

The Perceptions of Tertiary Students towards Environmental Sustainability: Some Empirical Evidence from A Longitudinal Study

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This article focuses on a comparative analysis of tertiary students. The target population were tertiary students of Unitec, Auckland. The questionnaire distributed in 2007 resulted in 132 usable questionnaires received, and in 2010 questionnaires were again distributed and 92 usable questionnaires returned. This study has revealed some of the positive and long term impacts of sustainable development. It was also determined that the demographic factors affects an individual's thinking patterns to a great extent, and the social and cultural impacts are found to be positive. Some similarities are discussed and differences of opinion identified, between the two groups (2007 and 2010) of the longitudinal study. The research is based on the assumption that positive attitudes lead to positive behaviours and aims to establish what people's attitudes towards sustainability and the environment are. The results show the development of a positive trend in terms of thinking and the behaviour towards environment conservation when comparing the longitudinal surveys of 2007 and 2010. Recommendations for tertiary institutions form the last section before the conclusions.

Field of Research: Management

1. Introduction

With the development of civilisations over time, our affluence and expectations for comfortable life styles have increased (Sibbel, 2009). It is evident that the luxurious human lifestyles have led to severe environmental conditions such as soil erosion, desertification, and water and air pollution and global warming (Ni, Sun, Li, Huang, & Borthwick, 2010).

According to Emanuel & Adams (2011) sustainability is an “economic, social, and ecological concept” (p.81) that was derived from the term sustainable development and includes conservation of natural resources through recycling, waste and water management, using renewable energy resources and developing environmental friendly land and property assets.

The main aim of the survey executed was to explore and understand the students' perceptions and attitudes towards environmental sustainability and other issues related

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to the subject. This is also the main question. The first study was executed at Unitec New Zealand in March 2007 in the then Unitec Business School. This is the second study of this nature at Unitec New Zealand and is consequently longitudinal. The objective is therefore a comparison which would result from the 2010 study to identify trends in student approaches to sustainability issues. Since the area of student perception is under-researched, it is an important step towards changing their behaviours to intentional sustainable actions (Treanor, 2010). Students have certain perceptions about sustainability and they could be some of our leaders of tomorrow, so what are their views and perceptions on sustainability? Which factors affect their 'green' behaviour, and how are perceptions formed, with specific consideration to the demographic factors?

This study has revealed recognition by the respondents of the positive and long term impacts of the sustainable development. It was also determined that the demographic factors affect an individual's thinking patterns to a great extent, and the social and cultural impacts are found to be positive. The results show the development of a positive trend in terms of attitudes and the behaviour towards environment conservation when comparing the 2007 and 2010 surveys.

The value add of this research is in the fact that this is a longitudinal study and perceptions of students over a three year period could be compared. Furthermore, tertiary institutions should pay attention to the outcome of this study to alter / amend / or add to their curricula a paper for tertiary students on every level with facts on sustainability and how to preserve the limited resources especially in New Zealand, for future generations.

The first section of this article discusses a literature review in the research area. The next section of the article reviews the literature containing the attitudes and responses of the respondents towards sustainability and its impacts. The article then narrates the problem statement, followed by aims and the purpose of the study with the expected benefits of the research. In the following section, the methodology, with research design and data collection of the empirical exercise is presented. A discussion follows on the comparative analysis of the data collected and correlations identified. The next section presents the authors' recommendations from the study and finally the article provides a summary and conclusion followed by references.

2. Literature Review

The recent global economic downturn, the uncertainty of the financial future, the war on terrorism, the war for talent, the progress in e-business and e-media and others all add to the tough times that people are experiencing in the every-day environment. Organisations and communities are looking up to strong leaders to take charge during these rapid environmental changes to ease out the negative impact it could have on businesses. Sustainability can be defined as the preservation of the global resource base through conservation of natural resource consumption. In simpler words, sustainability is utilizing the natural resources wisely and to meet the necessities of our

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lives, considering the need for the resources for the future generations to survive (Johnson, 2009).

Sustainability also emphasises the importance of a clean environment and protection of the natural assets available to us. The decline of ecology on a global level has proved that the ever increasing population and the free trade policies have resulted in exploitation of resources and increased effluence stresses. Unrelenting economic conditions, increasing inequity among nations, continuous degrading quality of life despite all the social efforts and increased costs to produce food worldwide, erratic changes in the climate and deteriorating atmospheric conditions are some of the other trends of the environmental sustainability problems (Keys, Thomsen, & Smith, 2010).

Very little research among tertiary students has been done to identify and determine their perceptions, attitudes and behaviour towards sustainability. In a study done in 2011 at UUNZ Institute of Business among international tertiary students it was found that they are concerned about the environment, that they do recycle material and that they are aware of their contribution to the future of the environment in New Zealand. (Rahman, Chen & Toh, 2011). Their research supports the researchers' previous study (being 2007) as well as the current study (being 2010) that tertiary students should be positive towards sustainability projects and to save New Zealand's precious resources for the future. According to previous research (Huang and Rust, 2010) the industrialised nations and their consumers use more than 80% of the limited natural resources that have led to consumption inequality amongst nations across the globe and support a sustainable consumption. Sustainable consumption is expected to minimise the environmental damage, through socially equitable consumption patterns as it allows every individual to consume only what their fair share of natural resources is (Peattie and Collins, 2009).

Roth, (2004) is of the opinion that our planet's average temperature has increased by 0.5 degrees Celsius in the last century. Although the number seems small however it is a great change for a planet to experience and the consequences can be seen through the melting polar ice. Other researchers are of the opinion that it is only due to a cycle that the earth is going through as it happened before. Such extreme conditions pose a great threat in the form of natural water-related disasters. Recent floods in Europe, Tsunami in the Indian Ocean and Japan and Hurricane Katrina could be the result of a disrupted environmental atmosphere (Ni, Sun, Li, Huang, & Borthwick, 2010). Khandlhela and May (2006) postulate that the natural calamities and floorings have become relatively frequent across the globe and are very capable of shaking the foundations for the sustainable development of the small and developing nations.

Climate has become unpredictable with the UK and USA experiencing the coldest winter in a hundred years during their last winter season, and this has drastic effects on people across the world (Treanor, 2010). The precariousness of the environment is now evident to even the most casual observer. The global environment is changing rapidly and more dramatically than ever expected. Population growth increased industrialisation and improper utilisation of resources have negatively impacted the ecosystem which resulted in a disrupted natural cycle of global resources and have destabilised

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environmental sustainability (Orimoogunje, Adegboyega, Banjo & Funmilayo, 2011). Scientists also fear that if unchecked, the impacts of unpredictable climatic conditions will be gruesome and the ecosystems and human society will not be able to cope with it (Sibbel, 2009). This is significant because our health and the quality of life are greatly influenced by the veracity of the environment we live in (Orimoogunje, Adegboyega, Banjo & Funmilayo, 2011).

The human-nature relationship has changed and experienced a reversal according to Abedi-Sarvestani & Shahvali (2008). However, the social-sciences do not yet fully understand what people's attitudes towards sustainability are. According to the World Wildlife Fund (2002) the poor life conditions, such as poverty, starvation, lack of significant health care facilities, deprived education and underprivileged economic opportunities is often seen as a reason for a high fertility rate and further strains the natural resources that eventually diminish. The relationship between these conditions and sustainability needs more research in order to understand its effects. The technological advancement and increased human knowledge, have given us the capability to modify the environment.

Because it is not clear how people make decisions about environmentally 'friendly' behaviour this research was executed to shed light on people's attitudes towards sustainability and the environment, how they approach environmentalism, water conservation, energy conservation, recycling, reducing waste (e.g. composting) and using green energy sources (e.g. solar and wind power). It is also not clear whether or not there are any voluntary modifications in their behaviour at all in relation to environmental issues. Therefore, this research intends to identify the differences between different groups of people in terms of their attitudes and self-reported behaviours, if any.

Sustainability means preserving the natural capital. However, for modern human beings, living involves using the non renewable resources (Bonevac, 2010). This view is applicable to tertiary students especially if they become managers or leaders in organisations. For example the amount of raw materials such as coal, iron or oil, available is limited and is non renewable after use. This makes the conditions of sustainable consumptions implausible and controversial. It also necessitates the need of substituting some alternatives for the non renewable resources to perform similar functions (Crowther, 2002) and commands that the society must only use the resources that can be regenerated (Aras and Crowther, 2008). There are four equally important and key aspects of sustainability. This emphasises that people perceive sustainability differently under the influence of societal, environmental, cultural and financial factors (Aras and Crowther, 2008). It is therefore important that studies are executed to determine the perceptions of students and to identify their attitudes towards sustainability as they could study sustainability and its implications on future generations, at tertiary institutions. Their value in preserving our resources for the future should not be underestimated, it does not matter what background they have or their country of origin.

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There is a huge amount of research about the difficulties in understanding human behaviour and attitudes towards environment, especially behaviours specific to the general and routine activities (Keys, Thomsen, & Smith, 2010). Many studies in the field have been restricted to direct human behaviours related to the environmental responsibility on the individuals in daily household activities, without considering any external influences such as their educational and political actions. It is also argued that the indirect or unintentional activities have a much bigger and wider impact on environment, than any of the small individual efforts (Lubell, Zahran & Vedlitz, 2007).

The social groups and networks that people relate to, influences their decisions and approach towards environmental problems (Keys, Thomsen, & Smith, 2010). People who are sociable and friendly have positive interactions with others and make positive contributions to the neighbourhood making it more affable and organised. Positive community relationships have a major role to play when dealing with the environmental crises (Treanor, 2010). People in a community get influenced by other's actions, so when one person or a small group of people change their ways to eco-friendly, others tend to learn by their examples and start following. Therefore this research project was undertaken at Unitec New Zealand as students are from different backgrounds, cultures, ethnicities, communities and age.

The process that assists a behavioural change is very intricate. According to Folke (2003, p. 227) "directing human behaviour towards improved environmental performance and sustainability is not just a simple matter of providing information and policy prescriptions but a complex socio-cultural process. It will require understanding of the contexts that form, shape and reshape habits of thought and action." Therefore, a joint effort by communities is very important in order to attain the environmental sustainability as there are relatively very few problems that can be effectively addressed through individual effort. A fair amount of planning guidelines and policies is required to implement the principles of sustainability in a community (Carstens, 2010).

Our conventional system of education does not provide any training to the students that may help in developing solutions to the sustainability issues and deal with the ecosystem problems on a global level. The environmental issues have several aspects and cannot be addressed by the traditional and conventional theories. It needs professional guidance from experts on the subject and a positive approach towards environmentalism (Sibbel, 2009). There is an increasing influence by governments across nations to mainstream the sustainability in the educational institutions with an emphasis on developing people aptitudes to construct a sustainable society (Kagawa, 2007). Although the current literature discusses the importance of student's learning about sustainability. However much less is known about what they actually know about the subject as a vast library database search using all the key words on the subject obtained only a few articles. Influencing other's behaviours through setting personal examples proves to be more significant than to force it through confrontation or litigation (Treanor, 2010).

In an effort to combat global warming (climate change) governments got the idea to get all the nations and counties involved and the Kyoto Protocol was born. The Kyoto

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Protocol is an agreement made under the United Nations Framework Convention on Climate Change (UNFCCC). It was ready for signing by the parties on 11 December 1997 in Kyoto, Japan. Countries that ratify this protocol commit to reduce their emissions of carbon dioxide and five other greenhouse gases, or engage in emissions trading if they maintain or increase emissions of these gases. The Kyoto Protocol now covers 169 countries globally and over 55% of global greenhouse gas (GHG) emissions. Kyoto is underwritten by governments and is governed by global legislation enacted under the UN's aegis (Lockyer, Du Plessis, Maritz, 2007). Global warming is a result of increased emissions of the greenhouse gases post-industrialisation.

Tertiary institutions could assist in the effort to control the increasing atmospheric temperatures by creating awareness and outlining policies regarding the issue at a global level in their programmes they present to students. Kyoto protocol is an example of one of such efforts across the world. Its main objective is to control the greenhouse gasses emission in the atmosphere, by limiting the amount of gasses emitted by each country (Roth, 2004). The consequences of global warming are already evident in the Pacific region in forms of higher sea levels, increased high tides, unpredictable weather and salination of water and soil. New Zealand is a member of the Kyoto Protocol and the United Nations Framework Convention on Climate Change (Stephens, Smith & Lincoln, 2008).

In order to determine the inevitable effects of sustainability issues on a population and people perceptions on that, it is important to understand their reactions and analyze their attitudes towards sustainable development and environmentalism (Brida, Osti, & Faccioli, 2011). An attitude can be defined as an individual assessment of an object of thought in the person's mind towards people, environment, situations or ideas (Bohner & Dickel, 2011). It can be very similar to belief but has a component of evaluation. Understanding people perceptions and their approach towards sustainability would allow us to understand if they support or oppose the 'green' behaviour (Sharma & Dyer, 2009; Brida, Osti, & Faccioli, 2011). Previous studies in the fields of social and cultural research have identified specific factors that influence people's perceptions about sustainability issues that prevail in the society and accounts for dependant and independent variables of the subject (Brida, Osti, & Faccioli, 2011; Davis, O'Callaghan & Knox, 2009).

Therefore it could be said, according to the literature that the term sustainability is developed from sustainable development of the natural resources available to us. This involves keeping a check on our current consumption patterns and saving the resources and assets for future generations.

3. Problem Statement

The majority of sustainable development programmes are set up with an objective of changing individual attitudes and approaches towards sustainability and conservation of natural resources, with a vision to create a society where people consider and evaluate the consequences of their actions based on a long term impact on the environmental well being (Arbuthnott, 2009).

Current tertiary students are the future of New Zealand. They will be the leaders of tomorrow and it is important for a tertiary institution to determine what their perceptions, attitudes and behaviours are towards sustainability. A longitudinal study could shed some light on any changes in their perceptions and behaviours so that curricula could be altered or upgraded to include sustainability papers.

4. Aim of the Study

This paper focuses on a comparative analysis of tertiary student surveys executed in 2007 and 2010 to understand student approaches and current trends towards sustainability. Which factors affect their 'green' behaviour, and how perceptions are formed, with specific consideration to the demographic factors. This article also discusses any similarities and differences of opinion identified, between the two groups. The research is based on the assumption that positive attitudes lead to positive behaviours and aims to establish what people's attitudes towards sustainability and the environment are. It also seeks to understand whether there are differences between groups in terms of their attitudes and self-reported behaviours. The value and benefits is derived from the fact that this is the second study (therefore longitudinal), the first having been executed at Unitec New Zealand in March 2007. The value also comes from the comparisons resulting from the 2010 and 2007 data to identify trends in student approaches to sustainability issues. It will also enable international comparisons of similar studies.

5. Methodology

5.1 Research Design

The researchers found quantitative research to be the most appropriate method keeping the feasibility of the research in mind. The quantitative method was cost effective and fast to execute. This method also allowed participants to take part in the research at a time convenient to them. Thus, being able to collect data quickly without any geographic constraints together with the limited resources on hand are some of the factors that contributed to influencing the researcher's preference of selecting one methodology over the other.

The data pertaining to the surveys were exported to Microsoft Office Excel for analysis. All data was imported from the questionnaires which were handed out to students and received back in a sealed box. Many tables and charts were developed using Excel to portray the results of the survey. According to CRS, (2009) "the larger the sample size, the more certain you can be that their answers will truly reflect the population".

Some of the data was also quantitatively analysed using Statistical Package for Social Science (SPSS) programme. The SPSS programme was selected due to the numerous advantages that it provides for analysing quantitative data. The quantity and quality of the responses collected in the form of questionnaires warranted a quantitative research. A quantitative study helped in keeping the results unbiased and irrelevant to the

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circumstances under which the research was carried out. The comparative analysis of the respondent's perceptions and attitudes confirmed the existence of different groups where members had similarities and variation in the thinking patterns. A deductive research was carried out as a process to test the following hypothesis:

Null hypothesis: the average scale of each education level of the respondents are equal regarding the three significant questions in factor two (culture and social). This means that we want to determine if there are no differences between these averages.

Alternative hypothesis: there are at least two averages not equal (it means there are differences between the averages).

The target population were tertiary students of Unitec, Auckland. This is a longitudinal study. The questionnaires distributed in 2007 resulted in 132 usable questionnaires received (98% response rate), and in 2010 questionnaires were again distributed and 92 (94% response rate) usable questionnaires returned.

A survey was distributed to undergraduate and post graduate students studying business at the institute. The choice of business students is deliberate because the researchers believed they'll get a cohort of people with similar income, occupation and age in addition to materialistic aspirations. In future some of these students may perhaps become senior managers who could have a deciding standpoint on these issues.

The revelation of the identity of respondents was not required and the respect for rights and confidentiality and preservation of anonymity is present throughout the questionnaire. There is no harm, cultural or social sensitivity nor deception in the questionnaire or study. There was no conflict of interest and the intellectual and cultural property ownership was respected.

5.2 Questionnaire Design

A questionnaire was designed with 83 questions (using a Likert scale from 1 very strongly disagree to 7 very strongly agree) regarding some important characteristics about the views of people towards environments, culture, self feelings towards life regarding money and health, human and their interaction with natural resources. A further six questions were asked about some personal information of the participants in the survey.

5.3 Data Collection

Questionnaires were distributed in the tertiary students' classes at Unitec through the class representatives. Students completed the surveys anonymously and returned it to their respective representatives without the lecturer being present. Participation of all business students in the study was voluntary and through informed consent. Questionnaires are locked in the primary researcher's cabinet for a period of five (5) years.

6. Analysis

The data was entered in Excel and then transferred into SPSS to get some descriptive statistics and also to apply some statistical tests. Results are analysed using the SPSS package. The researchers did some factor analyses and based their research questionnaire on six factors. Only three factors are discussed in this article due to length limitation.

Factor one includes 11 questions all related to saving energy and caring about the environment, from these 11 questions, only three of the participants views were consistent and are more towards agreeing with what has been asked, the rest are not significant; their standard deviation was high which shows the variation in the views of the respondents. People's views are more towards having a good social life with other cultures; however at the same time it was also established that some of the respondents have barriers towards different cultures.

Factor two includes six questions related to the tradition and cultures and how people feel about it; it is interesting that in most of these questions related to this factor, the participants (more than 5) agree, except for some of them the standard deviation is more than 1.1 which is high. This shows that views vary around the average of some of the questions. It also means that there are differences between age groups regarding the respect for traditions, cultures and ways of life of other nations.

Factor three includes five questions related to how humans deal with nature, all these questions are related but there are no significant question in this factor (the mean is either less than 5 or if it is more than 5 the standard deviation is very high). The results revealed that people try to link their attitude to saving energy and environments with their attitude to have a social life with other traditions and cultures.

In Table 1 below, for factor one, it is evident that there is similarity in the answers for 2007 and 2010, for factor two (Table 2 below) the means are more than 6 for 2010 data which means respondent's views are more towards having a good social life with other cultures, but for 2007 data it is almost 6; these figures implicate that in 2007 some people might have some barriers towards different cultures.

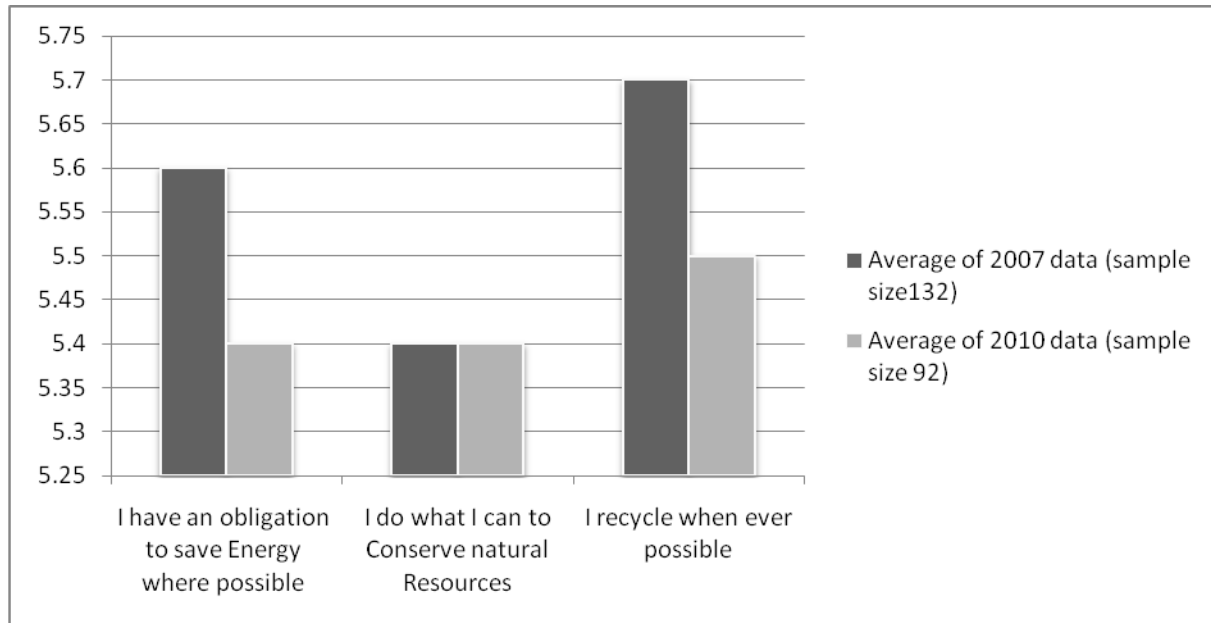
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Table 1: Comparison between the significant questions in Factor 1 and Factor 2

Question	Average of 2007 data (sample size 132)	Average of 2010 data (sample size 92)
Factor one 1) I have an obligation to save energy where possible (Q24) 2) I do what I can to conserve natural resources (Q25) 3) I recycle whenever Possible (Q27)	5.6	5.4
	5.4	5.4
	5.7	5.5
Factor two 1) I should have respect for traditions, cultures and ways of life of other countries (Q19) 2) I like to learn more about other countries (Q20) 3) I like to know more about other cultures and customs (Q22)	6.1	6.4
	5.9	6.2
	5.8	6.1

One billion children live in deep poverty. Six hundred and forty million people lack decent shelter. Four hundred million lack safe water. Two hundred and seventy million have no health services. Climate change (global warming) and loss of biodiversity threaten the web of life. At the Brandeis University, the Heller School for Social Policy and Management presents a programme on their MA degree called Sustainable International Development (SID) and they are leading the way for graduate training on sustainable development. They have built a holistic and innovative professional curriculum that integrates development with the study of political and economic institutions, the allocation of scarce resources, the connection of policy and practice with ecology, demography, human rights and capabilities – and that draws upon intellectual and cultural histories of justice and social change (Simon, 2012). It supports our recommendation that tertiary institutions in New Zealand should have sustainability papers in their curricula as others are already presenting it as full programmes.

Figure 1: Comparison between the significant questions in Factor 1

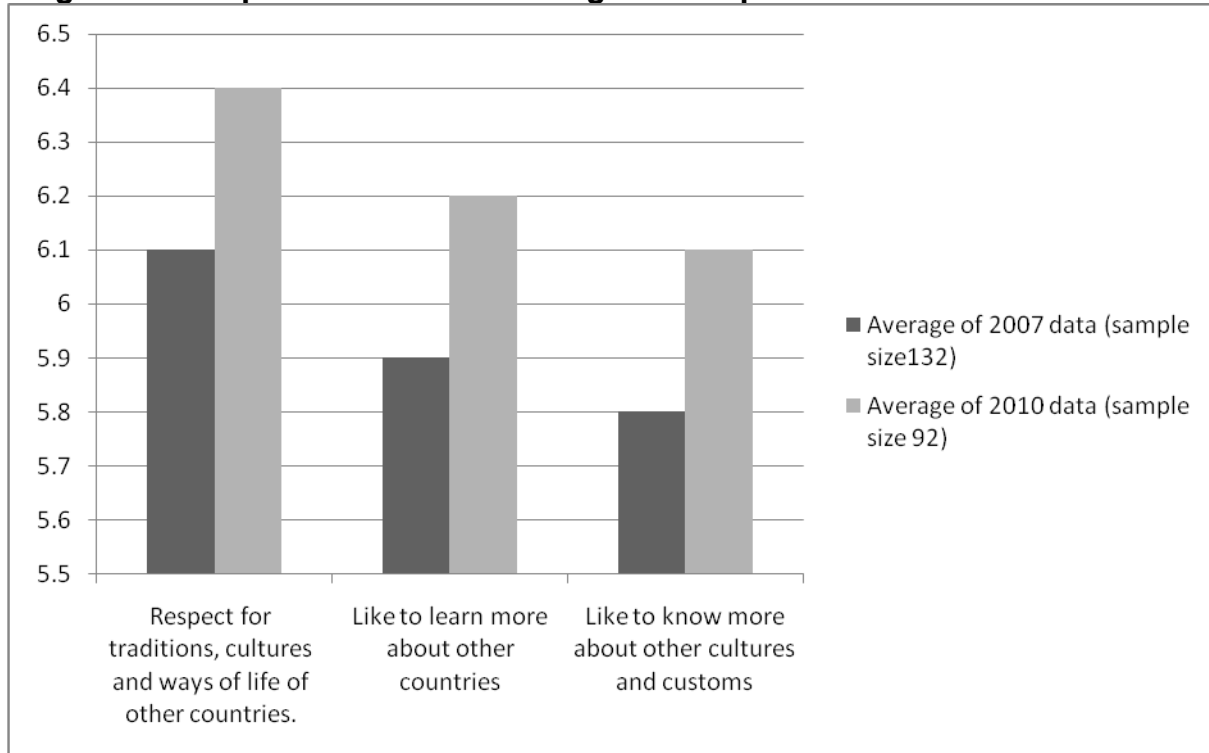


In comparing the 2007 and 2010 results in this longitudinal study the following three questions in Factor One is of great importance. The first significant difference is in Q 24: “I have an obligation to save energy where possible” The 2010 results are down by 0.2 points compared to the 2007 results. It can be deduced that the respondents feel that they are already saving as much energy as they could. Peattie and Collins, (2009) are of the opinion that sustainable consumption is expected to minimise the environmental damage, through socially equitable consumption patterns as it allows every individual to consume only what their fair share of natural resources is. If the respondents care less and less about saving energy, in other words their consumption, we are facing problems in New Zealand.

For Q25 (“I do what I can to conserve natural resources”) there was no change between the 2007 and 2010 results. It can be deduced that the respondents do not relate resources to energy, which needs serious attention from tertiary institutions to “educate” students in this regard.

The third question in Factor One, Q27 (“I recycle whenever possible”) is even further confusing as it is also down by 0.2 points compared to the 2010 results. In an article published by the Ministry of Environment in 2008 it explains that each month, New Zealanders dispose of enough rubbish to fill a rugby field 30 stories high. Almost half of the average rubbish bag could be composted and others could be recycled as this huge amount of waste could save space at the local landfill (Anonymous, 2008). One would think that in a country such as New Zealand where there are so many opportunities to recycle that everybody would support it.

Figure 2: Comparison between the significant questions in Factor 2



Question 19: "I should have respect for traditions, cultures and ways of life of other countries" increased by 0.3 points from the 2007 to the 2010 results. It is a positive sign because of New Zealand's cultural diversity. Similar results (increase by 0.3 points) were received for Q 20 ("I like to learn more about other countries") and for Q22 ("I like to know more about other cultures and customs"). It can be deduced that the tertiary students are well aware of the cultural diversity in their class rooms and for those who are working they experience diversity as well. The results suggest that respondents should be sensitive to cultural differences in perceptions when working with different cultures and in a diverse workforce. Language and religion are important socio-biographical variables that may point to cultural diversity. With regards to cultural differences, home language can be regarded as a strong indicator of culture according to Hickson and Pugh (2002).

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Table 2: ANOVA – Respondent’s views

		Sum of Squares	df	Mean Square	F	Sig.
We should have respect for traditions, cultures and ways of life of other nations	Between Groups	2.188	3	.729	.493	.688
	Within Groups	186.435	126	1.480		
	Total	188.623	129			
I would like to learn more about other countries	Between Groups	1.501	3	.500	.361	.781
	Within Groups	174.569	126	1.385		
	Total	176.069	129			
I would like to know more about other cultures and customs	Between Groups	4.044	3	1.348	.964	.412
	Within Groups	176.149	126	1.398		
	Total	180.192	129			

The purpose of applying ANOVA is to test the following hypothesis:

Null hypothesis: the average scale of each education level of the respondents are equal regarding the three significant questions in factor two (culture and social). This means that we want to determine if there are no differences between these averages.

Alternative hypothesis: there are at least two averages not equal (it means there are differences between the averages).

The researchers use the above table, ANOVA, for the three questions which are significant from the respondents in 2007, but with the p-value we are not rejecting the null hypothesis; it means all the respondents with different education levels responded the same towards the three questions.

Similar results were identified for the differences between different age groups (average scale of each group); the 2007 data shows that there are no differences between the average scales for each age group, it means the average scale for the age group less than 20 years old is similar to the average scale for the age group 20-39 years old and 40-59 years old regarding the respect for traditions, cultures and ways of life of other nations, also regarding their views about willing to learn more about other countries, the last question was their willingness to know more about other cultures and customs.

The main features of the respondents in 2007 are:

The majority of the respondents (76%) were in the age group 20-39 years old with 48 percent of them holding an undergraduate degree and only 24 percent were fresh from high school entering tertiary education. Of these respondents in 2007, a total of 59 percent were female leaving the rest to be male (41%). Interestingly to note most of the respondents regarded themselves as New Zealanders but other nationalities from Asian, European and Indian countries were also represented in the survey whereas 65 percent were full time students.

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The researchers have done similar tests for data collected from the 2010 survey, and the same results was found (the sample size for 2010 was 92 respondents). The only result that is different is the test for the null hypothesis about the differences between age groups regarding the three questions of the second factor, it is interesting to see that regarding question 19: "We should have respect for traditions, cultures and ways of life of other nations", the test shows that the P-value is < 0.05 , so we reject the null hypothesis, concluding that there are differences between age groups regarding the respect for traditions, cultures and ways of life of other nations.

The main features of the respondents in the 2010 survey are:

There were 92 respondents of which 78 percent are in the age group between 20-39 years old with 44 percent holding an undergraduate degree, and 22 percent a postgraduate degree. Of the 2010 respondents 51 percent were female and the male respondents nearly got the same percentage in the sample (49%) with a good percentage (65%) as full time students. The respondents who regarded themselves as New Zealanders were still in the majority (34%) and the percentages of Chinese are the same (26%), whereas Indian respondents totalled 24 percent. A total of 60 percent were full time students. It is necessary to explain that traditional Chinese culture supports reciprocity, harmony, and stability in the working environment, and some cultural values such as collectivism, social obligations, loyalty, and respect for authority, are considered as key factors with employees (Ma & Trigo, 2008).

The Tukey test shows that there are differences between age <20 and the other two groups but there are no significant differences between age 20-39 and 40-59 regarding the traditions and cultures. It can be deduced that the younger generation's perceptions are different from older respondents regarding this issue. There are significant differences between the age groups for the 2010 survey, P-value <0.05 , and respondents' age less than 20 years old are different from the other 2 groups regarding their willingness to know more about other cultures, but there is no significant difference between the views of the second and third group

Table 3: Multiple Comparisons

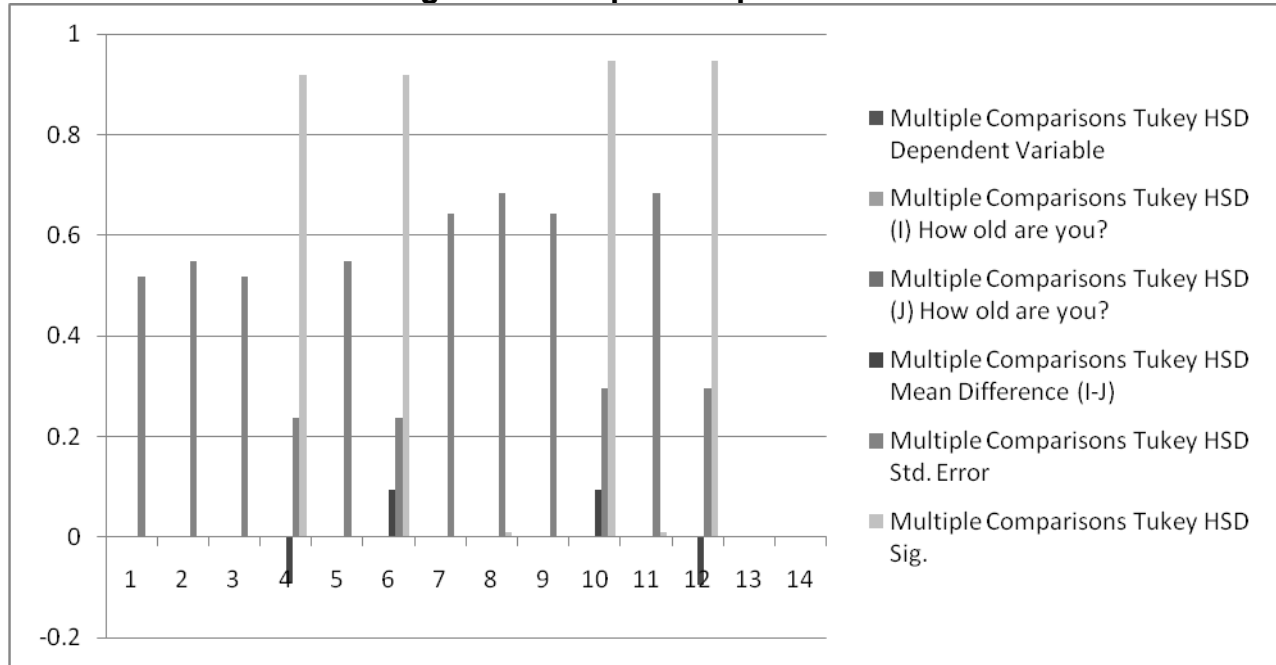
Tukey HSD

Dependent Variable	(I) How old are you?	(J) How old are you?	Mean Difference (I-J)	Std. Error	Sig.
We should have respect for traditions, cultures and ways of life of other nations	under20	20-39	-2.437	.517	.000
		40-59	-2.529	.549	.000
	20-39	under20	2.437	.517	.000
		40-59	-.093	.237	.919
	40-59	under20	2.529	.549	.000
		20-39	.093	.237	.919
I would like to know more about other cultures and customs	under20	20-39	-2.153	.644	.003
		40-59	-2.059	.684	.009
	20-39	under20	2.153	.644	.003
		40-59	.094	.295	.946
	40-59	under20	2.059	.684	.009
		20-39	-.094	.295	.946

* The mean difference is significant at the 0.05 level.

In a study done by Azapagic, Perdan, and Shallcross (2005), they address the issue of engineering education (tertiary students) for sustainable development. In an attempt to facilitate a better integration of sustainability teaching into the engineering curriculum, it seeks to provide answers to the following fundamental questions: (1) How much do engineering students know about sustainable development? (2) What are the knowledge gaps? (knowledge about other cultures, norms and traditions). (3) What could be the best approach to educating engineering students for sustainable development? In our research some of these questions were also asked to tertiary students and answers received. In their research they executed a world-wide survey of engineering (tertiary) students on their level of knowledge and understanding of sustainable development. The survey results suggest that, overall, the level of knowledge is not satisfactory and that significant knowledge gaps exist. This outcome supports our recommendations to have a paper on tertiary level about sustainability. An encouraging result from their research which is similar to what we found is that students believe that sustainable development is important for engineers (tertiary students), although they often have difficulties in making a direct link between the theory of sustainable development and engineering (work environment) practice. We found that most students agree that sustainability is important and saving resources is a must. To address their third question, they discuss the implications of these findings for the engineering curriculum. It also illustrates an approach to teaching sustainability that could help to stimulate students' interest in this subject during their studies and to ensure their commitment to practicing sustainable engineering later as professionals (Azapagic, Perdan, & Shallcross, 2005). These findings are very similar, as well as their recommendations, to our study.

Figure 3: Multiple Comparisons



6.1 Correlation between First Factor and Second Factor

In selecting three questions from the 2007 data regarding factor one and three questions from factor 2, the correlation coefficients matrix to determine the strength of the relationship between these two factors, it was found that there is no significant relation between Q19 (I should have respect for traditions, cultures and ways of life of other countries) and Q25 (I do what I can to conserve natural resources) and Q27 (I recycle whenever possible). Question 25 and Q27 have no relationship with the three questions of factor 2 either.

On a positive note the results for the 2010 data concluded that the relationships between all the questions (that are significant) from factor one and two have positive relationships between them. It can therefore be deduced that in 2010 people were linking their attitude to saving energy and environments with their attitude to enhance their social life with other traditions and cultures.

7. Recommendations

It is of the utmost importance that tertiary institutions take cognisance of this study and “re-develop” their curricula to include at least one session in every paper presented in their programmes about sustainability. This session could only cover the basics of conserving our most important resources for future generations.

Papers about sustainability should be included for tertiary students about respect for traditions, cultures and ways of life of other nations , also regarding their views about willing to learn more about other countries, the last issue to be addressed should be to create a willingness to know more about other cultures and customs.

8. Conclusion

The contribution of this article is to give the reader an overview and to identify possible recommendations to problems that organisations can encounter in the future regarding the issues of sustainability, cultural diversity, recycling and saving the resources for future generations. The ever changing technologies, the change in climate also known as global warming, international students studying in New Zealand and then becoming citizens, and global pressure coupled with intense domestic competition in tertiary institutions, initiated changes in New Zealand tertiary education curricula during the last decade. New directives from the Tertiary Education Commission (TEC) require tertiary institutions to “upgrade” or to “re-develop” some of their programmes to keep up with the global changes and competition.

From this research project it is evident that all the survey participants strongly associate the concept sustainability with their environment and it emphasises the need to link the sustainable development with the economic, social, cultural and factors for the students to understand the complications and the challenges about the topic. It was also found in the research that people with different cultures and varied personal and professional backgrounds have different approaches towards sustainability; they feel differently about the environment and behave differently when it comes to ‘green’ behaviours. Despite the differences there were many similarities that appeared constantly across the survey.

This research determined and exemplified the current trends and attitudes of tertiary students within Unitec across all courses. Furthermore, in order to explore several determinants sustainability behaviours were identified as well as trends in student approaches to sustainability issues. The study puts together some recommendations that could be used to develop and formulate future strategies (in curricula) to encourage sustainable consumptions and will also enable international comparisons of similar studies as well.

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