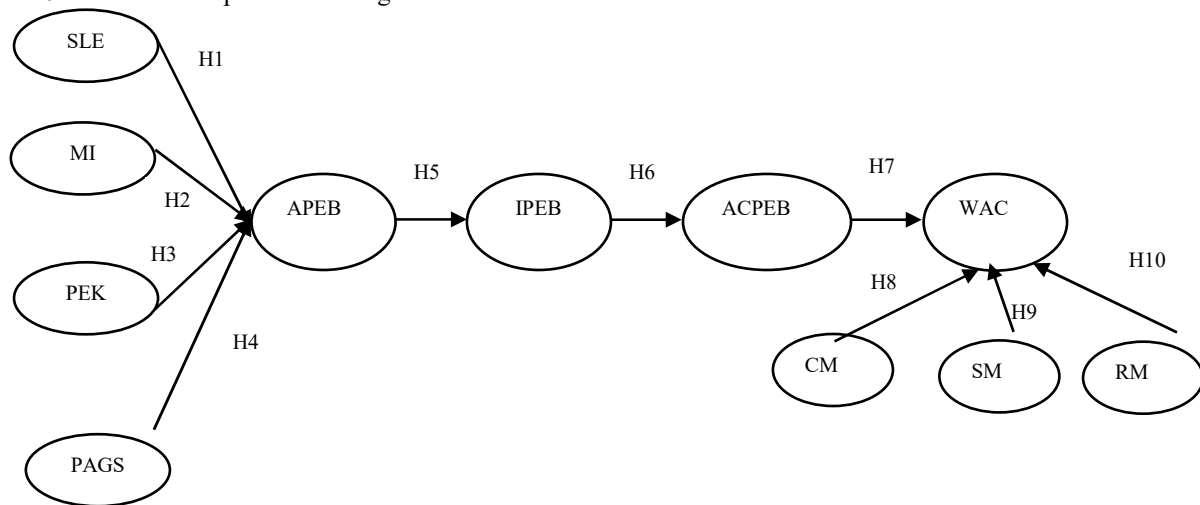


Figure 1. Research concept and the related hypothesis

4. Results and Discussion

4.1 Respondents' Profile

Table 2 presents the demographic characteristics of the respondents. Of the total valid samples (590 respondents), 73% was female and 27% was male respondents. It was similar with the number of students in the universities and vocational schools of the 3 provinces where the respondents lived, female was 62.4% and male was 37.7% (Pangkalan Data Pendidikan Tinggi 2018). More responds from female respondents were similar with Smith (2008) finding that the response rate of women to surveys is significantly higher than men in the US. Of the respondents, 60% were 19-20 years old and the rest were mix between 18, 21 and 22 years old. In accordance with the month this research was carried out, all students were between semesters 2-8. According to students subjects, the composition were almost balance, 57% respondents were science students (technique, agriculture, health and medicine; mathematic and natural science) and the rest were non-science students (education, social, politics and humanities; economy; art, design, media; religion and languages).

4.2 Measurement Model Evaluation

As reflective model, the assessment of the measurement model consists of 2 validities and 1 reliability (Hair et al. 2017). The two validities are convergent validity and discriminant validity. The reliability is internal consistency reliability. Hair *et al.* (2014; 2017) explained that convergent validity defined from the outer loading (OL) and average variance extracted (AVE) values while the discriminant validity defined from cross loading, outer loading, heterotrait-monotrait ratio (HTMT) and confidence interval bias corrected. The internal consistency reliability is measured by composite reliability/CR (Hair *et al.* 2014; 2017).

Hair *et al.* (2017) explained that for convergent validity, indicator with outer loading ≥ 0.7 has to be retained and indicator with a value of ≤ 0.7 sometimes is maintained because it will affect content validity. The indicator with outer loading value < 0.4 has to be deleted and the indicator with outer loading values between ≥ 0.4 and < 0.7 had to be evaluated and deleted if only it improved the CR and AVE above threshold. The threshold of AVE is > 0.5 and CR is < 0.95 . With the aforementioned requirements, indicator SLE3 (OL = 0.550), ACPEB4 (OL = 0.641), ACPEB5 (OL = 0.623), ACPEB6 (OL = 0.540), ACPEB7 (OL = 0.676), ACPEB8 (OL = 0.493) and ACPEB9 (OL = 0.576) were deleted while indicator SLE1, SLE2, SLE4, MI1, MI2 and ACPEB1 were maintained. The final measurement model gave AVE between 0.512 – 0.836 which fulfilled the requirement of AVE > 0.5 . The composite reliability were between 0.760– 0.945 which fulfilled the requirement of CR < 0.95 . The single value construct CM, SM and RM had AVE and CR = one. The outer loading values, AVE and CR for the remaining indicators are shown in Table 3.

Table 2. Demographic Characteristic of the Respondents (N= 590)

Characteristic	Demographic Characteristic	Frequency	Percentage
Gender	Female	431	73
	Male	159	27
Age	18 yo	55	9
	19 yo	169	29
	20 yo	183	31
	21 yo	114	19
	22 yo	69	12
Semester	2	146	25
	4	176	30
	6	165	28
	8	101	17
	10	2	0
Study program	Education	146	25
	Technique	116	20
	Agriculture	99	17
	Health & Medicine	63	11
	Mathematics & Natural Science	55	9
	Social, Political, Humanities	48	8
	Economy	45	8
	Art, Design, Media	12	2
	Religion	3	1
	Language	3	1

Table 3. Convergent Validity and Internal Consistency Reliability

Construct	Indicator	OL	CR	AVE
	“There is an opinion that says that ... (experiences)... shape your environmental concern. How much do you agree with that opinion?”		0.839	0.512
SLE1	Experience in nature (activities, walks, etc.)	0.644		
SLE2	Experience in environmental organizations	0.696		
SLE4	Formal education / school	0.623		
SLE5	Experience in student organizations	0.786		
SLE6	Experience in public organizations (non students)	0.811		
	“There is an opinion that the below media affects a person's environmental concern. How do you agree with that opinion?”		0.945	0.594
MI1	Newspaper	0.598		
MI2	Magazine	0.594		
MI3	Television	0.789		
MI4	Radio	0.734		
MI5	Website	0.795		
MI6	Online media	0.817		
MI7	Facebook	0.798		
MI8	Twitter	0.835		
MI9	Instagram	0.836		
MI10	Youtube	0.820		
MI11	Whatsapp	0.821		
MI12	Blog	0.756		
PEK1	How do you agree with the opinion "I know the solution to environmental problems"?	0.602	0.834	0.632
PEK2	How do you assess your knowledge of environmental issues ?	0.854		
PEK3	How do you assess your knowledge of pro-environmental behavior ?	0.896		
	"How do you agree with the below opinion ?"		0.894	0.809
PAGS1	Government regulations are sufficient to get people to protect the environment	0.889		
PAGS2	The government has sufficiently instructed related parties to facilitate environmentally friendly behavior (for example: the application of trash bins by type)	0.909		

Construct	Indicator	OL	CR	AVE
APEB1	Doing pro-environmental behavior in everyday life is ... bad - good	0.766	0.760	0.613
APEB2	Doing pro-environmental behavior in everyday life is ... very difficult - very easy	0.799		
	"How do you agree with the below opinion"		0.939	0.836
IPEB1	I am interested in doing pro-environmental behaviour in everyday life	0.916		
IPEB2	I plan to do pro-environmental behaviour in my daily life	0.915		
IPEB3	I will do pro-environmental behaviour in my daily life	0.912		
	"How often do you do the below pro-environmental behavior?"		0.837	0.563
ACPEB1	I save water use by using water as needed	0.696		
ACPEB2	I save electricity by turning off unnecessary lights	0.777		
ACPEB3	I save electricity by turning off unused electronic equipment	0.788		
ACPEB10	I always throw the trash in its place	0.738		
WAC1	I want to join an environmental group	0.772	0.877	0.704
WAC2	I want to invite others to do pro-environmental behavior	0.853		
WAC3	I'm going to do another pro-environmental behavior that I've never done	0.888		

Notes :

- OL, outer loading; CR, composite reliability; AVE, average variance extracted; SLE, significant life experiences; MI, media influences; PEK, perceived environmental knowledge; PAGS, perceived authority/government support; APEB, attitude toward pro-environmental behavior; IPEB, intention to do pro-environmental behavior; ACPEB, actual pro-environmental behavior; WAC, willingness to become agent of change

- convergent validity: OL values (≥ 0.7 or ≤ 0.7 or $0.4 \leq OL < 0.7$) & AVE values (> 0.5)

- internal consistency reliability: CR values, $CR < 0.95$)

In term of discriminant validity, cross loading values has to be smaller than outer loading values of the respected indicator and HTMT < 0.85 . HTMT values has to have confidence interval bias corrected between 2.5% - 97.5% and it should not include value 1 for all combination of construct (Hair *et al.* 2017). The measurement model fulfilled the first requirement that all cross loading values $<$ outer loading values. The final measurement model had HTMT values between 0.019 – 0.792 which fulfilled the requirement of HTMT values < 0.85 . Moreover, confidence interval bias corrected between 2.5% - 97.5% for the remaining indicators were not include value of one. After the evaluation, from 44 indicators of the measurement models, seven were deleted and 37 retained. The measurement model has fulfilled the entire requirement for the next analysis and is shown in Table 3 and Table 4. The discriminant validity result is shown in Table 4.

Table 4. The Discriminant Validity

Construct	ACPEB	APEB	CM	IPEB	MI	PAGS	PEK	RM	SLE	SM
APEB	0.503*									
	(0.344, 0.690)**									
CM	0.178	0.315								
	(0.088, 0.272)	(0.190, 0.461)								
IPEB	0.396	0.792	0.322							
	(0.301, 0.490)	(0.648, 0.979)	(0.244, 0.399)							
MI	0.064	0.136	0.127	0.141						
	(0.060, 0.134)	(0.080, 0.277)	(0.046, 0.224)	(0.072, 0.224)						
PAGS	0.143	0.252	0.019	0.092	0.075					
	(0.077, 0.252)	(0.150, 0.411)	(0.008, 0.110)	(0.039, 0.187)	(0.062, 0.133)					
PEK	0.404	0.788	0.197	0.426	0.130	0.274				
	(0.296, 0.514)	(0.642, 0.986)	(0.110, 0.289)	(0.325, 0.520)	(0.076, 0.288)	(0.180, 0.377)				
RM	0.198	0.211	0.441	0.240	0.076	0.029	0.228			
	(0.109, 0.285)	(0.093, 0.345)	(0.376, 0.498)	(0.162, 0.312)	(0.025, 0.181)	(0.008, 0.130)	(0.124, 0.329)			
SLE	0.235	0.453	0.249	0.378	0.254	0.306	0.471	0.215		
	(0.138, 0.347)	(0.303, 0.631)	(0.151, 0.350)	(0.277, 0.479)	(0.159, 0.367)	(0.205, 0.417)	(0.372, 0.567)	(0.115, 0.309)		
SM	0.227	0.366	0.409	0.369	0.140	0.055	0.283	0.374	0.277	
	(0.138, 0.319)	(0.238, 0.524)	(0.334, 0.479)	(0.289, 0.447)	(0.066, 0.224)	(0.023, 0.123)	(0.186, 0.374)	(0.308, 0.438)	(0.187, 0.363)	
WAC	0.312	0.565	0.465	0.551	0.101	0.039	0.497	0.296	0.414	0.434
	(0.215, 0.410)	(0.409, 0.749)	(0.389, 0.535)	(0.460, 0.632)	(0.063, 0.198)	(0.031, 0.128)	(0.389, 0.598)	(0.211, 0.379)	(0.315, 0.512)	(0.352, 0.512)

4.3 Structural Model Evaluation

Structural model evaluation consists of three main analyzes. First, is the size and significance of the path coefficient that determines whether 10 hypotheses tested in this model are accepted or rejected, second is the predictive power of the model, consists of in sample (R2 value) and out-of-sample, which come from the results of the analysis with PLSpredict. The last analysis is the total effect that shows which construct has a significant influence on WAC as the key construct.

Before the structural model analysis carried out, a collinearity test had been done to ensure that there was no bias in the path coefficient due to OLS regression, which was the basis of PLS-SEM. A model must have a VIF value ≤ 5 (Hair *et al.* 2017). Results of the model showed that VIF values were between 1.000 – 1.360 so that further analysis can be carried out.

4.3.1 Path Analysis

The path analysis explains about hypothesis testing result. The model has 11 constructs, 37 indicators and 10 hypotheses. The hypothesis is accepted if the relationship between construct has a positive and significant effect. The positive effect is indicated by the positive value of the path coefficient, while the significance is expressed by the t value > 1.96 for $\alpha = 5\%$ or p value < 0.05 . The result of path analysis is summarized in table 5.

Table 5. The Path Analysis Result

Hypotheses	Path Coefficient	T values	P values	95% Confidence Interval BC	Association	Significance	Summary
H1 SLE->APEB	0.121	2.811	0.005	(0.038, 0.207)	positive	yes	accepted
H2 MI->APEB	0.026	0.724	0.469	(-0.015, 0.110)	positive	no	not accepted
H3 PEK->APEB	0.372	9.669	0.000	(0.294, 0.445)	positive	yes	accepted
H4 PAGS->APEB	-0.012	0.300	0.764	(-0.080, 0.071)	negative	no	not accepted
H5 APEB->IPEB	0.457	11.969	0.000	(0.382, 0.531)	positive	yes	accepted
H6 IPEB->ACPEB	0.340	9.006	0.000	(0.269, 0.417)	positive	yes	accepted
H7 ACPEB->WAC	0.159	4.255	0.000	(0.088, 0.234)	positive	yes	accepted
H8 CM->WAC	0.284	6.970	0.000	(0.204, 0.363)	positive	yes	accepted
H9 SM->WAC	0.229	5.463	0.000	(0.144, 0.309)	positive	yes	accepted
H10 RM->WAC	0.027	0.651	0.515	(-0.056, 0.110)	positive	no	not accepted

Notes :

BC, Bias Corrected; numbers in the brackets represent the 95% bias-corrected and accelerated confidence interval derived from complete bootstrapping with 5,000 samples. SLE, significant life experiences; MI, media influences; PEK, perceived environmental knowledge; PAGS, perceived authority/government support; APEB, attitude toward pro-environmental behavior; IPEB, intention to do pro-environmental behavior; ACPEB, actual pro-environmental behavior; WAC, willingness to become agent of change

APEB is the most important determinant in RAA (Fishbein & Ajzen 2010). Attitude is defined as tendency that reacts with a degree of liking or dislike to pro-environmental behavior. Therefore understanding the influence of four background factors tested (SLE, MI, PEK and PAGS) to APEB is very important. The result showed that from four hypotheses, only two hypotheses accepted, PEK and SLE. Both positively influenced APEB significantly. PEK had the highest influence followed by SLE.

The acceptance of H1: SLE ->APEB showed that SLE, which is defined as one's direct experience of an event that helps foster environmental concern for an individual, was the second highest factor in influencing APEB in term of strength. The SLE indicators' strength in consecutive order based on outer loading (OL) values was *experience in public or non-students organizations* and *experience in student organizations*. Both indicators supported the result from qualitative study to young environmental leaders (Arnold *et al.* 2009). *Experience in environmental organizations* supported the result from Li and Chen (2015) and *experience in nature for example nature activities, nature walks, and formal education/ school* supported the result from another research (Howell & Allen 2019; Li & Chen 2015).

The H2: MI->APEB was not accepted, MI had a positive influence but insignificant relationship. The result also had a similar conclusion with the study from McCrindle (2018) that generation Z uses online media more than traditional media. Based on OL values, top seven medias which were considered affected a person's environmental concern were online medias. The highest influence of traditional media was television, which ranked no eight among 12 medias tested. Based on the result that media had a positive influence but not significant might be due to the situation which environmental subjects were not enough or not interesting for the respondents. The result of this study is congruent with the previous study that media does not influence pro-environmental behavior (Muralidharan *et al.* 2016) or pro-environmental behavior intention (Velampy and Achchuthan 2016). Participation of Gen Z in making the content in media might help enhancing the deliverables of the message like the study from Han *et al.* (2018) that environmental user generated content of the media can

help making the media influenced the pre-environmental behavior significantly. How the media use (Zhang & Skoric 2018) and content (Huang 2016) also affected the media influencing capability to pro-environmental behavior.

The acceptance of H3: PEK->APEB showed that PEK which was individual opinion about the level of one's environmental knowledge had the highest influence and significant to ACPEB. The PEK indicator which influenced the highest was PEK3, *how individual score individual's own knowledge about pro-environmental behavior*, followed by PEK2, *how individual score individual's own knowledge about environmental problem* and PEK1, *about individual perception on individual's knowledge about solution of the environmental problem*. This study confirmed the importance of individual knowledge about environmental problem, the solution to the problem and the behavior one can do to help solving the problem. The finding conformed with previous studies (Goh & Balaji 2016; Levy *et al.* 2018; Geiger *et al.* 2018; Kesari *et al.* 2018).

The H4: PAGES->APEB was not accepted due to negative influence and insignificant relation. Based on the definition of PAGES construct, respondents felt that government does not give resource, regulation, facility and support/action to help individual to do pro-environmental behavior. As explained in the background while government of Indonesia both at national or local level have created necessary support to guard the environment from regulation until reward and punishment, respondents may perceived them were not strong enough or not enough reinforcement to give positive influence. This result was supported the previous study (Mufidah *et al.* 2018). The analysis, which gave a negative effect, was predicted to come from the respondent's polarized answer to this question. Looking at the questionnaire data, respondents who did not agree that government regulations were sufficient (PAGES1) was 40.2%, did not know was 11.5% and agreed was 48.3% with mean value of 4.19 and standard deviation 1.568. Respondent who did not agree that government has sufficiently facilitated environmental friendly behavior (PAGES2) was 26.3%, did not know 6.5% and agreed was 67.4% with mean value of 4.75 and standard deviation of 1.557.

The H5: APEB->IPEB was accepted. The relationship between these constructs had the highest path coefficient, it showed that the influence of attitude to the intention was very strong, the strongest in the model. It meant the more respondents like the pro-environmental behavior, the higher the respondents' intention to do the behavior. This result proved the relation between attitude and intention in reasoned action approach. It confirmed the previous study that attitude has positive and significant influence to pro-environmental behavior intention (de Leeuw *et al.* 2015; Eles & Sihombing 2017; Emekci 2019; Lee 2011; Liu *et al.* 2017; Maichum *et al.* 2016; Mohamad & Majid 2017; Mufidah *et al.* 2018; Poudel & Nyaupane 2017; Shukla 2019; Velnampy & Achchuthan 2016). Generation Z has to like the pro-environmental behavior to enable them to have a high intention. Understanding the benefit of doing the behavior as part of the environmental knowledge may increase the likeness to do the behavior as shown how PEK can influence APEB.

The H6: IPEB -> ACPEB was accepted with the third highest path coefficient after relationship between APEB ->IPEB and PEK ->APEB. In reasoned action approach and its predecessor theories, intention is the best predictor for behavior (Fishbein & Ajzen 2010; Hagger 2019; Morris *et al.* 2012); The result of this study confirmed some previous studies that intention positively influences the actual behavior. (de Leeuw *et al.* 2015; Emekci 2019; Hsu & Huang 2016; Lee 2011; Pittayachawan *et al.* 2014).

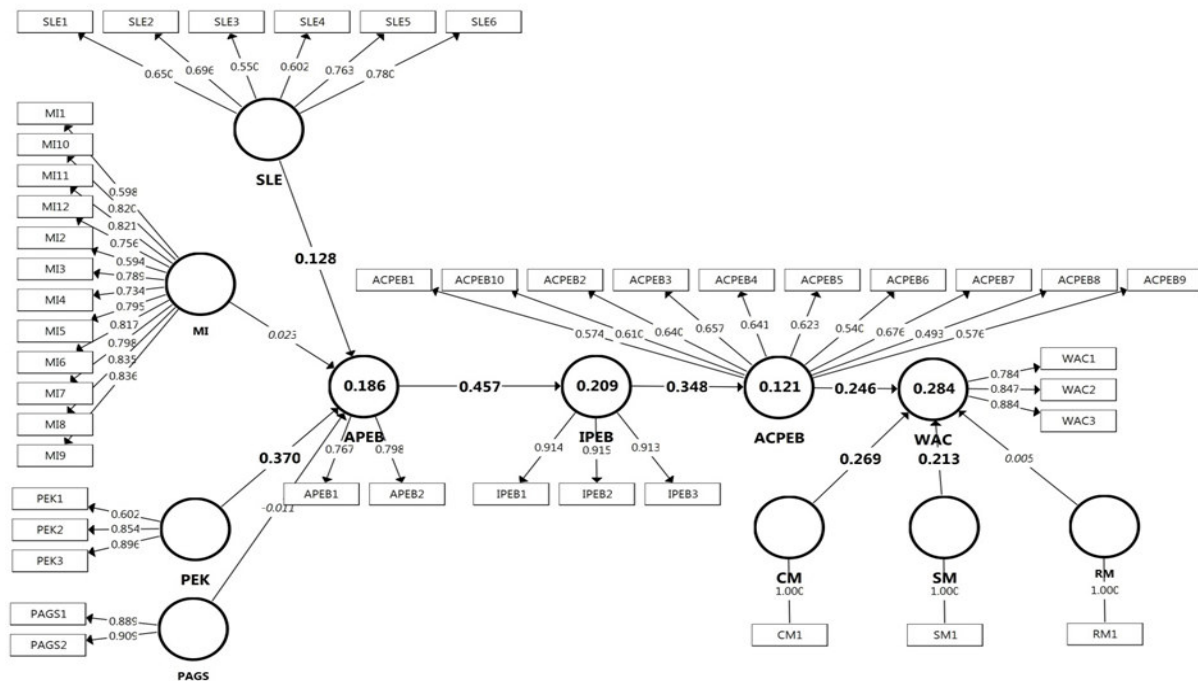
The H7: ACPEB -> WAC was accepted, it supported the model postulate that before individual has the intention to become agent of change, one has to do pro-environmental behavior. The result showed that respondents had the willingness to become agent of change in environmental aspects. Three indicators of WAC were tested. In order of interest, the first was *respondents were more interested in doing another pro-environmental behavior that they have never had done* (mean: 5.97, standard deviation: 0.821), followed with *wanted to invite others to do pro-environmental behavior* (mean: 5.93, standard deviation: 0.817) and the last one was *wanted to join an environmental group* (mean: 5.28, standard deviation: 1.233). It showed that if respondents had the right knowledge and experiences, they would have had the potential to slow down further environmental degradation by doing more than just pro-environmental behavior by them.

The H8: CM->WAC was accepted. Respondents felt that if they participated in the action of preventing further damage of environmental situation in Indonesia, the goals of the action would be achieved. The result was similar with previous studies about how efficacy appraisals influenced collective intention in forest protection in Germany (Landmann and Rohmann 2020) and how CM significantly influenced the willingness to participate in gay movement in the US (Simon *et al.* 1998). This belief can be used as a stimulus for respondents to become agent of change. The communication about the good result of pro-environmental behavior can become one of the tools to increase individual motive to become agent of change. The role of media and education were the key in increasing all related knowledge of pro-environmental behavior.

The H9: SM->WAC was accepted. The result concluded that respondents believed that people who were meaningful to them would have supported them if they become agent of change and the reactions from these people were important. The result was supported previous studies that social motive influences people intention to participate in a movement (Born & Akkerman 2017; Simon *et al.* 1998).

The H10: RM->WAC was not accepted. RM had a positive influence to WAC but it was not significant. The result showed that respondents felt losses and gain because of their participation in the movement were not as important as they significantly influence the intention to become agent of change. It showed that the beliefs of their collective action will have stopped further environmental damage and the supports from meaningful people were more influencing than loses and gain. This finding is supported by previous studies that monetary incentives which part of reward motives, can reduce the performance of pro-environmental behavior (Steinhorst and Klöckner 2018). It gives an implication that communication of the good result and the positive feeling of doing good to environment will be more effective than communication about loss and benefit.

Among 10 hypotheses tested, three were rejected and seven were accepted. The three hypotheses rejected were H2, H4 and H10. The accepted hypotheses were H1, H3, H5, H6, H7, H8, and H9. Based on the path coefficient, the strongest relationship was between APEB ->IPEB, followed by PEK->APEB, IPEB->ACPEB, CM->WAC, ACPEB->WAC, SM->WAC and the smallest was between SLE->APEB. The relationship between APEB to IPEB to ACPEB proved construct relationship in the reasoned action approach theory. The relationship between ACPEB and WAC proved the postulate that an individual has to do pro-environmental behavior before one can become agent of change and the relationship between CM, SM and RM to WAC proved the construct relationship of theory of willingness to participate even though the positive relationship of RM to WAC was not significant.



Note: bold path coefficient shows positive and significant relationship (accepted hypotheses)

Figure 2. Final Model Based on PLS-SEM result

To find out the most influential construct in the model, total effects values of each constructs to key construct has been analyzed. The interpretation of the total effect value is useful in understanding which construct influences the key construct the most and significant. Based on the total effect value and t value in table 6, the constructs that have a positive and significant influence on WAC as the key construct were CM, SM, ACPEB, IPEB, APEB and PEK. Among four background factors tested, it concluded that knowledge was the only background factor, which gave a positive and significant total effect to the key construct WAC. It meant if respondents' knowledge increases, the willingness to become agent of change in preventing further environmental destruction would increase as well. Based on this model, increasing and instilling knowledge in all generation Z activities were the opportunity for Indonesia to include generation Z as agent of change in preventing further environmental degradation.

Table 6. Total Effect Values of Model Constructs to WAC

Construct	Value to WAC	t-values	p-values	95% Confidence Interval BC	Association	Significance
SLE	0.003	1.925	0.054	(0.001, 0.007)	positive	no
MI	0.001	0.621	0.535	(-0.006, 0.002)	positive	no
PEK	0.009	2.874	0.004	(0.004, 0.017)	positive	yes
PAGS	0.000	0.272	0.785	(-0.003, 0.002)	positive	no
CM	0.284	6.970	0.000	(0.203, 0.361)	positive	yes
SM	0.229	5.463	0.000	(0.142, 0.308)	positive	yes
RM	0.027	0.651	0.515	(-0.054, 0.111)	positive	no
APEB	0.025	3.116	0.002	(0.011, 0.042)	positive	yes
IPEB	0.054	3.413	0.001	(0.026, 0.087)	positive	yes
ACPEB	0.159	4.255	0.000	(0.085, 0.231)	positive	yes

Notes :

BC, Bias Corrected ; numbers in the brackets represent the 95% bias-corrected and accelerated confidence interval derived from complete bootstrapping with 5,000 samples. SLE, significant life experiences; MI, media influences; PEK, perceived environmental knowledge; PAGS, perceived authority/government support; APEB, attitude toward pro-environmental behavior; IPEB, intention to do pro-environmental behavior; ACPEB, actual pro-environmental behavior; WAC, willingness to become agent of change

4.3.2 Predictive Power

The predictive power of a model is very important for theory building and evaluation (Shmueli *et al.* 2016). The predictive ability of the model consists of two analyses, the analysis of the predictive power of the samples under study (in-sample predictive power) and the analysis of the predictive ability of new samples or the ability of the model to be applied in new data measurements (out-of-sample predictive power). In-sample predictive power is obtained from the coefficient of determination R² (Hair *et al.* 2017 2014) and out-of-sample predictive power is obtained from the analysis of the PLSpredict results (Shmueli *et al.* 2016).

The purpose of PLS-SEM is to maximize the R² value; it shows the effect of all exogenous constructs on endogenous constructs. The range of R² values is 0 < R² < 1, the higher the coefficient the higher the prediction accuracy. Consumer behavior research such as this study considered R² of 0.2 as a high value (Hair *et al.* 2014).

The R² values of the models are shown in table 7. All R² values inside dependent constructs showed that all R² values were positive (0.116-0.254), which meant that the model had in-sample predictive power. Moreover, with R² values of model key construct (WAC) of 0.254. It concluded that the model had a high in-sample predictive power. The R² of WAC concluded that construct APEB, IPEB and ACPEB influence WAC by 25.4%.

Table 7. R² values

Construct	R ²	R ² quality
APEB	0.184	moderate
IPEB	0.209	high
ACPEB	0.116	moderate
WAC	0.254	high

The next analysis was out-of-sample predictive power with the PLSpredict (Shmueli *et al.* 2016). The power of estimating the out-of-sample model must be exercised because PLS-SEM does not have the ability to answer whether the model under study can be used for populations outside the sample in general (Hair *et al.* 2019). PLSpredict can help to create conclusions that are useful for business and have managerial implications (Hair *et al.* 2019; Shmueli *et al.* 2019; Shmueli *et al.* 2016). The basic principle of PLSpredict is to compare the prediction error of PLS SEM and linear regression model/LM of endogenous constructs' indicator then focus the analysis on the key one (Shmueli *et al.* 2019).

The key construct of this study was WAC, therefore the power of the out-of-sample prediction for this model came from WAC and its indicators. In table 8 it can be seen that the PLS Q² predict value of all indicators shows a value greater than 0 which means the model had a predictive power (Shmueli *et al.* 2019). Since the two prediction error of PLS-SEM and LM for WAC indicator generally had corresponded closely, the evaluation of PLSpredict used RMSE (root mean squared error) values. The result of PLSpredict analysis is depicted on Table 8.

Table 8. PLSpredict Result Analysis

Indicator	PLS	RMSE		
	Q ² predict	PLS-SEM	LM	PLS-SEM - LM
APEB1	0.069	0.717	0.720	-0.003
APEB2	0.131	1.081	1.096	-0.015
IPEB1	0.089	0.694	0.670	0.024
IPEB2	0.088	0.704	0.672	0.031
IPEB3	0.093	0.658	0.632	0.026
ACPEB1	0.018	1.185	1.185	0.000
ACPEB2	0.022	1.107	1.123	-0.016
ACPEB3	0.023	1.141	1.149	-0.008
ACPEB10	0.018	0.841	0.844	-0.003
WAC1	0.122	1.157	1.128	0.029
WAC2	0.173	0.744	0.723	0.020
WAC3	0.180	0.744	0.734	0.010

Notes :

RMSE, root mean squared error derived from PLS predict program with 10 repetitions and 10 folds and 95% confidence level; PLS-SEM, partial least squares structural equation modelling; LM, linear regression modelling from complete bootstrapping with 5,000 samples. APEB, attitude toward pro-environmental behavior; IPEB, intention to do pro-environmental behavior; ACPEB, actual pro-environmental behavior; WAC, willingness to become agent of change

After comparing the RMSE PLS-SEM and LM values of all WAC indicators, it showed that the RMSE PLS-SEM values of all WAC indicators were bigger than RMSE LM values. If all RMSE values of PLS-SEM > RMSE values of LM of key indicators, it means predictive relevance of the model is not confirmed (Shmueli *et al.* 2019). The non-confirmed out of sample predictive power of this model was suspected due to single indicator of three motives constructs. This conclusion was based on the research from Diamantopoulos *et al.* (2012) that the prediction validity of models with latent variables that have more than one indicator outperforms models with a single indicator latent variables. Therefore, the use of constructs with a single indicator must be done with caution and only in certain situations like the three motives in this model which had come from the calculation of indicators' value as explained in Klandermans (1984), Simon *et al.* (1998) and Stürmer *et al.* (2003).

5. Conclusion, Implication and Further Research Direction

In overall, the result from the study has answered the first objective that generation Z in Indonesia was willing to become agent of change in preventing environmental degradation. It also has shown that two motives, collective and social motives were the strongest influencers to the willingness to become agent of changed, followed by implementation of pro-environmental behavior. The result has supported the postulate that before becoming an agent of change to prevent environmental degradation in Indonesia, the individual has to do pro-environmental behavior. This study has also abled to answer the second research objective to investigate the influence and causal relationship of four important factors to the willingness to become agent of change. The study has shown that knowledge was the only background factor, which influenced the willingness to become agent of change.

Based on the result of background factors influence to the attitude, significant life experience has also had a positive and significant relationship while media only had a positive relation but not significant. Increasing the knowledge about the environmental problem, the consequences and the action to help solving the issues can become the key factor to increase the willingness to become agent of change. Information and education can become the source of knowledge, which in the end will support the formation of pro-environmental behavior. It has to be done in all activities of gen Z since significant life experiences have a positive and significant influence to gen Z's attitude in the model.

The government influence to gen Z attitude in this study was negative and insignificant. Based on the study from Persada *et al.* (2015) that government has the key position in minimizing negative impact to the environment and society, it is very important that as the key stakeholder, government have to have a significant positive influence. Government of Indonesia has to increase its integrity, credibility and authority in protecting the environment and natural resources. This action will be very important as the previous study has shown that consumers in Indonesia are passive consumers who depend heavily on the government and producers as the initiator, regulator and implementer of environmentally friendly marketing (Yusuf 2020). They also have the opinion that the government can act as the main actor who has the power to prevent environmental damage and has an important role in a sustainable environment (Yusuf 2020). Hence, it is very important that Government of Indonesia have to have a positive influence since the government must lead and facilitate environmentally

friendly behavior for consumers in Indonesia.

In relation to the third objective of this study on predictive ability of the model, the result has shown that predictive relevance of the model was not confirmed. It means the model only able to predict the samples under study (in-sample) but does not have the ability to be applied for new data measurement (out-of-sample). Based on Diamantopoulos et al. (2012) that more indicators in a construct will give better prediction validity than a single indicator, the future study may need to increase number of indicators in the construct. It will help in avoiding single indicator construct as the result of measurement model evaluation.

As a cross sectional study, this study has limitation that it is only a snapshot of respondents' behavior at a given point in time, the responses may change if a significant event related with environmental occurs after the study. The potential future study can include the longitudinal or cross-sequential study, which may improve the model predictive ability.

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