

**SUSTAINABLE
DEVELOPMENT
SURVEY
2019**

UM-WWFM LIVING PLANET CENTRE 2020



ACKNOWLEDGEMENT

This survey marks a significant finding as it illustrates some insights into the current levels of understanding and practice of sustainable development and environmental citizenship after ten years of conducting various engagements to raise awareness and transform individuals into sustainability followers, managers and champions.

WWF-Malaysia wishes to thank everyone who has been instrumental in contributing to the success of the “2019 Sustainable Development Survey”. The completion of this study could not have been accomplished without the support of 1976 respondents who invested their precious time to answer all the questions via online and face to face interviews.

The survey instruments were developed through a rigorous process of discussion and editing through a series of meetings and workshops with the Principal Investigator, Prof. Dr Esther Daniel and the team namely, Dr Hong Wei Han, Dr Yip Jinchi, Dr Yong Siew Nget, Dr Choong Shiau Huai, Dr Ambiga, Ms. Linda Mah Lay Suat, Mr. Thiyagu Karupaiyah, Ms. Menaka Velayudhan and Ms. Ablin Peter.

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Last but not least, many thanks go to the head of the project, Professor Dr Esther Gnanamalar Sarojini A. N. Daniel for her undivided attention and commitment to construct and analyse the study. We would also like to acknowledge the contribution of her research assistants, Mr. Riyan Hidayat and Ms. Riski Israeni Nur.

Again, thank you and let us reiterate that our hope for the future is to leave the future generations a living planet.

A decade after the *Environmental Citizenship: Emerging Perspectives in Malaysia* study was conducted, WWF-Malaysia and the University of Malaya through the WWF-UM Living Planet Centre, collaborated once again. With all the efforts invested in the past ten years, the 2019 survey was set to discover Malaysians' awareness and attitudes, particularly on environmental issues. Besides, the study also aimed to determine their knowledge in the four areas of environment, social, economy, and culture related to sustainable development.

The findings will lead WWF-Malaysia to improve its plans for the Education for Sustainable Development (ESD) programme. Currently, its strategies are aligned to address the critical issues from the United Nations' Sustainable Development Goals (SDGs) into teaching and learning, for example, sustainable cities and urban communities, biodiversity, marine, climate change, water, plastics, responsible consumption and production and rural and indigenous communities.

After going through many changes, the programme strives to create a future generation of youths, students, communities, and local authorities adopting a sustainable lifestyle. The three strategies target not only on the science of teaching and learning environmental education but also influencing the environmental education policy formulation within the formal education system in the country. The emphasis is rooted in the development of educational processes that are strongly connected to the local content and context with an understanding and lesson learnt at the regional and global context.

The essence of this report must be shared and understood by many as it will guide educators, organisations and all the relevant bodies to plan and implement strategic, as well as appropriate environmental projects in the effort to move forward in the coming challenging decade where the world is facing unprecedented climate change and biodiversity issues as being stress in the UN's Paris Climate agreement and Convention on Biodiversity. The responsibility to protect the only planet we have lies within every individual from all walks of life. We believe that environmental education is the key to ensuring the protection of our world and its natural resources.

WWF-Malaysia thanks all partners and supporters who have made this study possible. We hope our ESD programme will continuously empower individuals to adopt behaviours and practices, which will enable us all to live a life in harmony with nature and people.

Together Possible

Thiagarajan Nadeson
Head of Education and Markets

EXECUTIVE SUMMARY

“If the bee disappears from the surface of the earth, man would have no more than four years to live.” —Albert Einstein

The importance of bumblebees in the web of life began with Darwin’s “Origin of the Species” written in 1859. Many scientists since have referred to bees in many ways and their impact upon the earth. If a humble bee has such a significance, how much more humans need to tread carefully. At the present time much research is being conducted in relation to sustainable development and all its related factors to try and identify hidden underlying factors that may need to be addressed in bringing out the best pro-environmental behaviour.

This study is a follow up of the Malaysian 2008 national survey conducted by WWF-M. Based on the 2008 study results, WWF-M has put in place various interventions for the youth through the eco-schools and eco-campus and other programmes. The present study with 1976 survey respondents has revealed some insights into the current levels of understanding and practice of sustainable development and environmental citizenship.

First, although the perceived knowledge levels for environmental, economy, social and cultural sustainability among the respondents was found to be high, the association between these domains of knowledge was found to range from negligible to low. Thus, there appears to be compartmentalisation of these domains of knowledge.

Second, the affective domains attitudes and behavior was perceived by the respondents as high also, but the strength of the association between these domains also ranged between weak to low. This suggests that change in attitudes need not necessarily bring about change in behaviour.

Third, when the WWF-M involved group was compared with the Non-WWF-M involved group, similar weak to low correlation coefficients were obtained suggesting compartmentalisation of knowledge. Nevertheless, the WWF-M involved group showed a significance difference for Environmental Citizenship when compared to the Non-WWF-M involved group.

Fourth, the values domain was investigated as an explanatory variable and the results suggest that values could be a mediating factor to strengthen the associations between the various EC and Sd awareness component dimensions. This will need further study.

Ultimately it is human behaviour that determines what we proceed to hand over to future generations. This study has shown that the journey to behavioral change is still slow although it appears that respondents involved in WWF-M activities may have acquired a slight edge in this direction to behavioural change.

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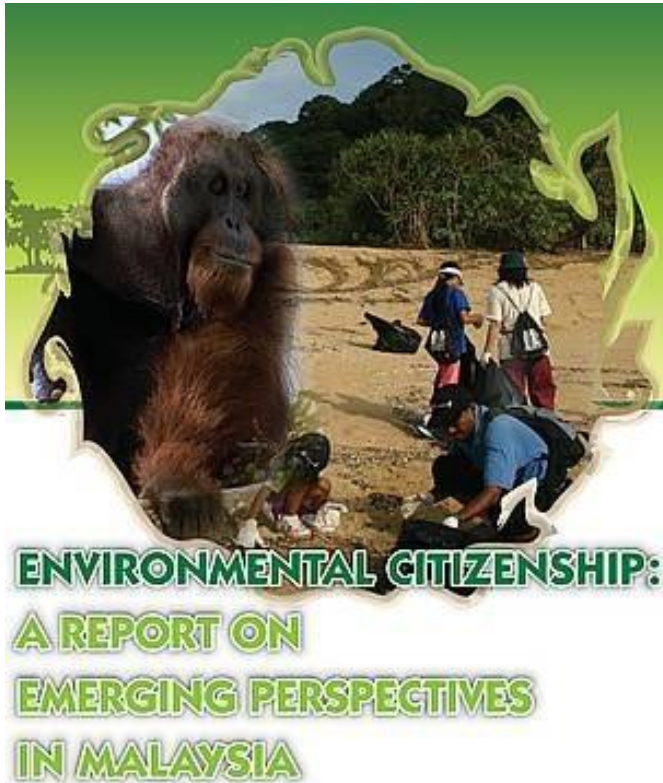
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INTRODUCTION AND BACKGROUND



In 2008, the WWF-Malaysia report on the Emerging Perspectives of Environmental Citizenship in Malaysia was published. The report presented findings of a national study conducted among 6090 respondents from different sections of the population throughout West and East Malaysia, namely teachers, university lecturers, teacher trainers, the media and industry, politicians, government officers, NGOs', primary school students, secondary school students, tertiary students, teacher trainees, parents and members of the public. The objectives of the study were (i) to determine the level of Environmental Citizenship among Malaysians at that time; (ii) to identify the factors to move the present level of Environmental Citizenship to higher anticipated level; (iii) to put forward a model for the

implementation for an Environmental Education policy for environmental citizenship, and (iv) to project the anticipated level of Environmental Citizenship for Malaysians and the indicators to achieve it. Environmental citizenship in the 2008 report enveloped environmental knowledge, attitudes, skills and participation. The main indicators projected for the next ten years were (i) and increase in the number of schools with Lestari programmes, (ii) setting up of an Environmental Education (EE) Research Centre, (iii) curriculum revision for EE, (iv) an increase in EE training and resources and (iii) transformations in environmental behaviour. The Report also recommended that a survey on environmental citizenship be conducted every five years.

Since 2008, WWF-M with its partners have implemented the indicators through various projects. EE is now referred to as Education for Sustainable Development (ESD) in line with the United Nations Sustainable Development Goals (SDGs). The 2019 survey aimed to determine the awareness of the four areas of environment, social, economy and culture related to sustainable development in addition to the values, attitudes and behaviour about the environment in general among Malaysians, after 10 years.

The WWF Living Planet Report (2018) released alarming statistics such as in the last 50 years, global average temperature has risen at 170 times the background rate and that 90%

of the world's seabirds are estimated to have fragments of plastic in their stomach. In relation to this the report also stated that the present generation is the first to have a clear picture of the value of nature and the enormous impact humans have upon it. We may also be the last who can act to reverse the destructive trend. From the Malaysian context, it is also good to assess, how knowledge about the environment and related economic, social and cultural aspects, attitudes, values and behaviours have evolved.

Thus, after ten years, the Sustainable Development Survey was planned in 2018 to determine the effects of what has been put in place since the last survey in 2008, thus paving the way for WWF-M to progress to the next level of implementation of its plans for ESD. These plans include regional level collaboration between Asia Pacific nations in trying to achieve the SDGs. Hence, the participation of all respondents in this survey is extremely important to help plan and implement strategic, relevant and appropriate projects in our effort to move forward in the coming decade.

BETWEEN 2008 AND 2018

After the Environmental Citizenship survey of 2008, the attention of WWF-M turned towards enhancing environmental education in schools, as getting the young rooted in knowledge about the environment and sustainable development will reap long term rewards in the future.

The 2008 results for the youth are shown in Tables 1 to 4 (Source: Emerging Perspectives of Environmental Citizenship in Malaysia, 2008)

Table 1 Knowledge Levels of Malaysian Students

Group	Level of Knowledge (%)
Primary Students	43.15
Secondary Students	47.79
Tertiary	47.67

Table 2: Attitude Levels of Malaysian Students

Group	Level of Attitude (%)
Primary Students	67.20
Secondary Students	76.62
Tertiary	78.42

Table 3: Participation Levels of Malaysian Students

Group	Level of Participation (%)
Primary Students	58.50
Secondary Students	57.00
Tertiary	56.25

Table 4: Skills Levels of Malaysian Students

Group	Level of Skills (%)
Primary Students	62.50
Secondary Students	69.00
Tertiary	80.00

The emergent results of the Environmental Citizenship report spearheaded the “Enhancing Infusion of EE in the Existing National Curriculum” (in short was named “Environment & You) project. This project had two full cycles and followed students from Forms 1 to 3 (between 2008 to 2010 and 2011 – 2013), which was conducted in the four zones of peninsula West Malaysia in collaboration with the Ministry of Education (MOE), Malaysia. The purpose of the “Environment & You” project was to develop an Environmental Education (EE) Formal Curriculum component model for the purpose of replication in Malaysian schools. For this purpose, teaching aids and resource materials relevant to teachers and practitioners were developed to enhance the execution of EE in Malaysian schools for the subjects of Science, Geography, English and the Malay National Language (Bahasa Malaysia). The two cycles of intervention showed that a change in behaviour toward the environment happens slowly but steadily as can be seen in Tables 5 to 6 (Source: ‘Enhancing Infusion of Environmental Education in the Existing National Curriculum’ Report, 2013)

Table 5: Environmental Citizenship from 2008-2013

Research Cycle	First Cycle			Second Cycle		
	2008	2009	2010	2011	2012	2013
Level	32.54%	39.75%	33.52%	42.50%	41.30%	39.20%

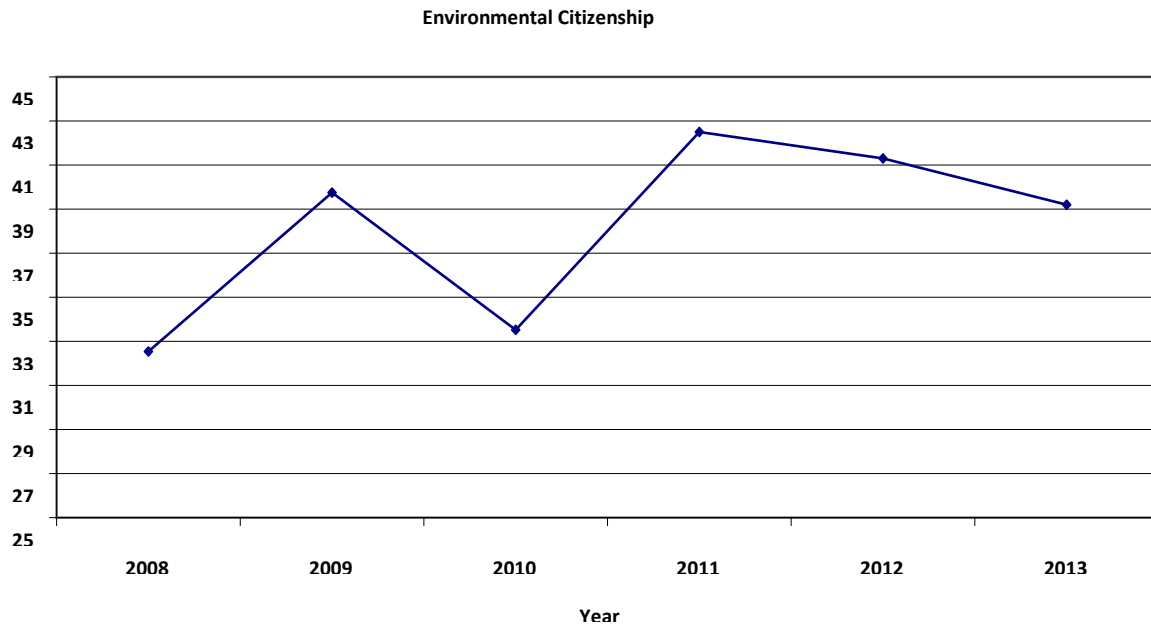


Figure 1 Environmental Citizenship from 2008-2013

The results for environmental citizenship (a combination of the knowledge, attitude, skills and action) levels show a rise and dip for each cycle. The level, however, stayed below the 50% level. The highest level is just less than 43% in 2011 and 2012.(Figure 1)

Table 6: Environmental Behaviour from 2008-2013

Research Cycle	First Cycle			Second Cycle		
	2008	2009	2010	2011	2012	2013
Level	26.74%	36.43%	29.98%	34.30%	33.90%	32.95%

The results for environmental behaviour (which combines the skills and action aspects) levels show a rise and dip for each cycle as well. The level also stayed consistently below 40 %. The highest level is just less than 37% in 2009. Overall, the decline is very clear in 2010 and a smaller decline in 2013 (Figure 2)

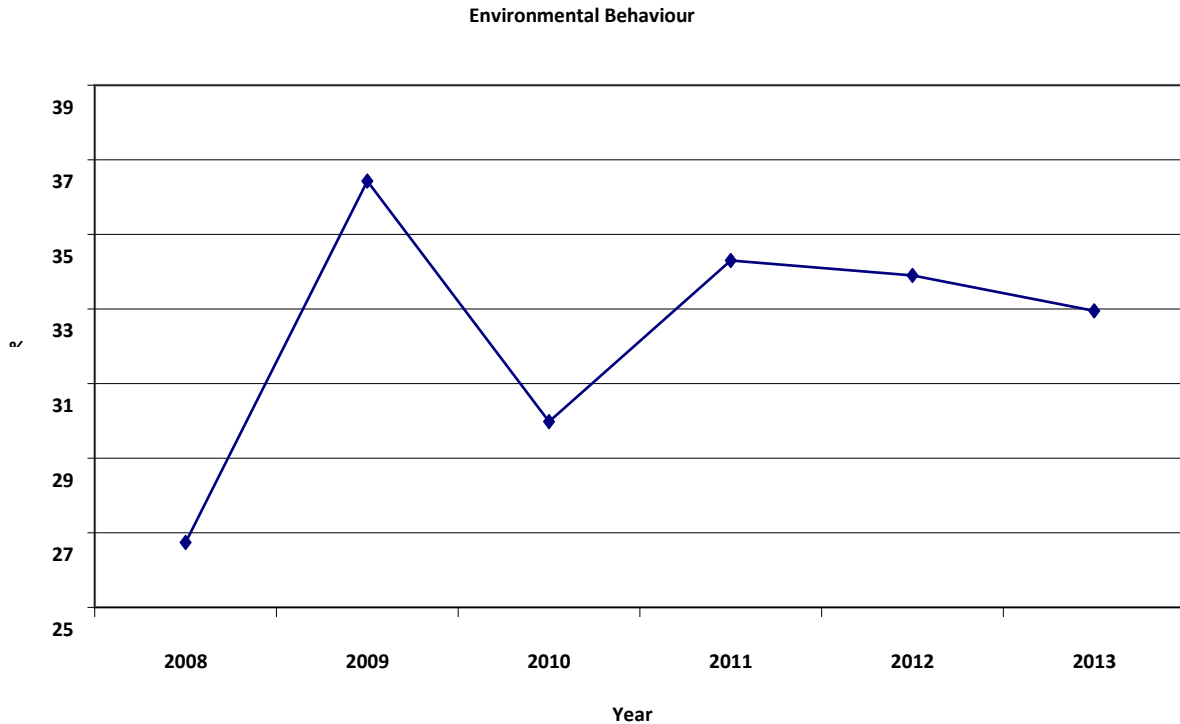


Figure 2: Environmental Behaviour from 2008 to 2013

The emergent results from the “Environment and You” study drove the researchers to the next project to link schoolchildren and teachers to international Environmental Education programmes to further the targets of the United Nations’ Decade for Education for Sustainable Development. It was decided that Environmental Citizenship Malaysia 2005 – 2015 project should include participation in the Eco–Schools Programme component (2010 – ongoing) which is under the international umbrella organization, Foundation for Environmental Education (FEE) to augment further improvements in Environmental Citizenship and Environmental Behaviour. The Eco-Campus programme has also been initiated since 2017. Other WWF initiatives include, Eco-Schools Conferences, ‘*Sembang*’ and also the Youth Conferences for Building Bridges for Sustainable Consumption & Production (BB4SCP).

With the above background and groundwork that has been done for more than a decade, the Sustainable Development Survey of 2018 was conducted. **The Objectives** of the present study are,

1. To ascertain the profile for sustainable development awareness and environmental citizenship in Malaysia at the present time,
2. To explore if WWF-M’s activities have influenced the profile for sustainable development awareness and environmental citizenship at the present time, and
3. To investigate the possible role of the values dimension in sustainable development awareness and environmental citizenship

THE SUSTAINABLE DEVELOPMENT SURVEY 2018

This study investigated the four knowledge dimensions of environment, economy, social and culture in relation to sustainability development awareness. Two affective dimensions, attitudes and behaviour were also studied. This section will describe the development of the instrument and the collection of data for the study. The definitions of the terms used in the study are as in Table 7.

Table 7: Definitions

No.	Term	Definition
1.	Sustainable Development (SD) Awareness	Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (Brundtland Report, 1987).
2.	Dimensions of SD	This study looks at four dimensions: Environment, Social, Economy and Culture.
	Culture	Culture is who we are and what shapes our identity. No development can be sustainable without including culture. From cultural heritage to cultural and creative industries, Culture is both an enabler and a driver of the economic, social and environmental dimensions of sustainable development. (UNESCO, 2019)
	Social	Social sustainability is not about ensuring that everyone's needs are met. Rather, its aims at providing enabling conditions for everyone to have the capacity to realize their needs, if they so desire (Kolk, 2016)
	Economy	Economic sustainability implies a system of production that satisfies present consumption levels without compromising future needs (Lobo, Pietriga, & Appert, 2015)
	Environment	The concept of environmental sustainability is about the natural environment and how it remains productive and resilient to support human life. Environmental sustainability relates to ecosystem integrity and carrying capacity of natural environment (Brodhag & Taliere, 2006).
3.	Environmental Citizenship (EC)	Environmental citizenship is a personal commitment to learning more about the environment and to taking responsible environmental action as a way to structure and acknowledge our co-dependence on one another and on more than just the human world.
4.	Dimensions of EC	This study investigates the levels of three dimensions: Environment, Attitudes and Behaviour.

No.	Term	Definition
	Environment	Same as above
	Attitudes	Attitudes are not instinctive but learned. Attitudes are predispositions for manifestations of a certain behaviour (Murchinson 1935) An attitude is a latent mental construct towards an abstract or concrete object (Breckler, 1984).
	Behaviour	Sustainable behaviour encompasses peoples' values, norms, beliefs, senses of responsibility in deliberate actions focused to providing well-being of all living beings, including present and future generations.(IGI Global, 2020)
5	Values	Values can be defined as the criteria people use to justify actions and to evaluate people and events (Schwartz 2006). Values are more general than attitudes and are known to influence attitudes and actions in different domains.

METHODOLOGY

A literature review of past studies was carried out. The dimensions for SD and EC were identified. Several surveys were also selected and their items scrutinized. These surveys include (i) Effective practice for SD in Ireland Schools (2010), (ii) Effectiveness of Education for SD, University of South Carolina (2014), (iii) Education for Sustainable Development in the Western Balkans and (iv) Effects of ESD implementation in Swedish Schools. A team of four researchers drafted out items for all the seven dimensions of Environment, Social, Economy Culture. Attitudes, Values and Behaviour in the first version of the survey consisting of 100 items. The items were vetted for face and content validity. The items were then translated into Bahasa Malaysia. At the end of each dimension there was an open-ended question to elicit qualitative responses. The English and the Bahasa Malaysia versions were pilot tested with 683 respondents.

The feedback given by many of the respondents was that there were too many items and that it took a long time to complete the survey. This could cause the number of respondents in the actual study to be few. Therefore, the team re-examined the items again and vetted it and reduced the items to 50. Several group discussions were held and experts in the field vetted the items. The final survey was again placed on-line. It elicited 1976 respondents. The reliability of the items in each dimension were calculated as in Table 8.

Table 8: Reliability of Dimensions (N=1976)

Constructs	Cronbach's Alpha	No. of Items
Environment	.705	5
Economy	.493	7
Social	.752	7
Culture	.826	7
Attitude	.787	10
Values	.824	5
Behaviour	.821	9
Overall	.925	50

The Respondent **Demographics** of the Final Survey is given in Table 9.

Table 9: Respondent Demographics

		No.	%
Gender	Male	1492	75.51
	Female	484	24.49
Involvement with WWF-M	Yes	163	8.25
	No	1813	91.75
States in Malaysia	Kuala Lumpur	311	15.74
	Selangor	630	31.88
	Putrajaya	12	0.61
	Perak	134	6.78
	Pahang	61	3.09
	Terengganu	54	2.73
	Labuan	3	0.15
	Kelantan	38	1.92
	Johor	163	8.25
	Negeri Sembilan	63	3.19
	Malacca	63	3.19
	Penang	99	5.01
	Perlis	7	0.35
	Kedah	80	4.05
Sabah	128	6.48	
Sarawak	102	5.16	
Blank		28	1.42

RESULTS AND FINDINGS

SECTION 1: OVERALL PROFILE FOR SUSTAINABLE DEVELOPMENT

Results for dimensions of Sustainable Development Awareness are environment at $M = 4.61$ with $SD = .36$; economy at $M = 3.59$ with $SD = .62$, social at $M = 4.23$ with $SD = .42$, and culture at $M = 4.41$ with $SD = .39$. The overall mean for Sustainable Development Awareness is 4.44 with $SD = .45$. Table 10 shows the mean values of Sustainable Development components-environment, economy, social and cultural sustainability. The median values are also shown

Table 10: Levels of Sustainable Development Dimensions

	Mean	Median	Std. Deviation
Environment	4.61	4.67	0.35983
Economy	3.59	3.57	0.61626
Social	4.23	4.33	0.41758
Culture	4.41	4.50	0.39927
Overall	4.44	4.27	0.44824

The mean values when plotted on a radar chart, reflect the profile of Sustainable Development Awareness dimensions among the respondents as shown in Figure 3.

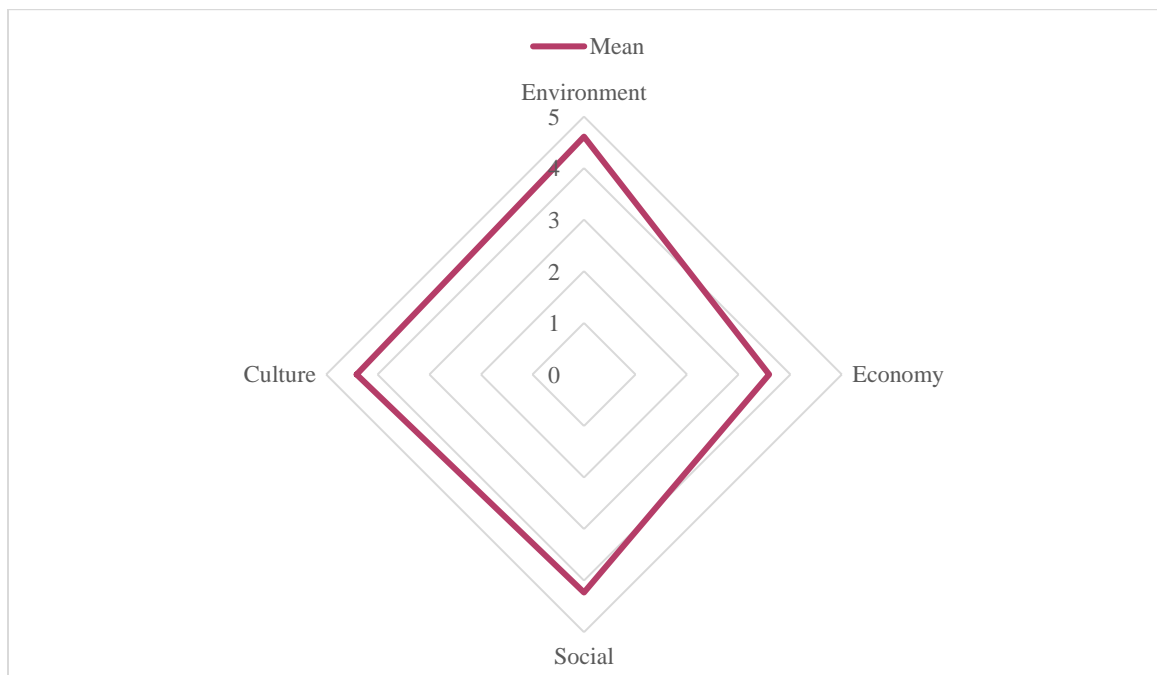


Figure 3: Profile Radar chart for the mean of each SD awareness component

Figure 3 indicates a high level of awareness of the environment, social and cultural sustainability dimensions and a lower level for the economy sustainability dimension. Table 11 shows the correlation coefficient values between the SD awareness dimensions.

Table 11 Correlations between SD Awareness Dimensions

		Env	Eco	Soc	Cul
Env	Spearman 's Rho	1	.335**	.427**	.374**
	Sig. (2-tailed)		.000	.000	.000
Eco	Spearman 's Rho	.335**	1	.224**	.157*
	Sig. (2-tailed)	.000		.000	.000
Soc	Spearman 's Rho	.427**	.224**	1	.451**
	Sig. (2-tailed)	.000	.000		.000
Cul	Spearman 's Rho	.374**	.157**	.451**	1
	Sig. (2-tailed)	.000	.000	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient interpretation Table is given in Appendix 1

The correlation Coefficients between the Culture and Economy dimensions ($r_s = .157$), between the economy and social dimensions ($r_s = .224$) can be considered as negligible. Thus, the associations – relationships between the dimensions is almost non-existent and changes in one dimension need not be accompanied by changes in the other.

The correlation coefficients between the environment and economy dimensions ($r_s = .335$) is weak, between the environment and social dimensions ($r_s = .427$) is found to be low. This also suggests that since the association between the dimensions is low, any increase in one dimension may not be accompanied by an increase in the other.

(Sample Scatterplot Diagrams are given in Appendix 2)

The results suggest that the knowledge of environmental, social, cultural and economic sustainability is not associated strongly with one another among the respondents and therefore this implies that the influence between the dimensions is low.

SECTION 2: OVERALL PROFILE FOR ENVIRONMENTAL CITIZENSHIP

In environmental citizenship, Environment is at $M=4.61$ and $SD=.36$, Attitudes are at $M = 4.18$ and $SD = .37$ and Behaviour at $M = 4.23$ and $SD = .54$. The overall is 4.35 with $SD = .28$. Table 12 shows these values.

Table 12: Levels of Environmental Citizenship dimensions

	Mean	Median	Std. Deviation
Environment	4.61	4.67	0.35983
Attitudes	4.18	4.25	0.37400
Behaviour	4.23	4.22	0.54208
Overall	4.34	4.38	0.42530

The mean values when plotted on a radar chart, reflect the profile for Environmental Citizenship dimensions among the sample as shown in Figure 4.

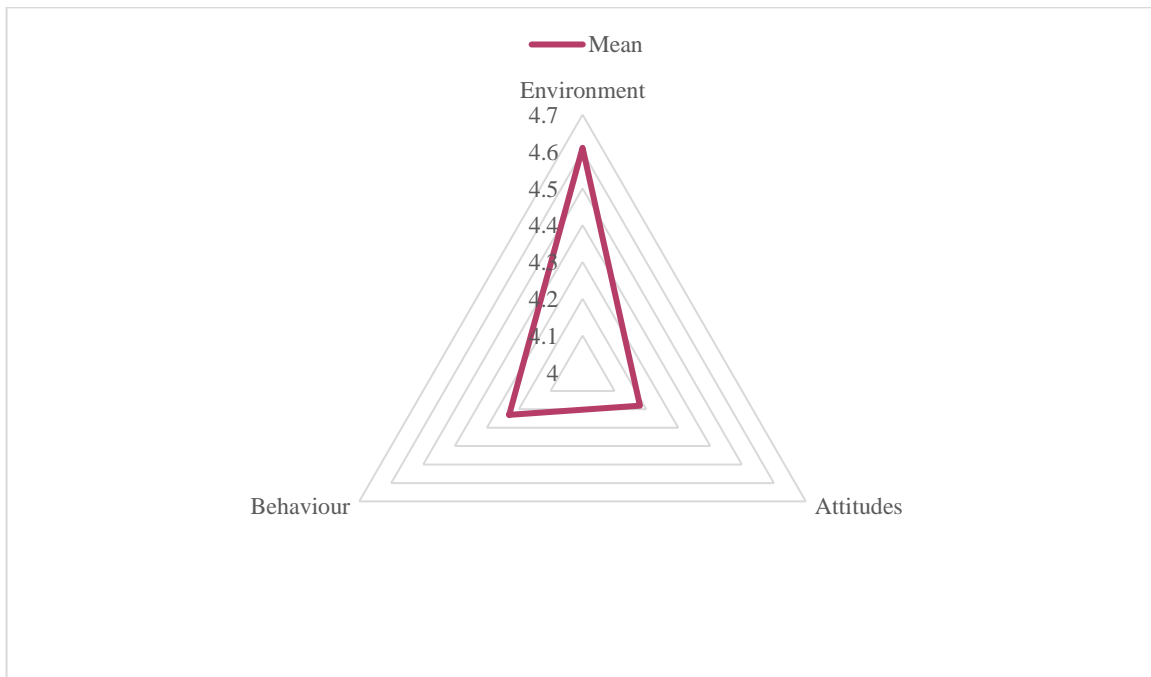


Figure 4:Profile Radar chart for the mean of each EC component

Figure 4 indicates that the environment sustainability knowledge dimension is the highest when compared to the attitudes and behaviour affective dimensions. Table 13 shows the correlation coefficient values between the dimensions.

Table 13: Correlations between EC dimensions

		Env	Att	Beh
Env	Spearman 's Rho	1	.405**	.380**
	Sig. (2-tailed)		.000	.000
Att	Spearman 's Rho	.405**	1	.364**
	Sig. (2-tailed)	.000		.000
Beh	Spearman 's Rho	.380**	.364**	1
	Sig. (2-tailed)	.000	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

The correlations between the environment and attitude dimensions is $r_s=.405$, between the environment and behaviour dimensions is $r_s=.380$, and between the attitude and behaviour dimensions is $r_s = .364$. The associations between the dimensions are weak to low. Thus, an increase in one dimension may not be accompanied by an increase in the other.

The results suggest that the knowledge of environmental, attitudes and behaviour are not associated strongly with one another among the respondents and therefore this implies that the influence between the dimensions is low.

SECTION 3: OVERALL PROFILE FOR ALL SD AWARENESS AND EC DIMENSIONS

Table 14 documents the results for all the seven Sustainable Development and Environmental Citizenship dimensions investigated.

Table 14 Levels for all Dimensions

	Mean	Median	Std. Deviation
Environment	4.61	4.67	0.35983
Economy	3.59	3.57	0.61626
Social	4.23	4.33	0.41758
Culture	4.41	4.50	0.39927
Attitudes	4.18	4.25	0.37400
Behaviour	4.23	4.22	0.54208

The mean values varied among variables, where environment was at $M = 4.61$ with $SD = .36$; economy at $M = 3.59$ with $SD = .61$, social at $M = 4.23$ with $SD = .42$ culture at $M = 4.41$ with $SD = .39$, attitudes at $M = 4.18$ with $SD = .37$ and behaviour at $M = 4.23$ with $SD = .54$. Based on the mean values, Figure 3 shows the profile radar chart for all the SD awareness and EC dimensions.

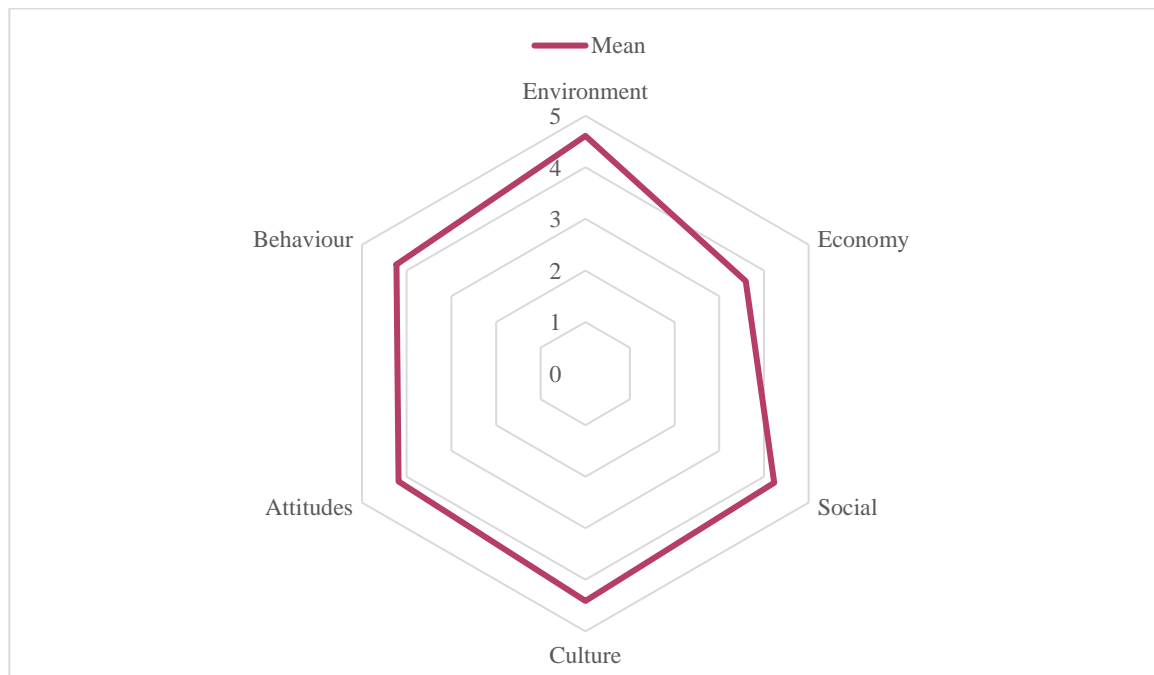


Figure 5: Profile Radar chart for the mean of all SD awareness and EC components

Figure 5 indicates that the environment and culture sustainability dimensions are higher when compared to the attitudes, behaviour, culture social dimensions. The economy dimension is the lowest. Table 15 shows the correlation coefficient values between the six dimensions.

Weak to low correlations exist between environment and economic sustainability ($r_s = .335$) as well as between environment and cultural sustainability ($r_s = .374$), between environment and social sustainability ($r_s = .427$), between environment and attitudes ($r_s = .405$) and between environment and behaviour ($r_s = .380$). Thus, an increase in awareness and knowledge of the environment is not necessarily associated strongly by respondents to a better understanding of the economy, culture and social sustainability, nor to a higher level of behaviour.

A low correlation was found between the social dimension with culture ($r_s = .451$) and with attitude ($r_s = .441$). The correlations between economic and social sustainability ($r_s = .224$), between economy sustainability and behaviour ($r_s = .220$) and between the social sustainability and behaviour ($r_s = .254$) can be considered as negligible. A negligible correlation also emerged between economy and attitude ($r_s = .196$), and with cultural sustainability ($r_s = .157$).

The cultural dimension has a low correlation with attitudes ($r_s = .484$) and a negligible correlation with behaviour ($r_s = .278$). This suggests that an increase in cultural sustainability awareness may not be accompanied by an increase in higher attitudes or pro-environmental behaviour

Attitudes correlate weakly with behaviour ($r_s = 0.364$). Thus, a higher level of positive attitudes need not see an increase in pro-environmental behaviour.

Overall what is expected and important is that knowledge of social, cultural, economy, environment sustainability and attitudes should translate into desired pro-environmental behaviours for sustainable development. However, the results show that correlations between environment and behaviour is $r_s = .380$ (weak); between economy and behaviour is $r_s = .220$ (negligible), between social sustainability and behaviour is $r_s = .254$ (negligible); between culture and behaviour is $r_s = .278$ (negligible); and between attitudes and behaviour is $r_s = .364$ (weak). These low associations indicate that a positive change in awareness of environmental, economy, social, cultural sustainability will probably not be followed by any noticeable increase in pro-environmental behaviour

Table 15: Correlations between SD and EC dimensions

		Env	Eco	Soc	Cul	Att	Beh
Env	Spearman 's Rho	1	.335**	.427**	.374**	.405**	.380**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
Eco	Spearman 's Rho	.335**	1	.297**	.224*	.196**	.220**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
Soc	Spearman 's Rho	.427**	.224**	1	.451**	.441**	.254**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
Cul	Spearman 's Rho	.374**	.157**	.451**	1	.484**	.278**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
Att	Spearman 's Rho	.405**	.196**	.441**	.484**	1	.364**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
Beh	Spearman 's Rho	.380**	.220**	.254*	.278**	.364**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

SECTION 4: PROFILE COMPARISON FOR SAMPLE INVOLVED WITH WWF VERSUS SAMPLE NOT INVOLVED WITH WWF FOR ALL SD AWARENESS AND EC DIMENSIONS

Table 16 compares the results for all the Sustainable Development Awareness and Environmental Citizenship dimensions investigated between respondents involved in WWF-M programmes and those who are not involved.

Table 16: Levels for all Dimensions for Respondents involved in and not involved with WWF-M

Category	WWF	(N = 163)		Non-WWF	(N = 1813)	
	Mean	Median	Std.Dev.	Mean	Median	Std.Dev.
Environment	4.66	4.67	0.35266	4.61	4.67	0.36033
Economy	3.69	3.71	0.66593	3.58	3.57	0.61063
Social	4.23	4.33	0.40167	4.23	4.12	0.41919
Culture	4.40	4.33	0.42972	4.41	4.50	0.39665
Attitudes	4.22	4.25	0.41958	4.18	4.25	0.36963
Behaviour	4.40	4.56	0.5319	4.21	4.22	0.54004

When the mean values are compared among variables where,

- (i) environment was at M = 4.66 with SD = .35 for the WWF-M involved group vs M = 4.61 with SD = .36 for the non WWF-M involved group
- (ii) economy was at M = 3.69 with SD = .67 for the WWF-M involved group vs M = 3.58 with SD = .61 for the non WWF-M involved group
- (iii) social was at M = 4.23 with SD = .40 for the WWF-M involved group vs M = 4.23 with SD = .42 for the non WWF-M involved group
- (iv) culture was at M = 4.40 with SD = .43 for the WWF-M involved group vs M = 4.41 with SD = .40 for the non WWF-M involved group
- (v) attitudes was at M = 4.22 with SD = .42 for the WWF-M involved group vs M = 4.18 with SD = .37 for the non WWF-M involved group
- (vi) behaviour was at M = 4.40 with SD = .53 for the WWF-M involved group vs M = 4.21 with SD = .54 for the non WWF-M involved group

Figure 6 shows the profile radar chart for all the SD and EC dimensions.

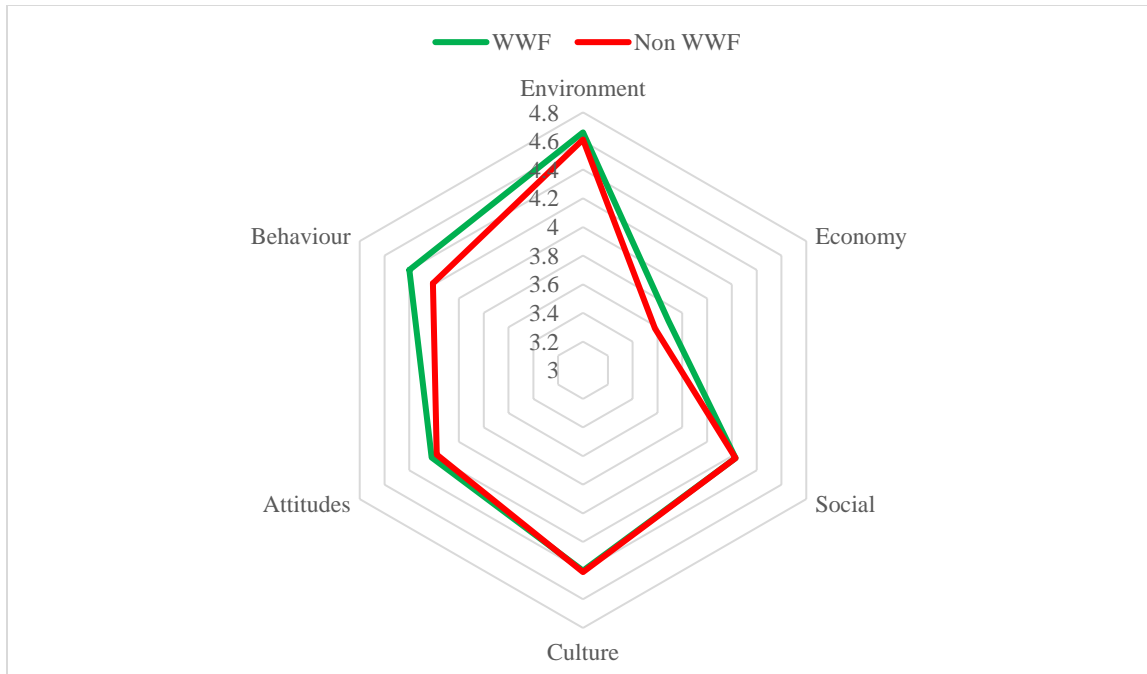


Figure 6: Profile Radar comparison chart for the mean of all SD & EC components

Figure 6 indicates that the behaviour and economy dimensions are clearly a little higher for the sample involved with WWF-M. Figure 7 shows the profile radar chart for all the SD dimensions for the WWF-M involved group and the non-involved group.

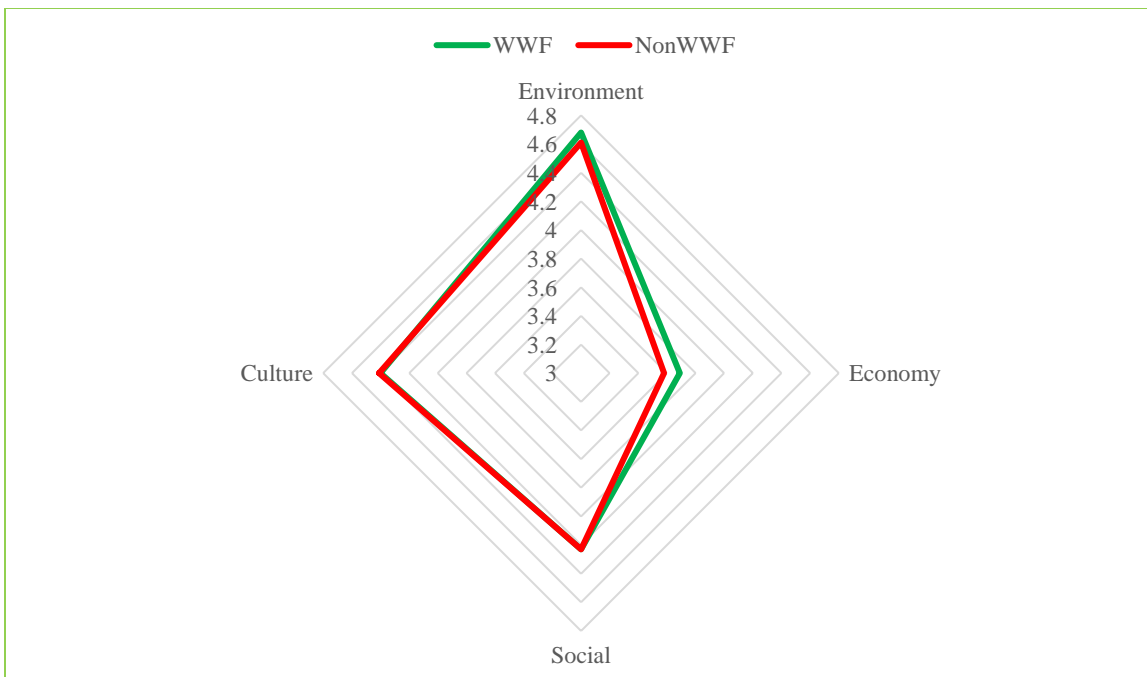


Figure 7: Profile Radar comparison chart for the mean of the sustainable development awareness components

The levels of all dimensions are very close for both groups except for the economy dimension which is clearly a little higher as is shown in Figure 7. Figure 8 shows the profile radar chart for all the EC dimensions for the WWF-M involved group and the non-involved group.

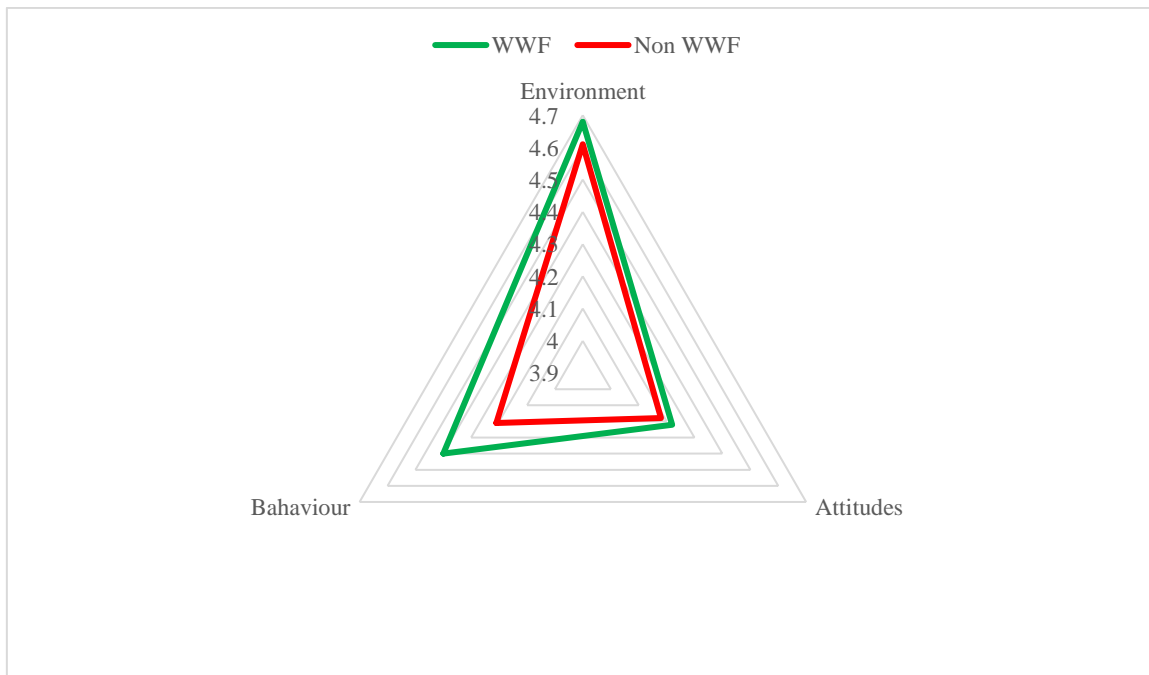


Figure 8: Profile Radar comparison chart for the mean of the environmental citizenship dimensions

From Figure 8 it can be seen that the behaviour dimension shows a clear difference, followed by the environmental dimension. The attitudes dimension for both groups are close

The above findings may indicate that involvement in WWF-M activities could have had an influence upon the behavioural aspects of the respondents

SECTION 5: DIFFERENCE BETWEEN WWF-M INVOLVED GROUP VS NON-INVOLVED GROUP

The overall mean for all the component dimensions for the WWF-M involved group and the Non WWF-M involved group is given in Table 17.

Table 17 : WWF-M and Non WWF-M group Statistics

WWF vs Non-WWF	N	Mean	Std. Deviation	Std. Error Mean
WWF-M involved	161	4.2670	.30547	.02407
Non WWF-M involved	1815	4.2038	.29315	.00688

Table 18 shows the results of the Independent Samples t- Test.

Table 18: Independent Samples t- Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed		.452	2.610	1974	.009	.06314	.02419	.01570	.11058
Equal variances not assumed			2.522	187.099	.013	.06314	.02504	.01375	.11254

Overall, for all the seven dimensions, a Two-sample assuming unequal variances (p-value of 0.05) t-test revealed that the WWF-M involved group **had a significant difference in the overall mean of all the EC and SD awareness components** in the scores (M=4.27, SD=.024) compared to the non-WWF-M involved group (M=4.20, SD= .007).

Tables 19 and 20, show the group statistics and the results of the Independent Samples t- Test for EC and SD Awareness

Table 19: WWF-M and Non WWF-M group statistics for EC and SD Awareness

WWF vs Non-WWF	N	Mean	Std. Deviation	Std. Error Mean
EC	WWF-M	161	4.4269	.34169
	Non WWF-M	1815	4.3346	.32448
SD Awareness	WWF-M	161	4.3301	.31296
	Non WWF-M	1815	4.2880	.30383

Table 20: WWF-M and Non WWF-M group Independent Samples t-Test for EC and SD Awareness

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
EC Equal variances assumed	.255	.613	3.445	1974	.001	.09232	.02680	.03976	.14488
EC Equal variances not assumed			3.299	186.517	.001	.09232	.02799	.03711	.14753
SD Equal variances assumed	.609	.435	1.681	1974	.093	.04211	.02505	-.00701	.09123
SD Equal variances not assumed			1.640	187.756	.103	.04211	.02568	-.00854	.09276

The Two-sample assuming unequal variances (p-value of 0.05) t-test revealed that the WWFM involved group **had a significant difference** in the scores (M=4.43, SD=.342) compared to the non-WWF-M involved group (M=4.33, SD= .324) for environmental citizenship. However,

the Two-sample assuming unequal variances (p-value of 0.05) t-test revealed that the WWF-M involved group **did not have a significant difference** in the scores (M=4.33, SD=.313) compared to the non-WWF-M involved group (M=4.29, SD= .304) for sustainable development awareness.

Thus, the results indicate that involvement in WWF-M does appear to have an effect upon environmental citizenship slowly but surely and also it suggests that this could enhance the overall awareness of SD.

SECTION 6: CORRELATIONS BETWEEN THE DIMENSIONS IN WWF-M INVOLVED AND NON WWF-M INVOLVED GROUPS

Table 21 shows the correlation coefficients for the WWF-M involved group and the Non-WWF-M involved group between the dimensions investigated.

For both groups, the correlations range from negligible (Example: Culture and Economy – $r_s = .159$, for the Non-WWF-M group and $r_s = .133$ for the WWF-M group) to weak (Example: Attitude and Behaviour – $r_s = .362$ for the Non-WWF-M group and $r_s = .334$ for the WWF-M group) to low (Example: Environment and Social – $r_s = .428$ for the Non-WWF-M group and $r_s = .410$ for the WWF-M group).

The relationship between environment and behaviour for the Non-WWF-M group is $r_s = .372$ which is weak and for the WWF-M group is $r_s = .429$ which is slightly stronger but still low.

Thus, overall the strength of the relationships between the dimensions is not strong and the influence between the dimensions weak for both groups.

Table 21: Comparing Correlations between SD and EC dimensions of WWF-M (WI) involved and Non-WWF-M (WN) involved Groups

		Env		Eco		Soc		Cul		Att		Beh	
		WI	WN	WI	WN	WI	WN	WI	WN	WI	WN	WI	WN
Env	Spearman's Rho	1.000	1.000	.404	.326	.410	.428	.400	.372	.387	.405	.429	.372
	Sig. (2-tailed)			.000		.000		.000		.000		.000	
Eco	Spearman's Rho	.404	.326	1.000	1.000	.179	.228	.133	.159	.057	.207	.244	.213
	Sig. (2-tailed)	.000				.000		.000		.000		.000	
Soc	Spearman's Rho	.410	.428	.179	.228	1.000	1.000	.419	.455	.399	.444	.263	.253
	Sig. (2-tailed)	.000		.000				.000		.000		.000	
Cul	Spearman's Rho	.400	.372	.133	.159	.419	.455	1.000	1.000	.505	.482	.265	.282
	Sig. (2-tailed)	.000		.000		.000				.000		.000	
Att	Spearman's Rho	.387	.405	.057	.207	.399	.444	.505	.482	1.000	1.000	.334	.362
	Sig. (2-tailed)	.000		.000		.000		.000				.000	
Beh	Spearman's Rho	.429	.372	.244	.213	.263	.253	.265	.282	.334	.362	1.000	1.000
	Sig. (2-tailed)	.000		.000		.000		.000		.000			

** . All figures in the Table : Correlation is significant at the 0.01 level (2-tailed).

SECTION 7: CORRELATION BETWEEN THE VALUES DIMENSION AND ALL OTHER DIMENSIONS

Values in this study was investigated as a separate dimension to explore its role in SD awareness and environmental citizenship. Table 22 shows the overall correlation between the values dimension, SD awareness and EC constructs.

Table 22 Correlation between Values and all Constructs

		Env	Eco	Soc	Cul	SD
Spearman 's Rho	Values	.510**	.404**	.469**	.413**	.637**
Sig. (2-tailed)		.000	.000	.000	.000	.000
		Env	Att	Beh	EC	
Spearman 's Rho	Values	.510**	.485**	.477**	.627**	
Sig. (2-tailed)		.000	.000	.000	.000	.000

** . Correlation is significant at the 0.01 level (2-tailed).

It is interesting to note that the association between values and the various dimensions are generally higher compared to the associations between the SD and EC components. In particular, the overall relationship between values and the environment dimension ($r_s = .510$), the SD awareness ($r_s = .637$) and EC ($r_s = .627$) constructs are moderately associated. This suggests that an increase in the values dimension can be accompanied by an increase in the SD awareness, EC and the environmental dimension.

As for the relationship between values and economy ($r_s = .404$), social ($r_s = .469$), culture ($r_s = .413$), attitudes ($r_s = .485$) and behaviour ($r_s = .477$) can be considered as low. These low correlations may indicate that changes in the values dimension can be accompanied by changes in the associated dimensions but in a limited manner.

When the respondent sample is separated into the WWF-M involved group and the Non WWF-M involved group the results can be found in Table 23. The associations between values and the various dimensions are stronger compared to the relationships between the SD and EC components. Specifically, the strength between environment and values are $r_s = .539$ for the WWF-M group and $r_s = .504$ for the Non-WWF-M group. Both show moderate correlations. The association between values and EC is $r_s = .618$ for the Non-WWF-M group and $r_s = .639$ for the WWF-M group. The relationship between values and SD awareness is $r_s = .634$ for the Non-WWF-M group and $r_s = .665$ for the WWF-M group. Hence, overall the relationship between values and EC and SD appears slightly stronger for the WWF-M involved group.

Table 23 Comparison Correlations between Values and all Constructs for WWF-M (WI) involved and Non-WWF-M (WN) involved Groups

		Env		Eco		Soc		Cul		SD	
		WI	WM	WI	WM	WI	WM	WI	WM	WI	WM
Spearman's Rho	Values	.539	.504	.417	.401	.502	.470	.398	.415	.665	.634
Sig. (2 - tailed)		.000		.000		.000		.000		.000	
		Env		Att		Beh		EC			
		WI	WM	WI	WM	WI	WM	WI	WM		
Spearman's Rho	Values	.539	.504	.505	.480	.486	.466	.639	.618		
Sig. (2 - tailed)		.000		.000		.000		.000		.000	

** . Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

It has been a long journey from 2008. Malaysians are increasingly exposed to information about the state of our planet. The results clearly shows that they have high levels of knowledge and awareness of social, culture and environment sustainability, with a slightly lower knowledge level for economic sustainability. The results also show that levels of attitudes and pro-environmental behaviours are slightly lower. This is true for both those who are involved with WWF-M and those who are not.

The correlations between the dimensions range from negligible to low, suggesting that the dimensions are not associated strongly with one another. This is similar for both WWF-M involved and the Non-WWF-M involved groups. This implies that the dimensions do not have much influence or affect one another. Thus, increase in environmental sustainability knowledge is not strongly associated and may not translate into better attitudes or better pro-environmental behaviour, nor an increased understanding of economic, social or cultural sustainability.

The values dimension which was taken as an explanatory variable in the study showed a higher association with all the other response variables. This hints that values could be the mediating factor to enhance the associations between the SD awareness and EC components. This would need further investigation.

CONCLUSION

The one clear fact emerging from the study is that the knowledge dimensions of environmental, economic, social, cultural do not have strong relationships with one another. These SD awareness dimensions also do not have strong associations with attitudes and pro-environmental behaviour. This implies that even though, these knowledge domains are at high levels, they are not necessarily translated into better attitudes and behaviour. There appears to be an impasse.

The 'compartmentalisation' of the dimensions could be why the translation into action and participation is lacking.

The study points to the possibility that values may play a mediating role to increase the relationships between all the dimensions of SD awareness and EC. Further exploration needs to be carried out to determine the role of values in enhancing the relationships between the dimensions.

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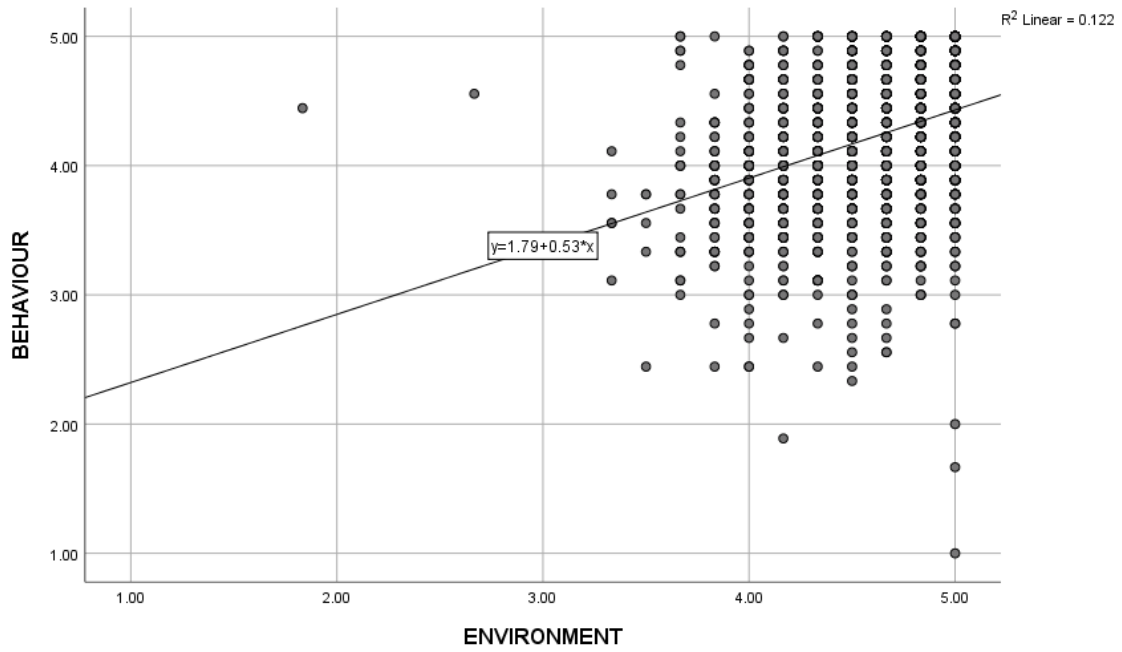
APPENDIX 1

Interpretation of Spearman's correlation coefficients.

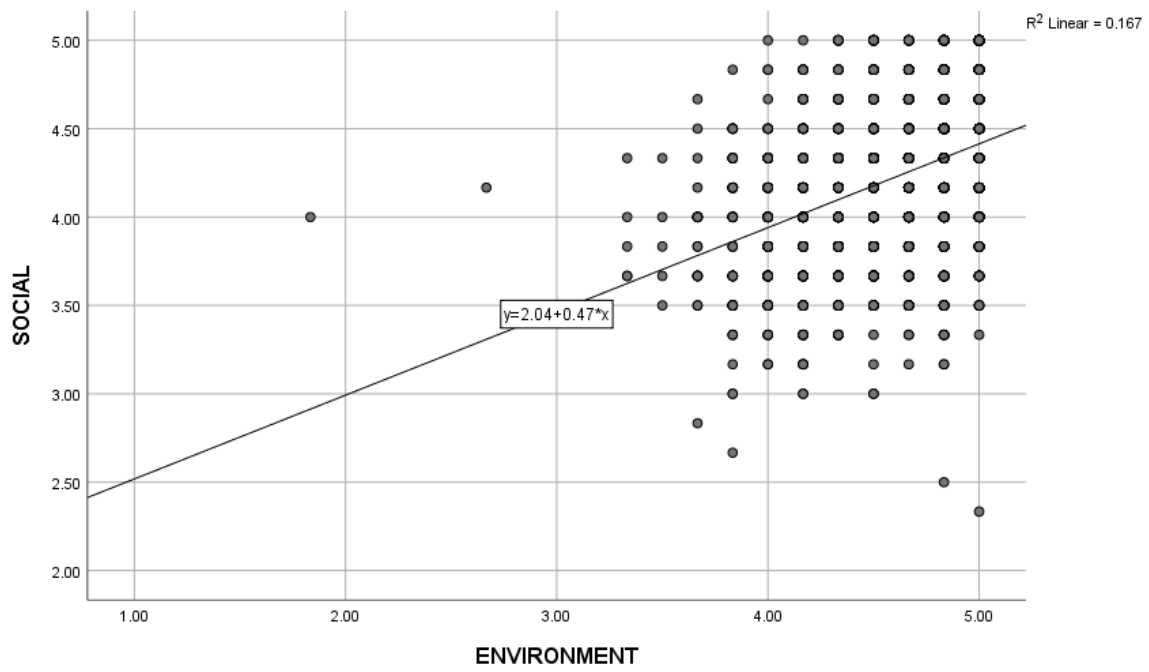
Correlation Coefficient			Dancey & Reidy (Psychology)
+1	-1		Perfect
+0.9	-0.9		Strong
+0.8	-0.8		Strong
+0.7	-0.7		Strong
+0.6	-0.6		Moderate
+0.5	-0.5		Moderate
+0.4	-0.4		Moderate
+0.3	-0.3		Weak
+0.2	-0.2		Weak
+0.1	-0.1		Weak
0	0		Zero

Source Dancey C.P., Reidy J. Pearson Education; 2007. Statistics without Maths for Psychology.

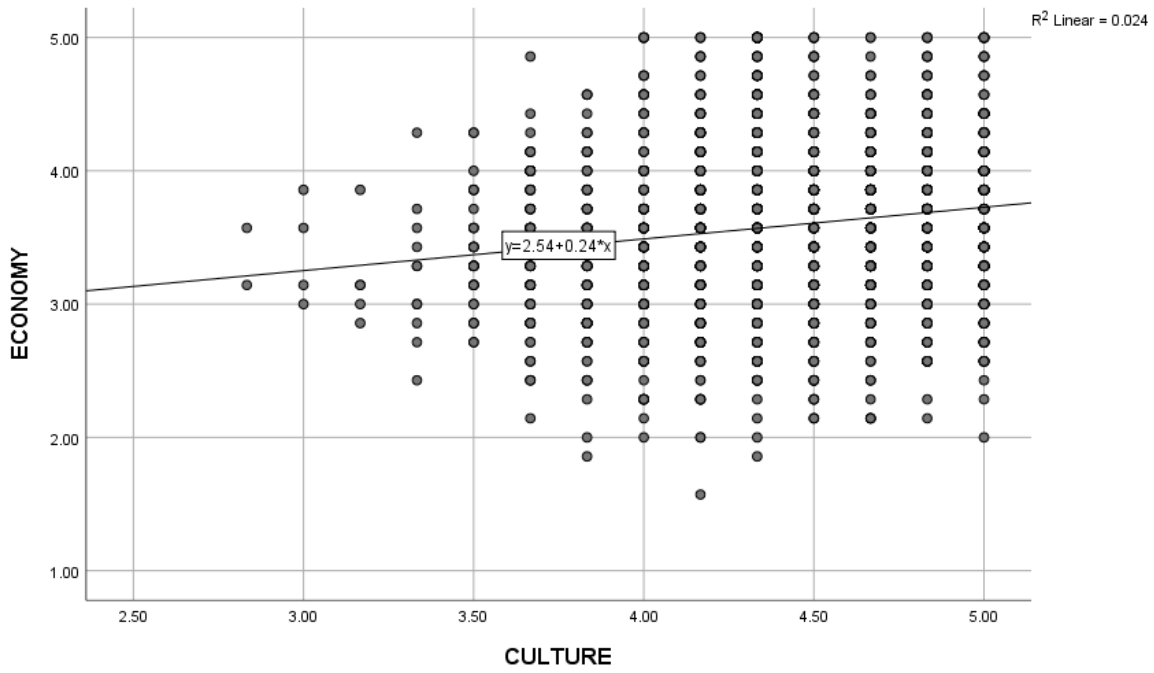
APPENDIX 2



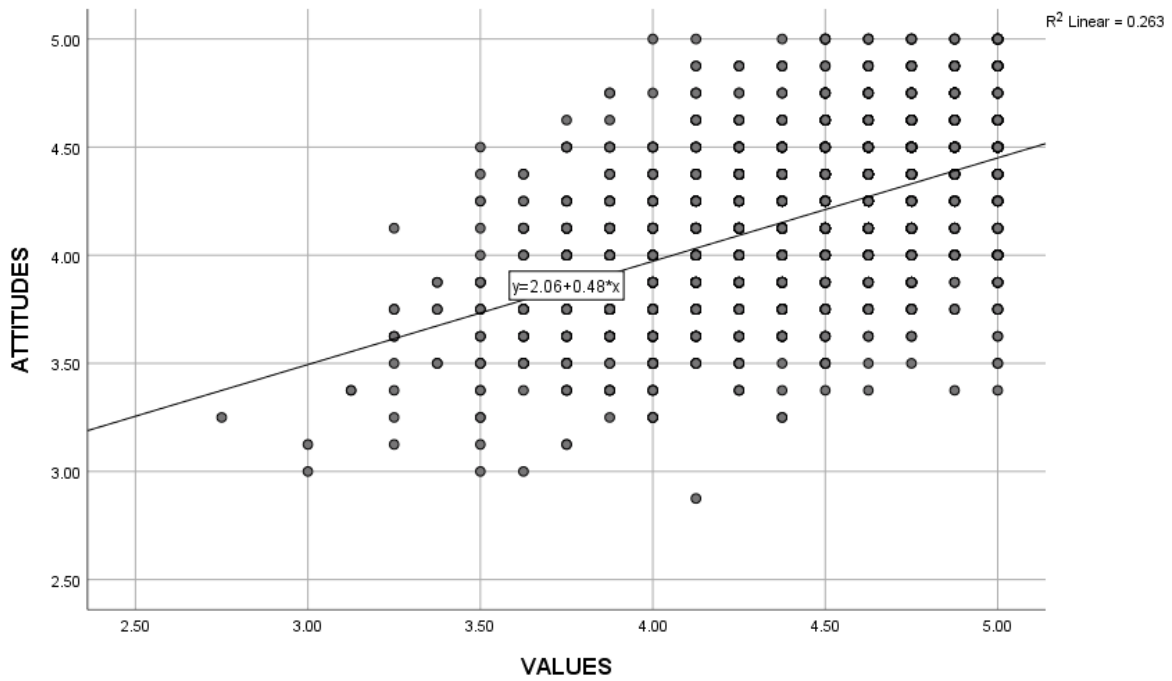
($r_s = .380$ Weak)



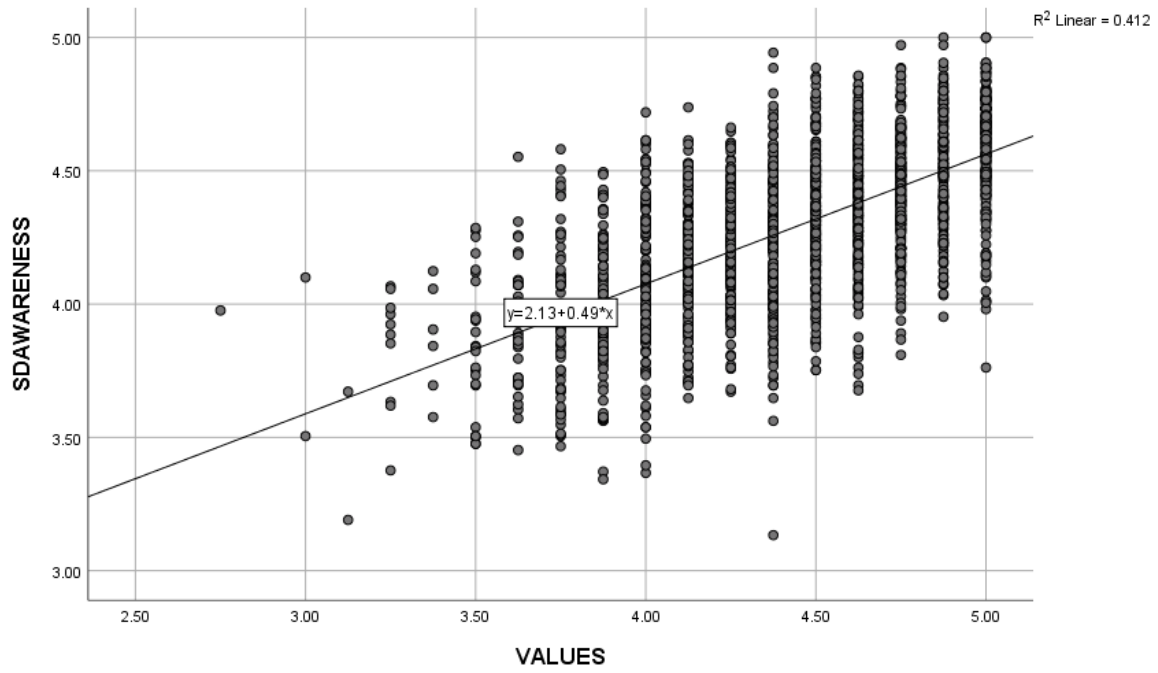
($r_s = .427$ Weak)



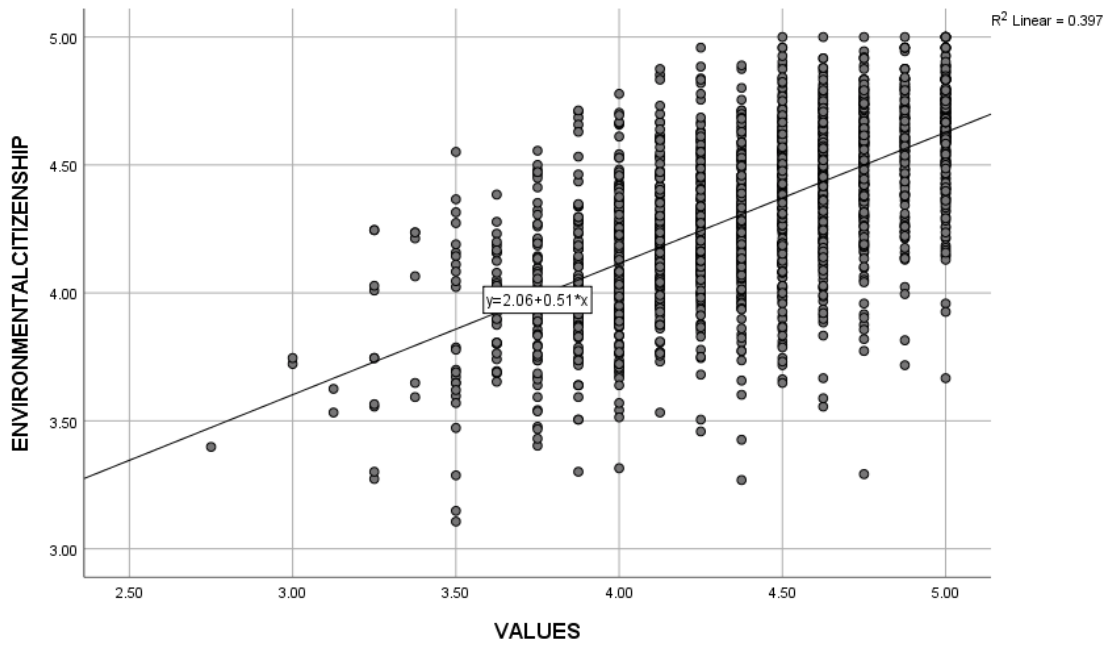
($r_s = .157$ Negligible)



($r_s = .485$ Weak)



($r_s = .637$ Moderate)



($r_s = .627$ Moderate)