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Developing an Instrument of Sustainability in Environmental Volunteering Participation (I-SEVP) Among Youth

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Abstract

Identifying the factors that contribute to participation in environmental volunteering will guide successful interventions as well as contribute to environmental conservation and human well-being. However, the issues of dropout in environmental volunteering creates a sense of urgency to identify factors contributing to sustained voluntary service through inventory. Thus, this study aimed to develop an instrument of sustainability in environmental volunteering participation (I-SEVP). The process of the instrument development involved four stages; i. interviewing youth volunteer to identify the factors contributing to participation in environmental volunteering, ii. Developing instrument based on identified themes, iii. Conducting a pilot test, and iv. Performing exploratory factors analysis (EFA), construct reliability as well as interpretation of total score means. In this study, a total of the 77-item questionnaire was administered to 267 youth (15-30 years of age). EFA analysis was run according to four main factors, namely environmental volunteering values, social norms, volunteers' well-beings and intention to predict sustainability in environmental volunteering participation. The results showed that the three sub-constructs were grouped under environmental volunteering values; personal needs (egoistic), contribution to society (altruistic) and role awareness (altruistic and biospheric). Social norms consisted of social influences, fulfil the university or employers' needs and influences of cultures while the volunteers' well-beings consisted of four sub-constructs, i.e. positive emotion, relationship, achievement and spiritual. It is expected that this instrument would be helpful in research and evaluation that is aimed at measuring factors affects the sustainability in environmental volunteering participation among youth.

Keywords: Exploratory Factor Analysis (efa), Instrument Development, Environmental Volunteering, Social Norms, Volunteers' Well-Being

Introduction

Curbing the effects of climate change such as flooding, storms, global warming and the spread of infectious diseases requires collaboration of various parties in the environmental conservation efforts. Accordingly, the actions which have been taken to address these environmental issues ranged from education (Viteri, Clarebout & Crauwels, 2013), awareness

programs (Arbatani, Labafi & Robati, 2016), social support (Van Goethem et al., 2014; Culiberg & Gambier, 2016; Law, Shek & Ma, 2013; Estrada, 2017) and environmental policy (Marshall et al., 2017). There are four subtypes of environmental conservation behaviors, i.e. (i) environmental activism (active involvement in organisations and demonstrations); (ii) nonactivist behaviors in the public sphere (environmental citizenship, or support for public policies); (iii) private sphere environmentalism (purchase, usage and disposal of items resulting in environmental impacts); and (iv) other environmentally significant behaviors (systemic influences through organizations) (Paco & Rodrigues, 2016).

Some environmental issues can be resolved individually but there are some that require group involvement (Stern, 2000; Almas, Chacón-Fuertes & Pérez-Muñoz, 2020; Seymour, King & Antonaci, 2018; Sloane & Pröbstl-Haider, 2019). This is because in such issues, group effort would have a greater impact on the environment in the short term and can help to solve problems that cannot be solved individually such as cleaning of rivers, lakes, or cleaning of large quantities of waste and so forth which require the cooperation of many (Measham & Barnett, 2008; Omoto & Packard, 2016; Woosnam et.al, 2019). Group actions are usually implemented through environmental volunteering. Environmental volunteering can save costs in environmental conservation (Foster, 2018), contribute to mental health (Gagliardi et al., 2020) as well as foster cooperation and community responsibility in reducing environmental problems (Woosnam et al., 2019; Paco, & Rodrigues, 2016). The government can save on environmental management costs, individuals benefit through personal development opportunities, and environmental NGOs enhance their role in conservation by engaging in environmental volunteering.

In order to support environmental volunteering programs, various environmental associations or NGOs have been established in Malaysia. Among these environmental NGOs include Malaysian Nature Society, Treat Every Environment Special (TrEES), Green Earth Society, and Malaysian Green & Blue Environmental Society (MENGO, 2020). There are also centers related to animal and plant conservation that provide opportunities for the public to get involved as environmental volunteers, for example as zoo volunteers. Volunteering support has also been received from environmental volunteer programs conducted in schools or universities (Smith et al., 2012), and local communities (Winch et al., 2020). However, retaining, sustaining, and reducing environmental volunteer dropouts are a major issue for voluntary organizations (Larson et al., 2020). Sustained volunteering is defined as a voluntary activity that is long in duration and frequent in service (Aydinli-Karakulak et al., 2016).

Based on previous studies, the factors contributing to dropout of environmental volunteers are both internal and external. Internal factors are usually related to self-motivation (Measham & Barnett, 2008; Omoto & Packard, 2016; Sulaiman, 2011; Woosnam et al., 2019; Butler & Kern, 2016; Huang, 2018) while external factors are related to the organizers' management (Kragh et al., 2016) as well as support from social systems such as family, parents, friends, and teachers (Van Goethem et al., 2014; Culiberg & Gambier, 2016; Law, Shek & Ma, 2013). Dropouts of environmental volunteers create a sense of urgency in identifying factors that contribute to sustained volunteering service through inventory.

Matching volunteers' motives and expectations is an important factor for volunteering sustainability (Aydinli-Karakulak et al., 2016); it helps in carrying out the intervention in sustaining environmental volunteering. Previous studies have shown that intention has an impact on involvement as an environmental volunteer (Woosnam et al., 2019). Based on the theory of planned behavior (Ajzen, 2006), intention affects one's action. TPB has been applied in predicting a person's behavior toward environmental conservation. However, very few

studies have focused on intention in relation to sustainability in environmental volunteering participation.

Sustaining environmental volunteers is usually connected with volunteers' perceived well-being which is aligned with volunteers' values, motivation, and social norms (Steg, Lindenberg & Keizer, 2015). Based on the PERMA model, environmental volunteers' well-being can be measured through positive emotion, engagement, relationships, meaning, and accomplishment (Seligman, 2011). Volunteers' well-being will be felt if the benefits derived from the involvement as an environmental volunteer suits the targeted personal goals and is related to environmental values orientation. According to Schwartz, there are three (3) environmental values orientation, namely egoistic, altruistic and biospheric. However, there is one value that has not been given much attention in predicting involvement as an environmental volunteer which is spiritual value related to religious values (Rahman et al. 2021, Sudhir & Mehrotra, 2016; Son & Wilson, 2012). Past studies have shown that altruistic and biospheric values influence volunteer engagement or involvement in the long term while biospheric values only influence involvement in the short term (Madsen et al., 2021). However, the impact of spiritual values on sustainability as an environmental volunteer is still poorly studied.

Sometimes, involvement as an environmental volunteer occurs without consideration of oneself but is influenced by external factors such as societal norms. Under societal norms, social influence, namely influence from people who are close or the social support system such as parental support, suggestions from family, influence from friends, local community and government support affect the involvement as an environmental volunteer (Van Goethem et al., 2014; Culiberg & Gambier, 2016; Law, Shek & Ma, 2013). Additionally, the need to fulfill certain demands or requirements also drives a person to be involved in environmental volunteering (Fang et al., 2017). Examples include fulfilling study requirement or requirement of associations or clubs joined in school, university or certain organizations which result in the person to be involved even though it is done out of compulsion.

Additionally, the culture within a society also influences a person to be involved in environmental volunteering (Fang et al., 2017; Aoyagi-Usui et al., 2003); this is especially so in Malaysia which is well-known for its culture of mutual cooperation (*gotong-royong*) in cleaning up areas where the culture also influences involvement in volunteering activities. The nature of the Malaysian people who are well-known for their kindness, friendliness, and politeness in carrying out tasks in groups has an impact on a person if the person does not participate because they would be described as deviating from the local culture and living an isolated life. Fang et al. (2017) mentioned that cultural factors that influence environmental conservation actions are unique to study. Nevertheless, not much research has linked cultural factors to involvement as environmental volunteers.

Identifying the factors that contribute to participation in environmental volunteering will guide successful interventions as well as contribute to environmental conservation and human well-being. Therefore, the development of the questionnaire can contribute to sustainability of involvement as an environmental volunteer rather than the on-off engagement in environmental volunteering. This study addresses the deficiency in previous instruments, which have been predominantly Western-oriented, by focusing on the context of environmental volunteers—specifically, Muslim youth. The instrument considers the culture, requirements, and motivations for engaging as environmental volunteers.

Literature Review

Previous studies have shown that there are several instruments to measure factors that contribute to involvement as environmental volunteers such as the Environmental Volunteer Functions Inventory (Wright, 2015) and PERMA profiler (Butler & Kern, 2016). However, existing instruments have largely been adapted from the western world (Aydinli-Karakulak et al., 2016). It is possible that the instruments used did not take into consideration the cultural context of Asian countries including Malaysia which has its own unique culture. Aydinli-Karakulak et al. (2016) in their study tested the antecedents of volunteering and factors promoting its sustainability where the antecedents and factors were derived from Western studies in Hong Kong. Research by Aydinli-Karakulak et al. (2016) supported the Volunteer Process Model (VPM), suggesting that western volunteering models can be applied to volunteering in East Asian cultures when culture specific adaptations are considered. Aoyagi-Usui et al. (2003) who conducted environmental care behaviors in Asian countries such as Japan, Thailand and Philippines found that environmental values are associated with certain traditional and altruistic values. For this reason, instruments developed should take into consideration the traditional values found within the society.

Malaysia is a multiracial country where various religions such as Islam, Buddhism, Hinduism, Christianity and animism are practiced, and these religious values influence the actions of its followers. However, in this study, the focus was only on Malay Muslims. There are cultural values among the Malays and the values associated with the religion of Islam that encourage the Malay Muslims to be involved as environmental volunteers. For example, in Islam, there are several concepts of values related to environmental conservation such as inviting and teaching close relations, friends or acquaintances to work together in the preservation of the environment, mannerliness/courteousness in doing good deeds, setting a good example for others and responsibility as a caliph in managing the environment. These Islamic values motivate youth to engage in environmental volunteering (Mangunjaya, 2010; Yamin, 2019; Kayikci, 2019). However, the value of volunteering and norms of the society that are related to religious culture are poorly studied in the context of environmental volunteering (Smith et al., 2012).

In order to sustain the environmental volunteering participation, the targeted group of volunteers should also be considered in the development of the study instrument. In the context of this study, the focus was on youth. Youth were chosen in this study because they are the ones who have witnessed serious destruction of the environment and their role is vital in preserving the environment in the future (Nesbit, 2017). There are factors that contribute to environmental volunteer participation which are more relevant to those in the youth category. Studies that analyzed environmental volunteering from among those of the older generation or those who have retired found that sense of community and health benefits are the contributing factors to environmental volunteering activities for this group of people (Pillemer et al., 2010; Gagliardi et al., 2020; Hsiao et al., 2020). However, studies on environmental volunteering among youth have found that the factors of seeking experience, increasing knowledge, improving social relationships, and career development contributed more toward their environmental volunteering participation (Sloane & Pröbstl-Haider, 2019; Butler & Kern, 2016; Huang, 2018; Asah et al., 2014; Seligman, 2011). For this reason, the development of the questionnaire in this study should consider the elements that contribute to sustainability of involvement as an environmental volunteer rather than the on-off engagement in environmental volunteering.

In instrument development, grounding it to the relevant theories and models is important to ensure that the factors studied are in line with human psychology and human behavior. Based on previous studies, the Volunteer Process Model (VPM) is often referred to

by researchers in understanding and predicting sustainability in environmental volunteering participation (Pages, Fischer & Wal, 2018; Aydinli-Karakulak et al., 2016; Trauntvein et al., 2018). The VPM which was founded by Omoto dan Snyder (1995) proposed that volunteering may satisfy six different motives. These motives, which are assessed through the Volunteer Functions Inventory (VFI), include: (1) values, which highlight the function of volunteering to express altruistic and humanitarian concerns; (2) understanding, which highlights the opportunity to obtain new experiences, and to practice knowledge, skills and abilities through volunteering; (3) social, which reflects the possibility to spend time with friends and to engage in an activity that is viewed highly favorable by others; (4) career, where volunteering is used to establish career opportunities and career-related networking and skills; (5) protective, which enables volunteers to escape from negative feelings related to their selves; and (6) enhancement, which captures the possibility to experience personal growth and satisfaction through volunteering (Aydinli-Karakulak et al., 2016). According to the VPM, when experiences gained during volunteering match the volunteers' motives, satisfaction with volunteering increases, and this in turn leads to sustained engagement (Aydinli-Karakulak et al., 2016).

Objectives of the Study

The aim of this study was to develop and validate an instrument of sustainability in Environmental Volunteering Participation (I-SEVP) for the context of youth. The objectives of this study are as follows:

i. To identify what are the factors that contribute to involvement as environmental volunteers based on the environmental volunteers' views.
ii. To develop an instrument of sustainability in Environmental Volunteering Participation (I-SEVP).
iii. To analyze the validity and reliability of the instrument of sustainability in Environmental Volunteering Participation (I-SEVP).
iv. To identify what is the level of the factors studied in predicting sustainability of involvement as environmental volunteers.

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Materials and Methods

In this study, the following four steps were employed in developing the instrument of sustainability in Environmental Volunteering Participation (I-SEVP):
Stage 1: Conducting the literature review and interviews to identify the factors contributing to participation in environmental volunteering among youth.
Stage 2: Developing the instrument based on the identified themes.
Stage 3: Conducting the pilot test.
Stage 4: Performing Exploratory Factor Analysis (EFA).
Stage 5: Conducting analysis of the instrument's construct reliability.
Stage 6: Performing interpretation of the total score mean.

Research Context

Data used in the validation process were collected from 267 environmental volunteers from among youth (15-35 years of age) in the Klang Valley, Malaysia. The youth involved were from various fields of study including pure sciences, social sciences, professional and Islamic Studies. Most of the participants were involved in environmental volunteering activities that are related to environmental management such as cleaning beaches, cleaning mosques, plogging and planting trees. The participants were involved in the environmental volunteering activities for a duration that ranged between 1 hour to 7 days. A total of 174 male volunteers and 180 female volunteers participated in this research. For all respondents, it was the first time that they had seen the items in the questionnaire.

Instrument Development

Stage 1: Conducting literature review and interviews to identify the factors contributing to participation in environmental volunteering

Literature review was performed to identify the factors that contribute to sustainability of involvement as environmental volunteers before interviews were conducted with ten environmental volunteers. Prior to conducting the interviews, an interview protocol was developed based on the research purpose. Data from the interviews were transcribed and analyzed manually based on the themes obtained from previous studies and the theories related to values, motivation, and well-being of environmental volunteers. The themes developed were then reviewed by experts in the field of environmental education and outdoor education. Based on expert validity, four main themes were identified in this study, i.e., environmental volunteering values, societal norms, intention to sustain environmental volunteering participation and environmental volunteers' well-being. The first theme, namely environmental volunteering values contained four subthemes, namely egoistic, altruistic, biospheric and spiritual. The second theme which is societal norms consisted of social influences, fulfilling the requirement of study program, and societal culture. Meanwhile, environmental volunteers' well-being contained four subthemes, namely positive emotion, relationships, spiritual, and accomplishment. However, the details of the interviews with the environmental volunteers are not discussed in this paper.

Stage 2: Developing the instrument based on the identified themes
The constructs involved in this study are summarized in Table 1. The full questionnaire items are listed in Appendix A.

Table 1
Constructs and Subconstructs of the Questionnaire

No.	Construct	Sources of Adaptation	Subconstruct	Examples of Items
1.	Environmental volunteering values (25 items)	Constructed by the researchers based on the interviews conducted and the theory of environmental values by Swartz (2012) and Stern (2000).	Egoistic	I am involved in volunteering activities to pass the time.
			Altruistic	I am involved in volunteering activities because I want to contribute to society.
			Biospheric	I am involved in volunteering activities because I have awareness of environmental conservation
			Spiritual	I am involved in volunteering activities to practice environmental conservation values taught in my religion.
2	Societal Norms (14 items)	Constructed by the researchers based on the interviews conducted and the theory of planned behavior (Ajzen, 2006)	Social influences	I am involved in volunteering activities because of invitation from friends.
			Culture	I am involved in volunteering activities because I was influenced by the practice of helping each other in the society.
			Fulfill the requirements of the university/ employer	I am involved in volunteering activities to fulfill the requirements of the study program or the workplace.
3	Intention to sustain participation in environmental volunteering (8 items)	Constructed by the researchers based on the interviews conducted and the theory of	-	I will continue to be involved in environmental volunteering activities even though no payment or reward is given.

		planned behavior (Ajzen, 2006)		
4	Environmental Volunteers' well-beings	Constructed by the researchers based on the interviews conducted and the theory of PERMA by Seligman (2011)	Positive Emotion	After being involved in environmental volunteering activities, I am happy that I get to contribute to the environment.
			Relationship	After being involved in environmental volunteering activities, I was able to expand my network of contacts in the environmental field.
			Meaning	After being involved in environmental volunteering activities, I feel calm in doing something good in life.
			Accomplishment	After being involved in environmental volunteering activities, I was able to enhance my knowledge of the environment.

Stage 3: Conducting the pilot test

The pilot test involved a total of 267 respondents (15-30 years old) who were representative of Muslim youth. The main aim of the pilot test was to identify the respondents' understanding of the items used in the instrument and to perform the validity as well as reliability test on the instrument. Students were briefed on the nature of the study and how to answer the questionnaire. Students were able to understand all the items in the instrument. The time taken by the respondents to answer all the items was between 15 to 20 minutes. The data from the pilot test were then used to run the exploratory factor analysis (EFA) which was performed using SPSS.

Stage 4: Performing Exploratory Factor Analysis (EFA)

Exploratory factor analysis is a statistical method used to explore the dimensionality of an instrument by finding the smallest number of interpretable factors needed to explain the correlations among the set of items (McCoach, Gable & Madura, 2013). Exploratory factor analysis takes a large set of variables and looks for a way in which the data may be reduced or summarized using a smaller set of factors or components. It does this by looking for clumps or groups among the inter correlations of a set of variables (Pallant, 2011). In this study, exploratory factor analysis was performed to examine the internal structure of the set of seventy-seven items and to validate the subconstructs underlying the four main constructs, i.e., environmental volunteering values, societal norms, intention, and environmental

volunteers' well-being. The construct in this study was developed based on the theory of value-belief-norm, planned environmental behavior, and PERMA as well as findings from the interviews with ten environmental volunteers.

Stage 5: Conducting analysis of the instrument's construct reliability
The reliability for each construct was determined based on Cronbach's alpha values. Pallant (2011) stated that Cronbach Alpha values above 0.60 are often used as the reliability index for an instrument.

Stage 6: *Performing interpretation of the total score mean*
The interpretation of the total score mean and the level for environmental volunteering values, societal norms, intention to sustain in environmental volunteering and environmental volunteers' well-being was performed by adapting the interpretation from Nunnally (1997) which is presented in Table 2. Based on the total score mean obtained, **t**he interpretation of the total score mean was described as either low, medium low, medium high or high.

Table 2
Mean Value and Interpretation of Total Score Mean

Total Score Mean	Interpretation of Total Score Mean
1.00 - 2.00	Low
2.01 - 3.00	Medium Low
3.01 – 4.00	Medium High
4.01 - 5.00	High

(Adapted from Nunnally, 1997)

Findings
Exploratory Factor Analysis for Environmental Volunteering Values
For environmental volunteering values factors, a total of 25 items were identified. These 25 items were subjected to principal component analysis (PCA) using SPSS version 23. Prior to performing PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Olkin value was .951, exceeding the recommended value of .6 (Pallant, 2011) and the Bartlett's test of sphericity reached a statistical significance, supporting the factorability of the correlation matrix as shown in Table 3.

Table 3
The Findings from Kaiser-Meyer-Olkin and Bartlett's Test for Environmental Volunteering Values

Kaiser-Meyer-Olkin's Measure of Sampling Adequacy		.951
Bartlett's Test of Sphericity	Approx. Chi-Square	5641.728
	Df	561
	Sig.	.000

Principal component analysis revealed the presence of three components with eigenvalues exceeding 1. An inspection of the scree plot revealed a clear break after the three components as shown in Figure 1. Thus, the three components retain for further investigation.

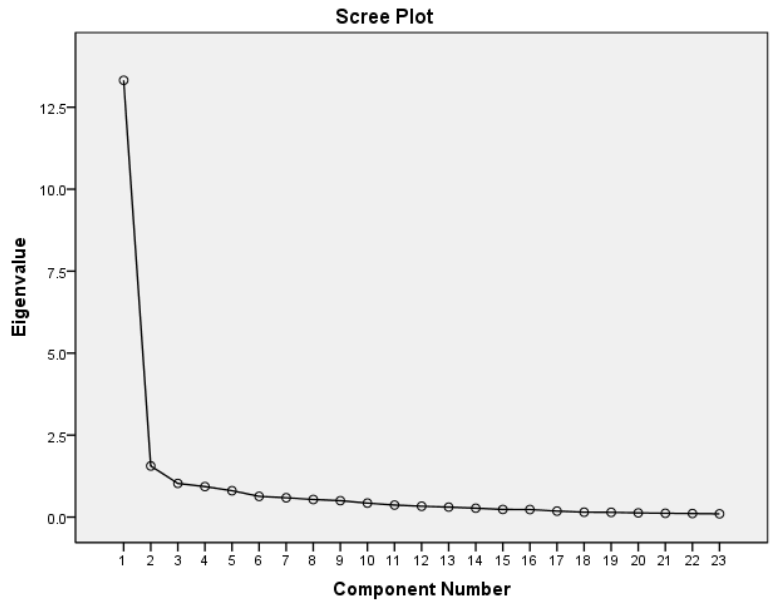

Figure 1 Scree Plot for Environmental Volunteering Values

To aid the interpretation of the four components, varimax rotation was used to generate orthogonal factors. The three components' solution explained a total of 69.174% of the variance, with component 1 contributing 36.83%, component 2 contributing 16.81%, and component 3 contributing 15.54 %, as shown in Table 4.

Table 4

Total Variance Explained for Environmental Volunteering Values

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.324	57.928	57.928	13.324	57.928	57.928	8.470	36.827	36.827
2	1.559	6.780	64.709	1.559	6.780	64.709	3.866	16.809	53.636
3	1.027	4.466	69.174	1.027	4.466	69.174	3.574	15.538	69.174

Based on factor loading values as shown in Table 5, item b1, b4, b5, b9 was removed because of low factor loading and overlap into another group. We decided to remove Item b10 because not related to the other item in same component because the item b10 related to money rewards to their own and others item related to the contribution towards society. Overall, based on exploratory factor analysis, environmental volunteering values factors consist of three sub factors i.e., role awareness (component 1), personal needs (component 2) and contribution to society (component 3). Role awareness is related to altruistic, biospheric and spirituality values while personal needs are egoistic values and contribution to society related to altruistic values.

Table 5

Rotated Component Matrix for Environmental Volunteering Values

	Component		
	1.Role awareness	2.Personal Needs	3. Contribution to society
b23	.868		
b22	.837		
b20	.791		
b25	.790		
b19	.790		
b24	.772		
b17	.755		
b21	.754		
b18	.737		
b16	.731		
b2		.719	
b7		.667	
b8		.594	
b3		.583	
b6		.582	
b12			.694
b11			.673
b13			.563

Exploratory Factor Analysis for Society Norms

A total of 14 items were developed for society norms. With same procedure, inspection of the correlation matrix revealed the presence of many coefficients of .3 and above and the Kaiser-Meyer-Olkin value was .882, exceeding the recommended value of .6 (Pallant, 2011) and the Bartlett's test of sphericity reached a statistical significance, supporting the factorability of the correlation matrix as shown in Table 6.

Table 6

Findings from Kaiser-Meyer-Olkin and Bartlett's Test for Society Norms

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.882
Bartlett's Test of Sphericity	Approx. Chi-Square	2197.829
	Df	91
	Sig.	.000

Principal component analysis revealed the presence of three components with eigenvalues exceeding 1. An inspection of the scree plot revealed a clear break after the three components as shown in Figure 2.

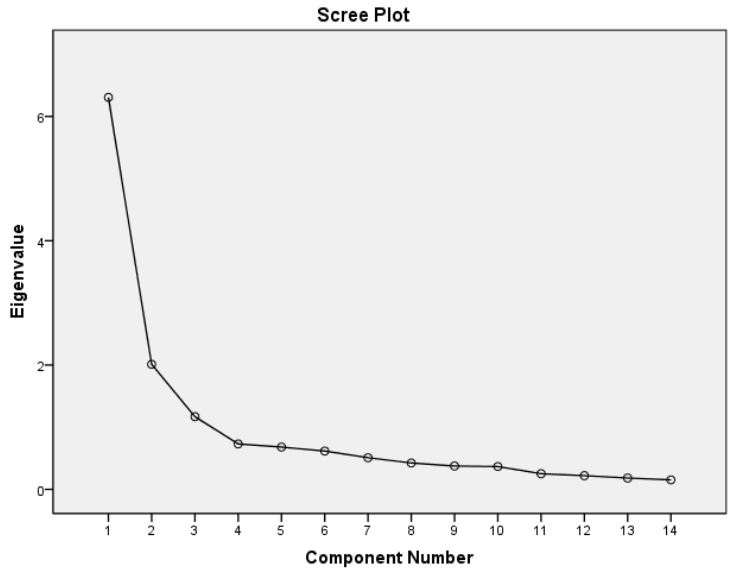

Figure 2 Scree Plot for Society Norms

The three components' solution explained a total of 67.77% of the variance, with component 1 contributing 31.02%, component 2 contributing 19.27%, and component 3 contributing 17.49% as shown in Table 7.

Table 7

Total Variance Explained for Society Norms

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.307	45.048	45.048	6.307	45.048	45.048	4.342	31.018	31.018
2	2.012	14.371	59.419	2.012	14.371	59.419	2.697	19.265	50.283
3	1.169	8.353	67.772	1.169	8.353	67.772	2.448	17.489	67.772

Based on the factor loading values in the rotated component matrix as shown in Table 8, all the 14 items belonged to the three elements, namely i) cultures (component 1), ii) social influences (component 2), and iii) Fulfill the needs by university/employer (component 3).

Table 8
Rotated Component Matrix for Society Norms

	Component		
	Culture	Social influences	Fulfill the university/ employer requirement
c13	.897		
c12	.875		
c14	.856		
c11	.806		
c6	.689		
c10	.668		
c2		.810	
c1		.798	
c4		.633	
c5		.622	
c8			.879
c7			.866
c3			.586

Exploratory Factor Analysis for Intention to Sustain the Participation as Environmental Volunteers

The total of 8 items were developed for intention to sustain the participation as environmental volunteers. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Olkin value was .880, exceeding the recommended value of .6 (Pallant, 2011) and the Bartlett's test of sphericity reached a statistical significance, supporting the factorability of the correlation matrix as shown in Table 9.

Table 9
Findings from Kaiser-Meyer-Olkin and Bartlett's Test for Intention to Sustain the Participation as Environmental Volunteers

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.932
Bartlett's Test of Sphericity	Approx. Chi-Square	2324.022
	Df	28
	Sig.	.000

Initially, principal component analysis revealed the presence of one component with eigenvalues exceeding 1. An inspection of the scree plot revealed a clear break after the first component as shown in Figure 3.

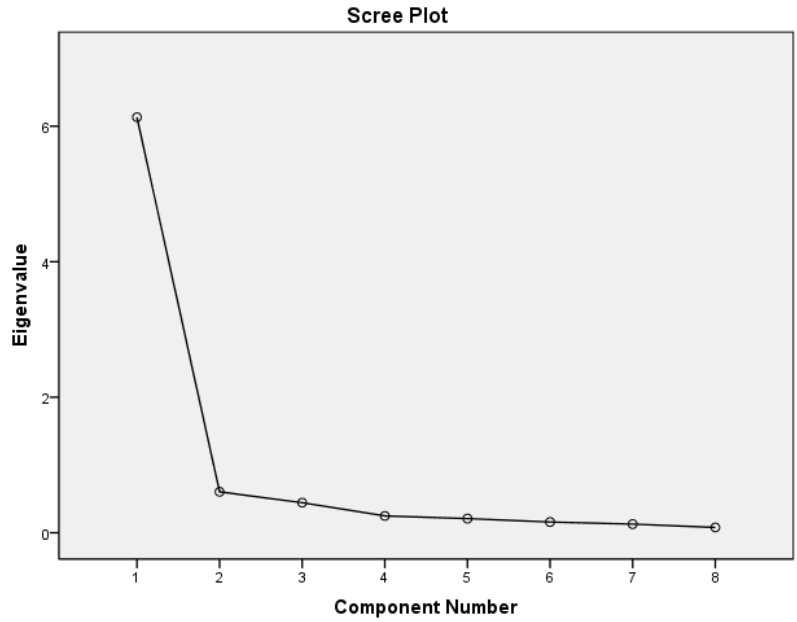

Figure 3 Scree Plot for Intention to Sustain the Participation as Environmental Volunteers

The one solution explained a total of 56.86% of the variance with contributing 76.66% as shown in Table 10. Meanwhile Table 11 shows the rotated component matrix for intention to sustain the participation as environmental volunteers.

Table 10

Rotated Component Matrix for Intention to Sustain the Participation as Environmental Volunteers

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.932
Bartlett's Test of Sphericity	Approx. Chi-Square	2324.022
	Df	28
	Sig.	.000

Table 11

Total Variance Explained for Intention to Sustain the Participation as Environmental Volunteers

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.133	76.657	76.657	6.133	76.657	76.657	6.133	76.657	76.657

Exploratory Factor Analysis for Environmental Volunteers' Well-Beings

The total of 30 items were developed for environmental volunteers' well-beings. These 30 items were subjected to principal component analysis (PCA). Prior to performing PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Olkin value

was .960, exceeding the recommended value of .6 (Pallant, 2011) and the Bartlett's test of sphericity reached a statistical significance, supporting the factorability of the correlation matrix as shown in Table 12.

Table 12

Findings from Kaiser-Meyer-Olkin and Bartlett's Test for environmental volunteers' well-beings

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.960
Bartlett's Test of Sphericity	Approx. Chi-Square	8122.845
	Df	378
	Sig.	.000

Initially, principal component analysis revealed the presence of two components with eigenvalues exceeding 1. An inspection of the scree plot revealed a clear break after the four components as shown in Figure 4.

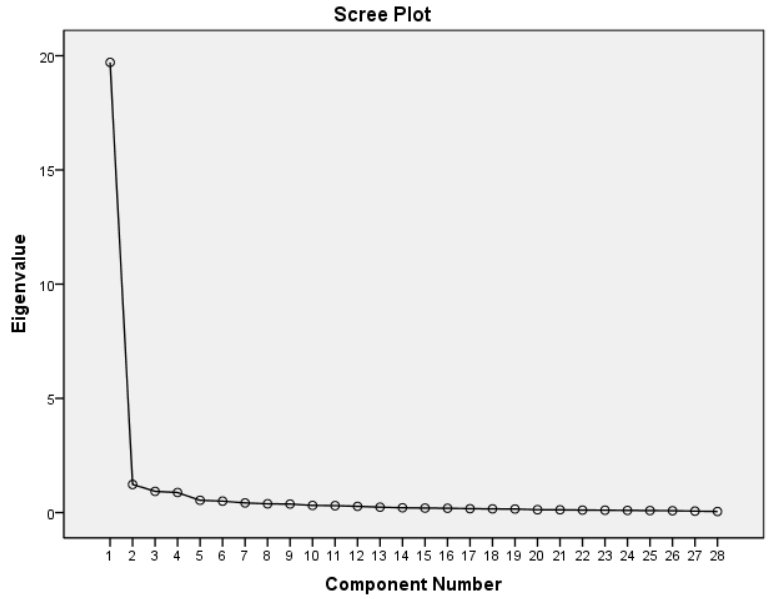

Figure 4 Scree Plot for Environmental Volunteers' Well-Beings

Due to conflict to decide whether 2 components based on eigenvalues or scree plot, we decided to compare the two results from eigenvalues and from scree plot. Based on eigenvalues, the two solutions explained a total of 74.78% of the variance, with component 1 contributing 42.14% and component 2 contributing 32.64%, as shown in Table 13.

Table 13

Total Variance Explained for Environmental Volunteers' Well-Beings for Two Components

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19.707	70.381	70.381	19.707	70.381	70.381	11.799	42.140	42.140
2	1.231	4.397	74.778	1.231	4.397	74.778	9.139	32.638	74.778

However, based on eigenvalues, the four solutions explained a total of 81.23% of the variance, with component 1 contributing 26.37%, component 2 contributing 25.99%, component 3 contributing 18.82% and component 4 contributing 10.05%, as shown in Table 14.

Table 14

Total Variance Explained for Environmental Volunteers' Well-Beings for Four Components

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19.707	70.381	70.381	19.707	70.381	70.381	7.384	26.372	26.372
2	1.231	4.397	74.778	1.231	4.397	74.778	7.276	25.987	52.358
3	.928	3.314	78.092	.928	3.314	78.092	5.270	18.823	71.181
4	.878	3.137	81.229	.878	3.137	81.229	2.813	10.048	81.229

Therefore, based on greater cumulative contribution and more components in constructs of environmental volunteers' well-beings for four components, we decided to retain 4 components for further investigation. Based on the factor loading values in the rotated component matrix as shown in Table 15, all the 30 items belonged to the four components i.e., positive emotion, relationship, accomplishment and spiritual. Due to spiritual factor only have 2 items and not significant statically to measure the construct, then we decided to drop the construct of spiritual or amendment the statement of these two items for actual study.

Table 15

Rotated Component Matrix for Environmental Volunteers' Well-Beings for Four Components

Rotated Component Matrix[a]

	Component			
	1. Accomplishment	2.Positive Emotion	3.Relationship	4.Spiritual
e29	.748			
e27	.719			
e25	.716			
e30	.714			
e28	.698			
e26	.684			
e23	.677			
e24	.668			
e18	.586			
e22	.579			
e19	.572			
e20	.567			
e7		.789		
e3		.780		
e6		.773		
e1		.766		
e4		.759		
e5		.742		
e2		.672		
e8		.586		
e15				
e12			.763	
e11			.752	
e13			.698	
e14			.663	
e21				
e17				.811
e16				.789

Reliability Analysis

Overall, the Cronbach's alpha value for each factor was between .788 and .972. Thus, each value indicated that all items showed high reliability as shown is Table 16.

Table 16
Cronbach's Alpha Value

No.	Construct	Subconstruct	Cronbach's Alpha Value
1	Environmental volunteering values	Personal needs	.852
		Role awareness	.960
		Contribution to society	.898
		OVERALL	**.955**
2	Society norms	Social Influences	.788
		Cultures	.953
		Requirement from university/employer	.808
		OVERALL	**.890**
3	Intention to sustain	**OVERALL**	**.953**
4	Volunteers' well-beings	Positive emotion	.970
		Relationship	.926
		Accomplishment	.972
		OVERALL	**.983**

Interpretation of Total Score Mean

Based on the findings of the study, the mean scores for all three constructs examined, namely environmental volunteering values, environmental volunteers' well-being and intention to sustain were identified to be at the high level while the construct of societal norms was at the medium high level. Similarly, the subconstructs that represented the main constructs were mostly at the high level except for social influences and university/employer requirement which were at the moderately high level. It could be justified that the high mean scores were because the factors studied through the questionnaire items were derived from themes obtained from the analysis of the views of the environmental volunteers involved in the interviews which were conducted before the questionnaire instrument was developed. A summary of the study's findings are presented in Table 17.

Table 17

Mean Score of Environmental Volunteering Values, Societal Norms, Intention to Sustain and Volunteers' Well-being.

No.	Construct	Subconstruct	Mean	Standard Deviation	Interpretation of Total Score Mean
1	Environmental volunteering values	Personal needs	4.312	0.583	High
		Role awareness	4.284	0.697	High
		Contribution to society	4.467	0.544	High
		OVERALL	**4.394**	**0.523**	**High**
2	Societal norms	Social Influences	3.622	0.841	Medium High
		Culture	4.131	0.676	High
		University/employer requirement	3.812	0.892	Medium High
		OVERALL	**3.901**	**0.630**	**Medium High**
3	Intention to sustain	**OVERALL**	**4.119**	**0.706**	High
4	Volunteers' well-being	Positive emotion	4.397	0.621	High
		Relationships	4.225	0.745	High
		Accomplishment	4.343	0.672	High
		OVERALL	**4.352**	**0.597**	High

Discussion

The instrument of sustainability in environmental volunteering participation (I-SEVP) was developed based on four factors, namely environmental volunteering values, societal norms, intention to sustain and environmental volunteers' well-being. These factors were based on the themes obtained from the interviews with ten environmental volunteers. At the beginning of the questionnaire development, the items that measured environmental volunteering values consisted of four value orientations which are egoistic, altruistic, biospheric and spiritual values. However, after the EFA analysis, these environmental volunteering values were recategorized based on three factors, namely role awareness, personal needs, and contribution to society. The factor of role awareness was based on biospheric, altruistic and spiritual value orientations. Personal needs were based on egoistic values while contribution to society was based on altruistic values. Binder and Blankenberg (2016) showed that egoistic concerns have a negative impact on subjective well-being while altruistic concerns are positively associated with well-being, an effect likely driven by omitting variables for environmental activism such as volunteer work. In contrast to the views of Binder and Blankenberg (2016), this study found that elements of egoistic nature contributed greatly to the happiness of the environmental volunteers such as positive emotions, accomplishment attained, and closer human relationships experienced after engaging in environmental volunteering activities. These factors of egoistic values also need to be considered in developing the instrument. The factors measured under environmental volunteering values were at 69.174% where the value was high and reflected the construct measured. These three environmental volunteering values are fitting with the context of youth life in Malaysia where most of the study sample were youth. Contribution to society is a motivating value that is related to a sense of responsibility to the community where studies by Omoto and Packard (2016) as well as Foster (2018) evidenced that the sense of

responsibility to the community is a major influence on involvement as an environmental volunteer.

The items that measured societal norms in this study was examined based on three factors, namely social influences, fulfilling the requirement of the educational institutions or employers, and culture. The factors studied contributed 67.77% to the entire construct of societal norms. Social influences that contributed to involvement as an environmental volunteer included friends, parents, government support and organizers of environmental volunteering programs. Fulfilling the requirements of education institutions or employers, associations or clubs which they joined concerns the need for the volunteers to fulfill the requisites of their field of study or the requirements at the workplace, and the volunteering involvement is usually done out of compulsion. Although the volunteering was initially performed out of compulsion, if it suits the individual's satisfaction, they will be motivated to sustain the behavior toward the environment (Fang et al., 2017). Meanwhile, culture is related to societal norms that should be followed by the community such as mutual cooperation (*gotong royong*), helping each other and making oneself closer to the community through environmental volunteering activities.

The intention to sustain in environmental volunteering examined in this study involved items related to giving commitment and contributing time, energy as well as finances in order to sustain self-involvement in the environmental volunteering programs. The factors studied contributed 76.66 % to the construct of intention to sustain in environmental volunteering. Intention is the factor closest in influencing a person to take action (Azjen, 2006).

Environmental volunteers' well-being measured in this study included positive emotion, relationships, accomplishment and meaning in terms of the spiritual aspect. However, spiritual aspect contained only two items because there were items which had low factor loading and thus, the subconstruct of spiritual had to be dropped because it was not enough to measure the construct statistically. According to Awang (2019), each subconstruct should have at least three items for the purpose of measurement. Thus, it was suggested that the items related to meaning from the spiritual aspect need to be reconsidered. The factors studied contributed 81.23% to the construct of environmental volunteers' well-being. Past studies have also shown that a high rate of continuous volunteers' involvement indicates the effectiveness of a successful environmental volunteering program when the volunteers feel happy, valued and are able to learn something and gain progress in their work (Cho, Wong & Chiu, 2020).

The mean scores for the subconstructs examined, namely environmental volunteering values, intention to sustain and environmental volunteers' well-being were found to be at the high level while the construct of societal norms was at the medium high level. Similarly, the subconstructs that represented the main constructs were mostly measured at the high level except for social influences and requirement from university/employer which were at the medium high level. This is because the instrument developed in this research was more focused and appropriate for the study's context as the construction of the items was based on the themes obtained from the interviews with the environmental volunteers.

Overall, the EFA findings based on the constructs showed valid items on the basis of face validity and expert validity, and it also had high reliability based on Cronbach's alpha. Hence, this instrument is considered suitable for use in research to measure sustainability of involvement as environmental volunteers among youth. The development of this

instrument fills the gap in the development of past instruments by focusing on the background of the environmental volunteers, namely Muslim youth, culture, needs and goals of involvement as an environmental volunteer that is in line with the background of Muslim youth.

Conclusion

This research attempted to investigate the development of an instrument on sustainability in environmental volunteering participation (I-SEVP) for youth. The four main constructs developed were environmental volunteering values, societal norms, intention, and volunteers' well-being. These four main constructs were analyzed using EFA. Findings of the study showed that under the construct of environmental volunteering values, there were three subconstructs, namely egoistic, altruistic and biospheric, and it was found that the items that measured biospheric and spiritual values which were determined before the EFA analysis was performed were mixed. Thus, this mixture of biospheric and spiritual values was renamed under a new construct, i.e., role awareness. For the construct of societal norms, the results of EFA showed that three subconstructs were generated, namely culture, social influences and fulfilling university/employer requirement. For the construct of intention for sustainability of involvement as an environmental volunteer, it remained at only one subconstruct. Meanwhile, the construct of volunteers' well-being resulted in four subconstructs, namely accomplishment, positive emotion, and relationships.

The research instrument developed can serve as a guide in predicting sustainability of involvement as an environmental volunteer among youth by taking into consideration the factors of value orientation, societal norms, volunteers' well-being, and intention. It is suggested that future studies expand the research by examining other factors that have the potential to influence sustainability of involvement as environmental volunteers. Among these factors include the influence of environmental education, policies, mass media support, and government support. It is also recommended that future studies explore other theories or models related to environmental volunteering behavior.

This study adopted EFA due to the nature of the study which is exploratory and focused on the development of a new instrument. In future, other researchers can use the instrument to measure environmental volunteering behavior. Even though this instrument and the items only focused on youth of Malay Muslim background, research involving youth from other religions can still adapt this instrument to suit the requirements of the research and the background and culture of the study participants.

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Appendix A: Instrument

Environmental Volunteering Values

I am involved in environmental volunteering activities…

1. because I am interested in environmental volunteering activities.
2. because I am interested in animals.
3. because I am interested in activities related to the environment (for example: bathing/swimming in rivers, jungle trekking, mountain climbing).
4. to pass the time.
5. because I want to know about environmental volunteering programs.
6. to relieve stress.
7. because I want to try something new.
8. because I want to find experience.
9. because I want to take the opportunity to be involved in environmental volunteering activities.
10. because of the economic rewards gained.
11. because I want to contribute to society.
12. because I want to increase the community's involvement in environmental volunteering activities.
13. because I want to spread environmental volunteering activities to the community.
14. because I have a sense of responsibility to the society.
15. because I want to create awareness or provide education to the community in caring for the environment.
16. because it will give benefits for future generation.
17. because I have a sense of responsibility for the environment.
18. because I have the awareness on environmental conservation.
19. because I want to do good to the environment.
20. because I want to preserve the beauty of the environment.
21. because I have love for the environment.
22. because I want to perform good deeds demanded by religion in terms of caring for the environment.

23. to practice the environmental conservation values taught in my religion.
24. because I have a sense of responsibility of the role as caliph in taking care of the environment.
25. because I consider it as an act of worship.

Society Norms

I am involved in environmental volunteering activities…

1. because of invitation from friends.
2. because of recommendations from lecturers.
3. because of recommendations from family.
4. because of support from the government.
5. because of the influence of organizers.
6. because of environmental awareness campaigns.
7. to fulfill the requirement of the activities of the club or association that I joined.
8. to fulfill the requirement of the study program.
9. because of the influence of social media (for example: FB, Twitter, Instagram, WhatsApp, and others).
10. because it is a norm in the society to clean up an area through cooperation or by working together (*gotong royong*).
11. because I was influenced by the practice of helping each other in the society.
12. because of the influence of the culture of kindness in the society to do good deeds through environmental volunteering activities
13. because it strengthens relationship with the society through environmental volunteering activities.
14. because of the feeling of being a part of the community to mutually work together in cleaning the local area.

Intention

1. I will continue to be involved as an environmental volunteer even without coercion.
2. I will contribute my time for environmental volunteering activities.
3. I will contribute my energy for environmental volunteering activities.
4. I will contribute my finances for environmental activities.
5. I will invite others to also be involved in environmental volunteering activities.
6. I want to continue learning about environmental volunteering activities.
7. I will research for information about environmental volunteering activities through the social media.
8. I will continue to be involved in environmental volunteering activities even though no payment or reward is given.

Volunteers' well-being

After being involved in environmental volunteering activities, I…

1. am happy that I get to contribute to the environment.
2. am happy to do something new.
3. am glad that I get to help the community care for the environment.
4. am satisfied when seeing changes to the community's practices in caring for the environment.

5. am satisfied to see the environmental volunteering programs that I participated in succeeded in achieving the targeted goals.
6. am satisfied for being able to perform my responsibility in caring for the environment.
7. am satisfied to see changes in the cleaner environmental condition.
8. was able to increase my knowledge about the areas involved with the environmental volunteering activities.
9. was able to increase my knowledge of the culture of the local community involved in the environmental volunteering activities.
10. feel that my relationship with the environment becomes closer
11. gained new friends who share the same interests.
12. got to know experts in the environmental field.
13. was able to expand my network of contacts in the environmental field.
14. was able to strengthen ties with fellow environmental volunteers.
15. became aware of the responsibility as a caliph in caring for the environment.
16. feel assured of the rewards that will be granted by Allah.
17. became aware of the greatness of Allah's creation.
18. feel calm in doing something good in life.
19. was able to enhance my social skills.
20. was able to enhance my communication skills.
21. was able to enhance skills related to own interest (example: advertising, graphics, handling animals, planting trees, running a program).
22. was able to enhance my leadership skills.
23. was able to enhance my preaching (da'wah) skills (inviting others to care for the environment through environmental volunteering activities).
24. was able to enhance my knowledge of the environment.
25. was able to enhance awareness about the environment.
26. was able to spread environmental volunteering activities to others.
27. was able to improve my level of health.
28. can broaden my career field.
29. was able to relate my field of study to the environmental volunteering activities.
30. developed my personality in caring for the environment.