PUBLIC ADMINISTRATION EDUCATION TOWARD SUSTAINABLE DEVELOPMENT GOALS: PSYCHOMETRIC ANALYSIS OF A SCALE

ABSTRACT

Purpose: The objective of this research is to adapt and validate a useful instrument to diagnose the Knowledge, Attitudes, Behaviours, and Intention to Participate (KABIP) toward Sustainable Development Goals (SDGs) in higher education institutions from the public administration in developing countries.
Design/methodology/approach: The study was carried out using the Delphi technique, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA). The selected sample was composed of 790 students. The instrument items were extracted from relevant scales on the topic.
Findings: After validation with EFA, the structure was checked, and the model was later corroborated with CFA through structural equations (RMSEA = 0.041; CFI = 0.779; TLI = 0.764). The reliability and internal consistency of the instrument were also tested, with values for all dimensions being higher than 0.8
Originality/value: It is concluded that this new questionnaire has 66 items and 4 dimensions. It has an acceptable validity and reliability, and can be used to diagnose Knowledge, Attitudes, Behaviours and Intention to Participate (KABIP) towards SDG at higher education institutions in developing countries.

KEYWORDS Higher education; Sustainable development goals; Behaviors; Attitudes; Practices; Intention to Participate**.**

INTRODUCTION

In recent decades, sustainability has become a concept to be emphasised in almost all fields of life (Zahid *et al*., 2020). It seeks both immediate and and long-term improvements (Muralikrishna and Manickam, 2017). Transitions towards sustainability require profound changes in the behaviours that mediate the relationship between humans and their environment (Salas-Zapata and Cardona-Arias, 2020). The unbridled growth of globalisation has had both positive and negative consequences, and striking a balance requires multilateral action by all institutions (Rieckmann *et al*., 2017; United Nations, 2015). Sustainability seeks a future vision in the exploitation of the diverse resources existing in a place (Amir *et al*., 2015), through the development of policies and strategies that aim to balance the economic system and the pursuit of environmental and socio-economic benefits (Hall and Lew, 2009).

In order to achieve the Sustainable Development Goals (SDG), it is necessary to involve all stakeholders: government, private companies, non-governmental organisations, etc. (United Nations, 2015; Dlouhá and Pospíšilová, 2018). Developing strategies that foster the relationship between education, environment and natural resources is vital for developing countries in particular, as these countries tend to have more resources, but at the same time, there is low economic growth (Zallé, 2019). This study focuses on public administration education, given the central role of public administration in the SDGs (Bouckaert *et al*., 2016). Furthermore, as many authors argue, sustainability should be the central focus of public administration (Leuenberger, 2006; Fiorino, 2010) and

incorporating sustainability directly into public administration education is an important opportunity to prepare future professionals to implement the SDG (Rosenbaum, 2017).

Among others, the landscape of higher education institutions (HEIs) has changed to broaden support and address emerging sustainability challenges (Findler *et al*., 2019). HEIs play a very important role in achieving the SDGs (Boni and Lopez-Forgues, 2016; Walker, 2015), however, there are still no studies available on how sustainability is integrated into the different curricular elements that make up university curricula (Albareda-Tiana *et al*., 2019; Aznar-Minguet *et al*., 2017; Murga-Menoyo and Novo, 2015). This makes it a challenge to have a global picture of sustainability in the university system (Baena *et al*., 2022).

HEIs in developing countries have yet to embed sustainability in their culture, curriculum, operations and planning (Adams *et al.,* 2018). It is therefore essential to design and validate tools that facilitate the assessment of substantive competences in the classroom. Without such tools, it will not be possible to assess the extent to which education for Sustainable Development (ESD) is being developed (Tilbury, 2016). Furthermore, very limited research has been done to explore and evaluate the process of sustainable development in HEIs in developing countries. More specifically, there is a small amount of research conducted in HEIs in developing countries (Alghamdi *et al*., 2017).

Education for Sustainable Development (ESD)

Among the aims of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) is the implementation of educational actions that lead to the achievement of sustainable development, promoting cooperation in areas such as employment, health or gender equality (UNESCO, 2014). In this way, it is clear that education is a vital element to foster the sustainable development of a region (Gonzalo *et al*., 2017). Furthermore, due to the emerging concern for sustainability, UNESCO (2014) established the concept of Education for Sustainable Development (ESD) to provide guidelines for teachers and improve students' attitudes towards sustainability.

However, the changes required for ESD imply a profound transformation of thinking and action, as well as the collaboration of all people, entities and governments (Olsson *et al*., 2016). Education for development aims to guide learning processes so that people acquire knowledge, values and attitudes that lead them to make responsible decisions and take responsible actions for the environment and economic viability. This strategy has been promoted by the United Nations at all levels of education, including higher education (UNESCO, 2014).

HEIs are among the different types of organisations that are responsible for creating a sustainable future (Wright and Horst, 2013). They should contribute to sustainable development by teaching students and researching sustainability, knowledge dissemination and integration with industry (Bayuo *et al*., 2020; Cetindamar, 2016; Martins, 2019). Following De Leeuw *et al*. (2014), ESD is vital to drive students' thinking and acting, with the purpose of designing a sustainable economic, social and environmental future. Michelsen and Fischer (2017), for their part, consider environmental education to be vital to boost the sustainability of a geographical space. Education can contribute to improving people's thinking in favour of sustainable environmental, economic and social actions (De Leeuw *et al*., 2014).

Sustainable development has evolved as a concept (Prasad, 2019), many HEIs around the world have adapted, formulated and implemented various sustainability initiatives related on their own and on a voluntary basis. They need to show how to integrate sustainability into their practices and operations on and off campus (Rubaii, 2016).

Knowledge, Attitudes, Behaviours and Intention to Participate (KABIP) toward SDGs

Students' knowledge, attitudes, behaviours and intention to participate in actions in favour of sustainable development have been investigated, although there are doubts about the influence of their relationships. Furthermore, for example, there are few studies on student attitudes (Biasutti, 2015). Some studies (Aziz *et al*., 2012; Asan *et al*., 2014; De Leeuw *et al*., 2014; Tucker and Izadpanahi, 2017; Al-Naqbi and Alshannag, 2018) have investigated the importance of measuring students' behaviours, attitudes, knowledge and intention to participate in the processes and aspects that encompass sustainability. Molderez and Fonseca (2018) proposed that teachers include learning strategies and actions to foster knowledge and practices in favour of sustainable development, with the aim of increasing students' attitudes and behaviours in relation to sustainability.

In order to work towards achieving the SDGs, it is important to improve the levels of knowledge of the population (Nasibulina, 2015). This knowledge must be established through education policies, with the aim of raising awareness and sensitising the population on aspects related to sustainability (UNESCO, 2005). Thus, it is important that these education programmes address all actors in society (Faham *et al*., 2017). The sustainability knowledge of university students influences attitudes and behaviours in favour of sustainable development (Vicente-Molina *et al*., 2013). It has also been shown that students tend to have a high level of understanding and positive attitudes and behaviours in relation to sustainability issues (Al-Naqbi and Alshannag, 2018). The different knowledge about sustainability in the educational system, can influence the behaviours and the intention to participate (Dagiliūtė *et al*., 2018).

The ecological crisis and its associated problems in the social, cultural, political and economic spheres are, in part, a product of population ignorance, and as such, knowledge of the global dilemma is a prerequisite for addressing it (Hume and Barry, 2015). In this way, new generations will be able to build on knowledge, especially scientific knowledge, to address environmental problems and establish mechanisms to ensure the conservation of natural resources and respect for the environment (Faham *et al*., 2017).

Attitudes in favour of sustainability influence the knowledge of sustainability (Michalos *et al*., 2011). It has also been shown that students' knowledge of sustainability correlates strongly with the development of attitudes towards sustainability (Aziz *et al*., 2012). Students' behaviours in actions related to sustainable development drive students' intention in relation to their participation and cooperation with sustainable environmental strategies (De Leeuw *et al*., 2014). Thus, it has been shown that institutions that are built with respect for sustainability promote sustainable attitudes and behaviours among students (Tucker and Izadpanahi, 2017).

Baena-Morales *et al*. (2022) developed an instrument based on 20 items and 3 dimensions: the first of the dimensions of a social nature, made up of eight items with a reliability measured through Cronbach's alpha of 0.853; the second of the dimensions referred to an economic aspect, conforming through 6 items with a Cronbach's alpha of

0.869 and, finally, the environmental dimension, also made up of 6 items and with a Cronbach's alpha of 0.928. In line with the previous study, Biasutti and Frate (2017) developed an instrument with an additional dimension to those of the previous study. In this case, the instrument consisted of 20 items and four dimensions with five items each: a social, economic and environmental dimension with Cronbach's alpha levels of 0.757, 0.737 and 0.743 respectively and, finally, a fourth educational dimension with a scale reliability tested through Cronbach's alpha of 0.660.

Other instruments were developed, such as Al-Naqbi and Alshannag (2017) obtained three dimensions based on 70 items. These dimensions were knowledge (composed of 21 items and with a Cronbach's alpha of 0.75), attitudes (composed of 15 items and a Cronbach's alpha of 0.78) and finally a behavioural dimension, composed of 34 items and with a Cronbach's alpha reliability of 0.80. Other authors (Salas-Zapata and Cardona-Arias, 2020) developed an instrument with 57 items and 3 dimensions, two of them already included in the study by Al-Naqbi and Alshannag (2017), although here these dimensions are made up of 21 items and a Cronbach's alpha of 0.74 for the knowledge dimension and 18 items and Cronbach's alpha of 0.70 for the attitude dimension. The practical dimension is composed of 18 items and an associated Cronbach's alpha of 0.86, giving a solid reliability of the instrument.

Finally, Dagliute *et al*. (2018) validated an instrument through 16 items and four dimensions, these being the dimensions of sustainability at university (4 items and Cronbach's alpha of 0.629), environmental information (3 items and Cronbach's alpha of 0.51), student involvement in sustainability (3 items and Cronbach's alpha of 0.74) and finally the role of the university in sustainable development, with 6 items and a Cronbach's alpha of 0.84.

The instrument to be validated in this research contributes to bringing together many of the dimensions mentioned above. Thus, three of the dimensions to be validated (attitudes, knowledge and practices are joined by a behavioural dimension in relation to sustainable development, all of them from a social, economic and environmental point of view. Moreover, it is important that such instruments are validated in developing countries, as there is very limited research work done in these countries to explore and evaluate the process of sustainable development in HEIs (Alghamdi *et al*., 2017).

Purpose of the study

This research encourages the improvement of students' perceptions of sustainable development and, consequently, sustainability practices (Borges *et al*., 2017). This study contributes to obtaining and thus improving the perception of sustainability in Higher Education students in the Dominican Republic, which has been shown to be necessary (Al-Naqbi and Alshannag, 2018). In this regard, it has been observed that there are no studies on this topic in the Dominican Republic, with the importance of sustainability in a country that is in the process of development and which has great natural potential. Therefore, it is needed to conduct research that promotes environmental education, which is vital to improve the social integration of countries (CEPAL, 2013).

The general objective is to design and validate an instrument to analyse the Knowledge, Attitudes, Behaviours and Intention to Participate (KABIP) towards sustainable development of higher education students in a developing country. In this sense, this research is carried out in the Dominican Republic. It addresses the need to design an

assessment of the SDGs, which had been previously raised by UNESCO (2014), in order to design the most effective strategies to improve and promote the SDGs. With this study, the aim is to obtain a tool that meets the criteria of reliability (Cronbach's alpha) and stability; as well as to validate a single instrument to measure Knowledge, Attitude, Behaviours and Intentions to Participation (KABIP) towards the SDGs at higher education in a developing country.

MATERIALS AND METHODS

Sample and context

The sample of 780 higher education students was selected through non-probabilistic sampling in which the scale was given to students from public higher education institutions who wished to participate from different cities in the Dominican Republic. The sample obtained refers to 57.8% of women and 42.2% of men, with students in the first year (9.4% of those surveyed), second year (14.3%), third year (34.7%) and fourth year (41.6%) having answered the survey.

The aim of the first stage was to find the structure and dimensions to organise the questionnaire items using exploratory factor analysis (EFA). The second stage was to perform confirmatory factor analysis (CFA) which aims to find a model that explains the structure of the instrument regarding the applied simple.

Instrument

The Knowledge, Attitudes, Behavior and Intention to Participate Scale (KABIP-S) is an adaptation of previous research of Al-Naqbi and Alshannag (2017), Dagliute *et al.,* (2018); Salas-Zapata and Cardona-Arias, (2020). The adapted instrument is designed for students in higher education institutions of public administration for developing countries and is structured in 66 items and assesses four dimensions (Knowledge, Attitudes, Behaviours and Intention to participate -KABIP-S-). Following theoretical indications (Humphrey-Murto et al. 2017), the creation of the questionnaire was carried out in three phases: preliminary, exploratory, and final.

In the preliminary phase, the problem was presented to the expert group; it was composed of 30 professionals from different Dominican universities, of which 16 were researchers related to SDG, 9 were associated with the SDG in higher education field, and 5 had lines of work in SDG in public administration. The validity of the initial adapted instrument was obtained by following the Delphi method, being one of the most effective in social science research (Rikkonen *et al*. , 2019). This is mainly due to the democratization of the process to construct meaning among experts; by including participants with knowledge of and experience with the study material; and by the anonymity of the expert responses, which avoids, in a group debate process, having people who might manipulate the opinions of others (Martínez-García *et al*. , 2019).

Data Collection and Analysis Process

To carry out the research, the HEIs were informed of the objectives, and were asked to participate. The application of the research instrument was done in a collective manner in the participants' classrooms with the presence of the teachers, during sessions lasting between fifteen and twenty minutes. The analysis of the data in the Exploratory Factor

Analysis (EFA) was made using the latest version of SPSS statistical software and for the Confirmatory Factor Analysis (CFA), the AMOS statistical program was used. Throughout the scale application process, the ethical guidelines established in the Declaration of Helsinki and the protocol approved by the Ethics Committee of the University of Granada.

RESULTS

The items used for the validation of the instrument are presented in the following table (table I), where a total of 66 items were used, 40 of which were rated with a score of more than 4 (out of 5 points).

INSERT TABLE I

Factor Analysis

In order to obtain different dimensions for the aforementioned items, a factor analysis was carried out, obtaining a total of four clearly differentiated dimensions. For this factor analysis, an exploratory factor analysis was carried out using the principal component extraction method and the Varimax rotation method with Kaiser normalisation, retaining the items whose communality was greater than 0.40. This factor analysis was validated through the Kaiser Meyer Olkin test (KMO) with a value of 0.9000 with a Bartlett's sphericity of 13704.531 (0.000). The results of the factor analysis are presented in table II.

INSERT TABLE II

Four different dimensions have been identified. The first of these is called knowledge, whose indicators refer to the knowledge that the different respondents have about sustainable development. In addition, it presents an optimal internal scale consistency, with a Cronbach's alpha value of 0.821. The second dimension identified is called attitudes, with the items included referring to the attitude towards sustainable development. It also presents a reliability above the minimum required values (Cronbach's alpha of 0.782). The third dimension corresponds to behaviours for the achievement of sustainable development, where once again the reliability of the scale is optimal (Cronbach's alpha of 0.820). The last of the dimensions identified.

Confirmatory Factor Analysis

After performing the AFE, the CFA is carried out to corroborate the suitability of the indicators to evaluate the latent variables (Anderson-Butcher *et al*., 2016). This statistical test was done with N = 430 and analyzed with AMOS software, version 24. The CFA is presented in path diagrams, where the circles represent latent variables and squares represent observed variables. The single-headed arrows are used to imply a direction of assumed influence, and two-headed arrows represent the covariance between the four latent variables (Figure I).

INSERT FIGURE I

To carry out the CFA, CMIN was observed (Cb, minimum value of the discrepancy) with a $\chi 2$ distribution (Table III).

INSERT TABLE III

Following Bentler (2007) and Byrne (2010) chi-square goodness of fit test (χ^2) tends to be insufficient for the size of the simple used, it is recommended that the comparative fit index (CFI), the Turcker-Lewis index (TLI), and the Root Mean Square Error of Approximation (RMSEA) are observed, in order to know the degree of adjustment between the covariance matrix of the observed data and the covariance matrix predicted by the model, established by the goodness of fit index.

The CFI, TLI, and RMSEA obtained show a good internal consistency of the latent factors (Tsaur and Tu 2019). In addition, according to Lecerf and Canivez (2018), the CFI and TLI are considered acceptable adjustment the closer to 1 that they are, which is a characteristic that is fulfilled in the results of this research, whose CFI = 0.779 and TLI = 0.764. In terms of the RMSEA value, excellent adjustment is considered below 0.06 (Maydeu-Olivares *et al*., 2017; Jöreskog and Sörbom 1984), which occurred in the study (Table IV).

INSERT TABLE IV

INSERT TABLE V

It can be deduced that the proposed model exhibits reasonable contiguity of the data and ratifies the hypothesis of the multidimensionality of the construct. The latent variables for the KABIP-S were presented in 66 items (Figure I). Once the CFA was completed and having confirmed the instrument structure of 66 items, the internal consistency test (Cronbach's alpha) was redone, obtaining a reliability factor of $\alpha = 0.821$ for the first dimension, $\alpha = 0.782$ for the second dimension, and $\alpha = 0.820$ for the third dimension and finally, =0.873 for the last dimension. This indicates a good scale reliability (Appleton *et al.*, 2016).

DISCUSSION

The main objective of this research was the adaptation and validation of a measuring instrument to measure the KABIP at public higher education in developing countries. To do this, the psychometric properties of the questionnaire were analysed in three phases. In the initial phase, the Delphi method was used, which analysed the validity of the scale content; it was also carried out a factorial analysis and a confirmatory one. It should be mentioned that the reference studies focus on SDG in higher education are not focus in developing countries. Therefore, an innovative tool has been created with high scientific application in the globalized world in which we live, in which the SDG are in the centre of all international agendas. Offering a reliable and empirically proven instrument is of great importance at a time when SDG has been involved in every country.

The decision to develop new instruments should be based on a careful consideration of the advantages and disadvantages of those already existing (Van *et al.* , 2018). In light of this situation, HEIs should propose preventive measures, in order to improve the situation regarding SDG. Making this questionnaire (see Appendix A) it is a starting a key point to improve the situation. This could even improve teaching strategies (Bevilacqua *et al.* , 2017) in contexts where students have misguided value SDG.

The evaluation of these psychometric properties contrasts with the absence of validation that is frequently observed in sustainability studies (Salas-Zapata and Cardona-Arias, 2020). There are many studies on this topic that do not perform the corresponding validation (Besar *et al*., 2013; Kioko *et al*. , 2010).Therefore, the construction and psychometric evaluation of this scale seems to have more value due to the fact that is focus in developing countries. This may indicate that this study is possibly one of the few validations of sustainability scales in these scenarios.

CONCLUSION

The psychometric properties of the scale indicate that this scale is appropriate to diagnostic Knowledge, Attitudes, Behaviours and Intention to Participate (KABIP) towards SDG for university students in developing countries, and therefore, it can be used to account for changes, interventions and improvements of situations. With the development of this novel instrument, a robust measurement and monitoring tool is provided for education system administrators, university authorities and academics interested in proposing effective ESD policies and programs for future in developing countries.

LIMITATIONS

There are limitations to this research. On the one hand, the sample that participated in the research was only from one developing country (Dominican Republic). Continuing in this line, it is necessary to delve deeper into sustainable practices for the achievement and development of the SDGs, since, as indicated by UNESCO (2017), in order to achieve the SDGs, an analysis of teaching practices that promote the development of sustainability is necessary.

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Table 1. Items

		Media	DT
Item1	Sustainable development requires the use of renewable resources (e.g. wind, sun, etc.).	4.02	0.984
Item2	Inappropriate human actions are contributing to changes in our atmosphere and climate systems (e.g. not recycling, littering, etc.).	4.02	1.317
Item3	Socio-economic development and environmental protection are all necessary for sustainable development.	4.25	0.771
Item4	Education is necessary for sustainable development	4.42	0.774
Item5	At home, I try to recycle as much as possible.	3.81	1.260
Item6	I volunteer to work with local charities or environmental groups.	3.21	1.467
Item7	Poverty alleviation is an important theme in education for sustainable development.	4.09	0.888
Item8	Education for sustainable development supports cultural diversity	3.90	0.923
Item9	As long as resources are available, using more than we need now does not threaten the health and well-being of future generations.	2.82	1.417
Item10	Environmental protection more important than industrial growth	4.00	1.024
Item11	Decreased water consumption	4.02	1.162
Item12	The teaching of sustainability principles should be integrated into all subjects and at all levels of schooling.	4.12	0.879
Item13	Sustainable development is about social justice	3.48	1.054
Item14	Every person should receive education that teaches knowledge, perspectives, values, issues and skills for sustainable community living.	4.59	0.744
Item15	Sustainable development requires companies to behave responsibly towards their employees, customers and suppliers.	4.10	0.957
Item16	Education for sustainable development emphasises respect for human rights	3.96	0.955
Item17	Teachers should promote the connection between local and global issues.	3.83	0.959
Item18	Improving people's opportunities for a long and healthy life contributes to sustainable development.	4.29	0.789
Item19	The university includes sustainability aspects in its curricula.	3.81	0.998
Item20	Decreased electricity consumption	3.92	1.227
Item21	It is important to find ways to reduce poverty	4.43	0.808
Item22	Respecting cultural diversity is necessary for sustainable development	4.14	0.805
Item23	Environmental education helps solve environmental problems	4.20	0.866
Item24	I recycle some of the things I use	3.87	1.249
Item25	I buy products with environmental labels	3.45	1.334
Item26	I never waste water	3.94	1.268
Item27	I pick up litter when I see it in a park or natural area.	3.88	11.253
Item28	Education for sustainable development seeks to balance human and economic well-being with cultural traditions and respect for the earth's natural resources.	4.37	0.774
Item29	I avoid the use of plastics of all kinds.	3.09	1.428
Item30	Often, I look for signs of ecosystem deterioration.	3.15	1.355
Item31	Sustainable development requires access to good quality education for all.	4.40	0.785
Item32	I will make an effort to participate in the process of sustainable development at my university.	4.14	0.903
Item33	By protecting nature, we protect ourselves and future generations.	4.64	0.661
Item34	I grow some of my own food	2.97	1.498
Item35	Poverty elimination is necessary for sustainable development	4.04	1.077
Item36	Where possible, I buy local products.	3.78	1.249
Item37	The overuse of our natural resources is a serious threat to the health and well-being of future generations.	4.06	1.049
Item38	Freshwater conservation needed for sustainable development	4.40	0.843
Item39	Taxes on polluters should be increased to pay for damage to communities and the environment.	4.15	1.124
Item40	Society should further promote equal opportunities for men and women.	4.41	0.769
Item41	I help reduce pollution	4.16	1.012
Item42	Men and women should have equal access to all types of education and employment.	4.50	0.854
Item43	Universities should adopt sustainable development as a national priority	4.12	0.817

Item44	Sustainable development results in a fair distribution of goods and services for all people everywhere.	3.99	0.880
Item45	I shower briefly to conserve water	3.52	1.452
Item46	Governments and communities should adopt sustainable development as a national priority.	4.18	0.891
Item47	I turn off lights and appliances when no one is in the room.	4.35	1.048
Item48	I help to protect the natural environment	4.19	1.008
Item49	Environmental protection is necessary for sustainable development.	4.53	0.747
Item50	I am willing to participate in the process of sustainable development of my community.	4.02	1.047
Item51	I generally travel by environmentally friendly vehicles (e.g. bicycle, OMSA, bus, etc.).	3.70	1.407
Item52	Environmental protection and people's quality of life are directly linked.	4.16	0.898
Item53	At home I use environmentally friendly light bulbs	3.82	1.299
Item54	Sustainable consumption includes the use of goods and services in ways that minimise the use of natural resources and toxic chemicals, and reduce waste.	3.91	1.022
Item55	I participate in social and environmental activities organised by the school.	3.32	1.444
Item56	I am willing to participate in the process of sustainable development of my university.	4.12	0.936
Item57	I will make an effort to participate in the process of sustainable development in my community.	4.05	0.934
Item58	Today's generation must ensure that the next generation inherits a community at least as healthy, diverse and productive as today's.	4.08	0.980
Item59	Maintaining biodiversity means maintaining the quantity and variety of living organisms. This is necessary for sustainable development	4.05	0.864
Item60	It is OK to use as much water as you want, as long as it is available.	2.42	1.460
Item61	I plan to participate in my university's sustainable development process.	3.94	1.017
Item62	Sustainable development requires waste reduction	4.05	0.991
Item63	We need stricter laws and regulations to protect the environment.	4.51	0.760
Item64	Nature is our treasure and should be everyone's business.	4.68	0.702
Item65	I plan to participate in the process of sustainable development in my community.	3.74	1.066
Item66	Protecting the environment is necessary for sustainable development	4.55	0.721

Table 2. Factor analysis

	Factors				Dimension	Cronbach
	1					
Item1	0,426				Knowledge	0,821
Item2	0,370					
Item3	0,303					
Item4	0,479					
Item8	0,373					
Item13	0,478					
Item15	0,392					
Item16	0,535					
Item18	0,509					
Item22	0,285					
Item28	0,413					
Item31	0,580					
Item35	0,453					
Item38	0,512					
Item44	0,510					
Item49	0,516					
Item54	0,534					
Item59	0,585					
Item62	0,508					
Item66	0,351					
Item7		0,593			Attitudes	0,782
Item9		0,436				
Item10		0,401				
Item12		0,523				
Item14		0,448				
Item17		0,408				
Item19		0,417				
Item21		0,416				
Item23		0,525				
Item33		0,537				
Item37		0,589				
Item39		0,503				
Item40		0,373				
Item42		0,602				
Item43		0,602				
Item46		0,558				
Item52		0,377				
Item58		0,494				
Item60		0,381				
Item63		0,516				
Item64		0,441				
Item5			0,505		Behaviour	0,820
Item6			0,273			
Item11			0,391			
Item20			0,402			
Item24			0,489			
Item25			0,575			
Item26			0,311			
Item27			0,300			
Item29			0,574			
Item30			0,576			
Item34			0,406			
Item36			0,529			
Item41			0,524			
Item45			0,573			

Item47			0,596			
Item48			0,411			
Item51			0,484			
Item53			0,417			
Item55			0,384			
Item32				0,687	Behavioural intentions	0,873
Item50				0,742		
Item56				0,704		
Item57				0,745		
Item61				0,650		
Item65				0,720		
Eigenvalues	9,740	4,392	2,137	1,866		
% variance explained	16,272	7,335	3,570	3,117		
% cumulative explained variance	16,272	23,608	27,180	30,296		
KMO	0,900					
Barlett's test of sphericity	χ^2 =13,704.531 Sig. <0.000					
Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalisation.						

Table III. Goodness of fit (1/3)

Model	NPAR	CMIN	DF	*p*	CMIN/DF
Default Model	204	4745,694	2073	0,000	2,289
Saturated Model	2277	0,000	0		
Independence Model		14309,132	2211	0,000	6,472

Table IV. Goodness of fit (2/3)

Model	NFI	IFI	TLI	IFC
Default Model	0,668	0,782	0,764	0,779
Saturated Model	1,000	1,000		1,000
Independence Model	0,000	0,000	0,000	0,000

Table V. Goodness of fit (3/3)

Model	RMSEA
Default Model	0,041
Independence Model	0,085

Figure I. Confirmatory Factor Analysis