A Study on Sustainability Report and the key Sustainable Indicators for Educational Institutions

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ABSTRACT: *A sustainability report is a report published by a company or organization on the economic, environmental and social impact caused by its everyday activities. A sustainability report also presents the organization's values and governance model, and demonstrates the link between its strategy and its commitment to a sustainable global economy. Systematic sustainability reporting helps organizations to measure the impact they cause or experience, set goals, and manage change. A sustainability report is the key platform for communicating sustainability performance. Universities colleges & schools are considered to be areas of high density population with wide campus space & natural resources leading to inevitably large ecological footprint. The influence held by colleges & universities also gives them the opportunity to become effective leaders in sustainable movement. The objective of the paper is to study the possibility of having sustainable report for educational institutions. Higher educational intuitions have a responsibility to integrate sustainability into their operations in order to reduce their environmental footprint (Staffod, 2011). Moreover, as Higher Education institutions are considered to be the incubators of tomorrow's leaders & decision makers, they are urged to deliver learning & research opportunities to advance knowledge in the area of sustainable development (Velazuezetal, 2006). Hence, the next objective is to study the key sustainability indicators that are relevant for educational institutions. The key sustainability indicators for the four main dimensions of sustainability performance of educational institutions are environment, society, economy & academics (curriculum). A structured questionnaire will be administered to 109 respondents from schools and colleges in Chennai and analyzed using SPSS.*

Keywords: Sustainability Report, Sustainability Indicators, Educational Institutions.

I. INTRODUCTION

Sustainability reporting is the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development. 'Sustainability reporting' is a broad term considered synonymous with others used to describe reporting on economic, environmental, and social impacts (e.g., triple bottom line, corporate responsibility reporting, etc.). A sustainability report should provide a balanced and reasonable representation of the sustainability performance of a reporting organization – including both positive and negative contributions.

Sustainability reporting requires companies to gather information about processes and impacts that they may not have measured before. This new data, in addition to creating greater transparency about firm performance, can provide firms with knowledge necessary to reduce their use of natural resources, increase efficiency and improve their operational performance. Even though sustainability reporting is voluntary, public and institutional pressure rises constantly. Therefore, businesses that report before it becomes mandatory enhance their legal security and, moreover, satisfy the expectations of internal and external stakeholders.

In addition, sustainability reporting can prepare firms to avoid or mitigate environmental and social risks that might have material financial impacts on their business while delivering better business, social, environmental and financial value — creating a virtuous circle.

II. REVIEW OF LITERATURE

From a historical perspective, the development and focus of sustainability-related reporting has seen several shifts (**Fifka, 2012; Kolk, 2010**). In the 1970s, traditional financial reporting in Western countries was sometimes complemented by additional social reports. In the 1980s, the focus shifted towards environmental issues such as emissions and waste generation often replacing prior social reporting. By the end of the 1990s, reporting research and practice increasingly began to consider the social and the environmental dimension simultaneously in a joint report which is often published alongside traditional financial reports. This trend can be directly linked to the development of voluntary standard-setting by the Global Reporting Initiative (GRI) (**Kolk, 2010; Vormedal and Ruud, 2009**). Today the GRI is regarded as "the de facto global standard" (**KPMG, 2011: 20**; **emphasis in original**) for sustainability reporting.

However, in spite of the standardization efforts, significant differences remain between companies from different institutional environments with regard to the content and quality of sustainability reports

(**Fortanier et al., 2011**), implying variations in the global academic interest as well. Nevertheless, the literature is still limited in quantity and no major reviews of the latest developments have been presented so far.

There have been some recent attempts to examine the field of sustainability-related reporting. However, they were mainly conducted from a specific focus on accounting (not reporting) issues (**Berthelot et al., 2003; Burritt and Schaltegger, 2010; Deegan and Soltys, 2007; Lee and Hutchison, 2005; Owen, 2008; Parker, 2005, Spence et al., 2010**). These reviews are limited for three additional reasons: They did not disclose a rigorous method of literature **review (Burritt and Schaltegger, 2010; Lee and Hutchison, 2005; Owen, 2008; Parker, 2005; Spence et al., 2010)**, they are restricted to very few (usually accounting) journals or even articles (**Burritt and Schaltegger, 2010; Deegan and Soltys, 2007; Owen, 2008; Parker, 2005**) and/or they specifically focused on single **issues (Berthelot et al., 2003; Deegan and Soltys, 2007; Lee and Hutchison, 2005)**. Beyond accounting journals, only two other reviews could be found. Starting with literature from the 1970s**, Fifka (2013)** reviews empirical research on corporate social responsibility (CSR) reporting and examines whether researchers from different regions apply different methodological approaches and therefore come to different results. **Dyllick and Hockerts (2002: 131)** define corporate sustainability as "meeting the needs of a firm's direct and indirect stakeholders …, without compromising its ability to meet the needs of future stakeholders as well". To achieve this goal, companies need "to maintain their economic, social and environmental capital base"

III.   RESEARCH METHODOLOGY

For this study, primary data was collected through a structured questionnaire from nearly 109 respondents who were students & teachers across schools & colleges in Chennai. Various literatures, articles, books & magazines were reviewed for secondary data.

Objectives:
1. To study the level of Awareness of sustainable indicators
2. Identifying factors contributing towards sustainable indicators
3. To develop a model on sustainable reporting

Hypothesis:
1. H_0 : There is no association between the age and the level of awareness
2. H_0 : There is no association between gender and level of awareness

IV.   ANALYSIS AND INFERENCE

The data was collected from 109 respondents from schools and colleges belonging to different age groups and social status and income levels from all over Chennai. The data thus collected is analyzed using varied statistical tools including Chi, Sq, ANOVA, Factor Analysis, Cluster analysis, Discriminant Analysis. The Demographic variables are analyzed using descriptive statistics namely frequencies and Cross tab. From the statistical analysis the following interpretations are made and inferences are drawn.

I.   Demographics of the respondents
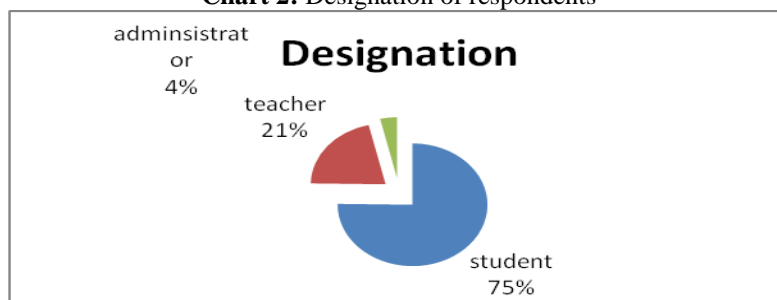
Chart 1: Gender of respondents
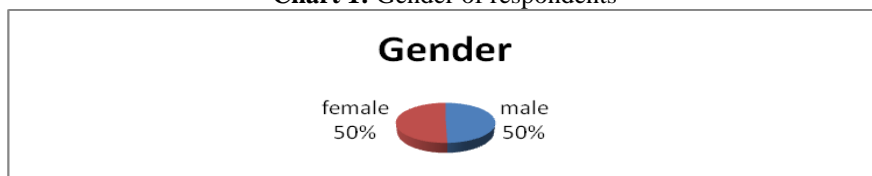
Source: Computed from Primary Data

Inference: The above chart shows that there were equal men & women respondents
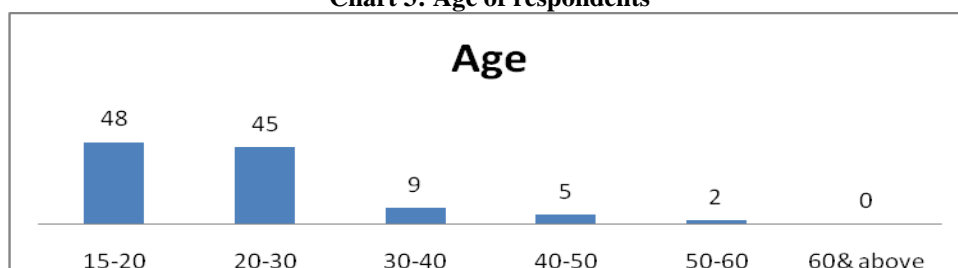
Chart 2: Designation of respondents

Source: Computed from Primary Data

Inference: From the above chart, it can be interpreted that 75% of the respondents are students & 21% are teachers and 4% are administrators.
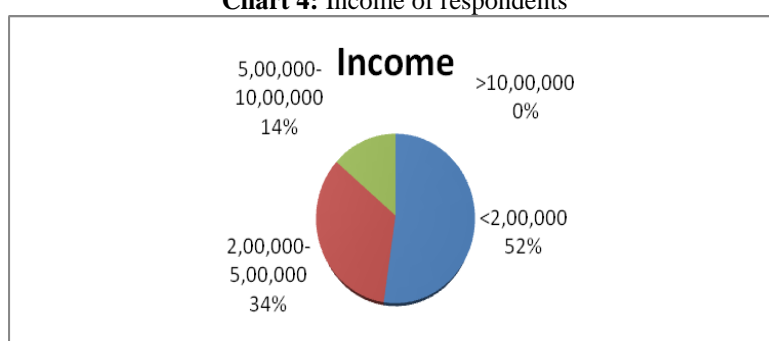
Chart 3: Age of respondents

Source: Computed from Primary Data

Inference: Majority of the respondents are between the ages of 15 and 30. Very few are above the age of 30 which will constitute the teachers & administrators

Chart 4: Income of respondents

Source: Computed from Primary Data

Inference: The above chart shows that majority of the respondents have an income less than Rs. 2, 00,000 p.a., about 34% of the respondents earn between 2 lakhs & 5 lakhs a year. And about 14% of the respondents earn between 5 to 10 lakhs a year.

II. Reliability statistics

Table 1: Reliability Statistics

Cronbach's Alpha	N of Items
.917	73

Source: Computed from Primary Data

Inference: In order to test the reliability of the data collected Cronbah's Alpha was applied. Since the Cronbach's Alpha value is 0.917, the data can be commended as highly reliable.

Table 2: What educational institutions gain through sustainable reporting

	Better reputation		Ecofriendly campus		Energy conservation		Waste management		Contribution to research	
	f	%	f	%	f	%	f	%	F	%
Strongly disagree	0	0	0	0	0	0	1	.9	1	.9
disagree	3	2.8	3	2.8	4	3.7	13	11.9	17	15.6
Neutral	22	20.2	30	27.5	37	33.9	47	43.1	35	32.1
Agree	38	34.9	57	52.3	38	34.9	32	29.4	26	23.9
Strongly agree	46	42.2	19	17.4	30	27.5	16	14.7	30	27.5

Source: Computed from Primary Data

Interpretation: 42% of the respondents strongly agree that a educational institution can achieve better reputation through sustainable reporting. 52% of the respondents agree that a educational institution can achieve eco-friendly campuses through sustainable reporting. 34% of the respondents agree that a educational institution can consume energy through sustainable reporting. Majority of the respondents are of the neutral opinion that waste reduction & management helps to achieve sustainable reporting. Majority of the respondents are of the neutral opinion that contribution through research helps to achieve sustainable reporting. Majority of the respondents are of the neutral opinion that generating students who are eco-friendly helps to achieve sustainable reporting

III. Factor Analysis

In order to test the validity of the factors considered in the research a KMO and Bartlett's test was employed.

H_0: *"The factor analysis employed is not valid."*

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Bartlett's Test of Sphericity	Approx. Chi-Square	4415.345
	Df	1485
	Sig.	.000

Source: Computed from Primary Data

Inference: Since the significance value is less than .05 (.000) the H_0 is rejected. The factors considered in this research are valid.

Table 4: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
Knowledge on sustainability	16.598	30.178	30.178	16.598	30.178	30.178	11.326
Measures for conserving Energy & Water	3.522	6.403	36.581	3.522	6.403	36.581	5.076
Waste management & recycling	3.185	5.791	42.372	3.185	5.791	42.372	4.938
Sustainable practices in campus	2.869	5.217	47.589	2.869	5.217	47.589	4.052
choice of transportation	2.271	4.129	51.718	2.271	4.129	51.718	3.053

Source: Computed from Primary Data

Table 5: Total Variance Explained

Component	Rotation Sums of Squared Loadings	
	% of Variance	Cumulative %
Knowledge on sustainability	20.594	20.594
Measures for conserving Energy & Water	9.229	29.822
Waste management & recycling	8.978	38.800
Sustainable practices in campus	7.366	46.167
choice of transportation	5.552	51.718

Source: Computed from Primary Data
Extraction Method: Principal Component Analysis.

Table 5(a): Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Include curriculum on environment and sustainability studies	.773				
Providing resource material on Basel norms , UNEP regulations on environment	.734				
Using recycled papers for notebooks	.719				
Regulations to ensure practices are followed in the institution	.718				
Adopting environmental accounting	.713				
Use of laptops/tabs or ipads instead of notebooks	.711				
Register for curriculum offering knowledge on sustainability and environment protection	.699				
Setting up committees to ensure practices	.696				
Adopting environment auditing in Institutions	.648				
Providing awards for individuals, departments or institutions for any impact on the environment	.639				
Making offices paperless	.621				
Gifting only ecofriendly products	.606				
Waste reduction & management	.605				
Providing books and materials as e-resource to students	.592				

Generate students who are eco-conscience	.579				
Conserve energy	.564				
Taking up projects	.563				
Consumption of energy	.556				
Better reputation for the Institution	.517				
Solar panels in buildings	.512				
Conducting more research on this area	.508				
Creating awareness	.494				
Avoid consumerism	.490				
Energy saving devices such as LED lights	.464				
Use of solar energy		.652			
Using recycled products		.577			
Having composting units in the campus		.563			
Reducing emission, effluents & waste		.542			
Preserving habitats		.539			
Proper ventilation		.526			

Source: Computed from Primary Data

Table 5(b): Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Having recycling unit in the campus		.463			
Using less non-recyclable products		.460			
Use natural lighting & ventilation to the maximum		.446			
Measures for Water conserving		.429			
Lights fitted with timer devices			.694		
Walking			-.604		
Recycling of text books by selling them to your juniors			.600		
Contribution through research			.549		
Walking on the stairs instead of using elevators			.500		
Use of Solar energy			.450		
Being involved in ecofriendly societies on campus			.446		
Recycling of waste			.431		
Using eco-friendly materials for construction					
Disposing waste only in the assigned places				.646	
Separate bins for collecting dry and wet waste				.581	
Switching off the lights & fans when leaving the class room				.567	
Using lights, fans & other electrical devices to the minimum				.487	
Conducting awareness programs/workshops for the students & teachers				.473	
Eco-friendly campuses				.459	
Rain water harvesting				.411	
Carpooling					.787
Bi-cycle					.718
Ride Sharing					.675
Making use of battery operated vehicles					.521

Source: Computed from Primary Data

Inference: The factors are classified into five categories in the factor test of these five components the first component which is knowledge in sustainability contributes to the maximum towards sustainable indicators (30.178%). The rotated component matrix Table 5 shows that practices like Include curriculum on environment and sustainability studies, Providing resource material on Basel norms , UNEP regulations on environment, Using recycled papers for notebooks, Regulations to ensure practices are followed in the institution, Adopting environmental accounting, Use of laptops/tabs instead of notebooks, Register for curriculum offering knowledge on sustainability and environment protection, Setting up committees to ensure practices, Adopting environment auditing in Institutions, Providing awards for individuals, departments or institutions for any impact on the environment, Making offices paperless, Gifting only ecofriendly products, Waste reduction & management, Providing books and materials as e-resource to students, Generate students who are eco-conscience, Conserve energy, Taking up projects, Consumption of energy, Better reputation for the Institution, Solar panels in buildings Conducting more research on this area, Creating awareness, Avoid consumerism, Energy saving devices such as LED lights, contributes maximum to the theme of conserving ecology through sustainability indicators. Hence it is clear that in an academic institution the need to be empowered through knowledge seems to be the major contributory factor towards sustainable indicator.

The second factor that contributes towards sustainability reporting is measures for conserving energy & water (6.403). The respondents say that Use of solar energy, Using recycled products, Having composting units in the campus, Reducing emission, effluents & waste, Preserving habitats, Proper ventilation, Having recycling

unit in the campus, Using less non-recyclable products, Use natural lighting & ventilation to the maximum, Measures for Water conserving, helps to conserve energy & water.

The third factor that contributes towards sustainability reporting is waste management & recycling (5.791). The respondents say that Lights fitted with timer devices, Walking, Recycling of text books by selling them to your juniors, Contribution through research, Walking on the stairs instead of using elevators, Use of Solar energy, Being involved in ecofriendly societies on campus, Recycling of waste contributes to this factor

The fourth factor is sustainable practices in campus (5.217).The respondents pointed out Using eco-friendly materials for construction, Disposing waste only in the assigned places, Separate bins for collecting dry and wet waste, Switching off the lights & fans when leaving the class room, Using lights, fans & other electrical devices to the minimum, Conducting awareness programs/workshops for the students & teachers, Eco-friendly campuses, Rain water harvesting etc., contributes to this factor.

The fifth factor is choice of transport (4.129) such as Carpooling, Bi-cycle, Ride Sharing, Making use of battery operated vehicles etc., contribute to sustainable reporting.

IV. *Cluster Analysis*
In order to group the respondents on the basis of their level of awareness Cluster Analysis was employed. According to this test the respondents can be grouped into three categories.

Table 6: Initial Cluster Centers

	Cluster		
	1	2	3
Knowledge on sustainability	-1.22472	3.45498	.79551
Measures for conserving Energy & Water	1.34936	-2.77073	-1.80756
Waste management & recycling	2.64379	.35486	-.78889
Sustainable practices in campus	-2.97669	-2.97907	1.73334
choice of transportation	.52614	.78231	1.55516

Source: Computed from Primary Data

Table 7: Final Cluster Centers

	Cluster		
	1	2	3
Knowledge on sustainability	.44488	1.85978	-.36043
Measures for conserving Energy & Water	.90893	-1.64050	-.34217
Waste management & recycling	.70631	.43835	-.39004
Sustainable practices in campus	.21565	-1.88471	.02718
choice of transportation	-.22990	.70746	.06535

Source: Computed from Primary Data

Table 8: Number of Cases in each Cluster

Cluster	Low awareness	35.000
	Moderate awareness	5.000
	High awareness	69.000
Valid		109.000
Missing		.000

Source: Computed from Primary Data

Inference: The above Table No. 8 shows that the respondents are grouped into three categories namely High awareness, Moderate awareness and Low awareness. 69 respondents fall in the category of being highly aware of the Sustainable indicators. 5 are in the moderate awareness group and 35 are among the people who possess low level of awareness about sustainable indicators. By this the researcher finds that Eco conservation are gaining momentum in Educational institutions.

V *Discriminant Analysis*
Checking the validity of Cluster Analysis: In order to check the validity of the Cluster Analysis, Discriminant Analysis was done and Wilks' Lambda test was employed.

Table 9(a): Summary of Canonical Discriminant Functions Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	10.796[a]	64.1	64.1	.957
2	6.040[a]	35.9	100.0	.926
Source: Computed from Primary Data				

H_0: **"The Cluster Analysis is not valid."**

Table 9(b): Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	.012	357.973	102	.000
2	.142	158.084	50	.000

Source: Computed from Primary Data

Inference: Since the significance is less than .05 (.000) the H_0 is rejected. This shows that the results of the Cluster Analysis are valid.

Table 10: Classification Results[a]

	Cluster Number of Case	Predicted Group Membership			Total
		LOW AWARENESS	MODERATE AWARENESS	HIGH AWARENESS	
Count	LOW AWARENESS	35	0	0	35
	MODERATE AWARENESS	0	5	0	5
	HIGH AWARENESS	0	0	69	69
%	LOW AWARENESS	100.0	.0	.0	100.0
	MODERATE AWARENESS	.0	100.0	.0	100.0
	HIGH AWARENESS	.0	.0	100.0	100.0

Source: Computed from Primary Data

Inference: The classification results Table No;10 shows that the first group of low awareness is 100% accurate. The second group of moderate awareness is 100% accurate and the third group of high awareness is 100% accurate. Hence we can rely on the results of this classification in this research.

V. Hypothesis Testing:
1. H_0: There is no association between the age and the level of awareness

Table 11: Cluster Number of Case * Age of the Respondents Cross tabulation

		Age of the Respondents					Total
		15 - 20 Years	20 - 30 Years	30 - 40 Years	40 - 50 Years	50 - 60 Years	
	LOW AWARENESS	5	20	6	2	2	35
	MODERATE AWARENESS	1	4	0	0	0	5
	HIGH AWARENESS	42	21	3	3	0	69
		48	45	9	5	2	109

Table 12: Chi-Square Tests

|	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.646	8	.001

Source: Computed from Primary Data

Inference: Since the Chi Sq.value is less than .05 (.001) H_0 is rejected. Hence we can say that there is an association between the age of the respondents and their level of awareness. Respondents falling in the 15-20 and 20 -30 years seem to possess high level of awareness

2. H_0: There is no association between Gender and the level of awareness

Table 13: Cluster Number of Case * Gender of the Respondents

		Gender of the Respondents		Total
		Male	Female	
	LOW AWARENESS	14	21	35
	MODERATE AWARENESS	5	0	5
	HIGH AWARENESS	35	34	69
		54	55	109

Source: Computed from Primary Data

Table 14: Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.406	2	.041

Source: Computed from Primary Data

Inference: Since the Chi Sq.value is less than .05 (.041) H_0 is rejected. Hence we can say that there is an association between the gender of the respondents and their level of awareness.

V. FINDINGS

- Majority of the respondents strongly agree that an educational institution can achieve better reputation through sustainable reporting
- Respondents also agree that an educational institution can achieve eco-friendly campuses through sustainable reporting
- Majority of the respondents agree that a educational institution can conserve energy through sustainable reporting
- Through factor analysis several factors were identified which contribute to sustainable reporting in educational institutions. The factors identified and grouped into five categories which are knowledge on sustainability, measures for conservation of energy & water, waste management & recycling, sustainability practices in campus and choice of transport.
- practices like Introduce curriculum on environment and sustainability studies, Providing resource material on Basel norms , UNEP regulations on environment, Using recycled papers for notebooks, Regulations to ensure practices are followed in the institution, Adopting environmental accounting, Use of laptops/tabs instead of notebooks, Register for curriculum offering knowledge on sustainability and environment protection, Setting up committees to ensure practices, Adopting environment auditing in Institutions, Providing awards for individuals, departments or institutions for any impact on the environment, Making offices paperless, Gifting only ecofriendly products, Waste reduction & management, Providing books and materials as e-resource to students, Generate students who are eco-conscience, Conserve energy, Taking up projects, Consumption of energy, Better reputation for the Institution, Solar panels in buildings Conducting more research on this area, Creating awareness, Avoid consumerism, Energy saving devices such as LED lights, contributes maximum to the theme of conserving ecology through sustainability indicators. Hence it is clear that in an academic institution the need to be empowered through knowledge seems to be the major contributory factor towards sustainable indicator.
- Through cluster analysis the factors were categorized into five and the same were grouped into three clusters namely low awareness, moderate awareness & high awareness. It was observed that majority of the respondents were highly aware about sustainability practices in their educational institution.
- There is association between age & level of awareness, Respondents falling in the 15-20 and 20 -30 years seem to possess high level of awareness.
- There is association between gender & level of awareness, it is observed that women try to gift more eco friendly products
- Through this research a model has been formulated for sustainable reporting. Four indicators were identified which are environment, social, academic & economy.

Sustainable Reporting Model
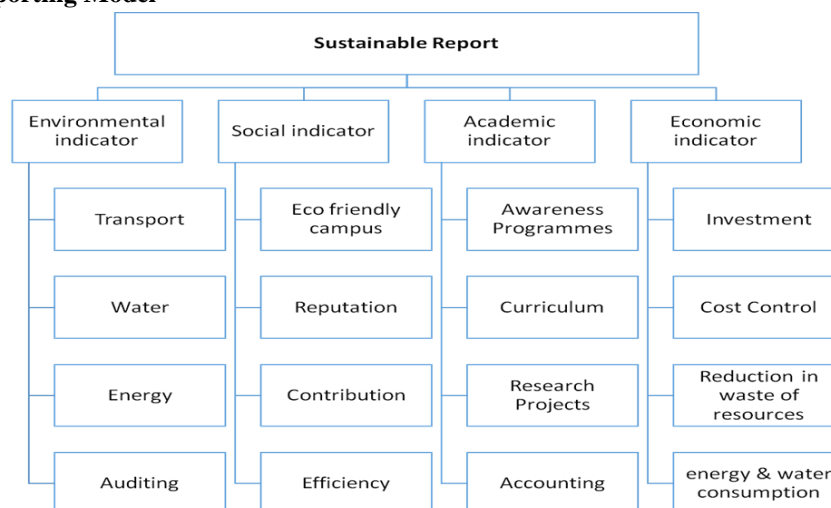
Source: Computed from Primary Data

VI. SUGGESTIONS

1. Educational institutions prefer Knowledge insemination. We can follow the Harvard University model in introducing new courses on sustainability at the degree level.
2. Spreading awareness, initiatives to spread awareness by providing proper literature (Green literature) published by UNEP and other authentic information must be made available to all.
3. Understanding of sustainability can be introduced in the curriculum for all to study like the environmental studies that has been made mandatory.
4. Measures to conserve energy and water to be monitored.
5. Waste management to be monitored
6. Committees to be set up to review sustainability practices (Green Committees)
7. Awards and recognition for departments and individuals who take sustainability measures in the organization or outside.
8. Green employment measures to be introduced and encouraged among students
9. Green financing as a commitment by the administrators towards sustainability
10. Green regulations on campus
11. Environmental (Green) accounting and auditing to be introduced
12. Academicians and students to be encouraged to do research in sustainable areas and their ideas to be implemented in the organization
13. Green checklist for students
14. Green report or the Sustainable report to be prepared by every organization as a conscious measure.

VII. CONCLUSION

Sustainability reporting is the need of the hour to have ecofriendly campuses in educational institutions. A conscious choice has to be promoted among the academic circles in order to promote sustainability on campuses, imparting of knowledge seems to be the priority, hence universities come forward in offering courses at degree or diploma or specializations in sustainability. From the government side regulations needs to be in place to promote sustainability. It is found universities like Harvard prepare sustainable reports & constantly ensure that sustainability practices are implemented & followed. Through the study a sustainable model has been evolved for academic institutions. Top management support is very crucial for such practices which can bring about a conscious transformation towards maintaining standards in sustainability. The study was able to identity sustainability indicators such as environment, social, academic & economy. The environment can be protected by changing the mode of transportation through carpooling, ridesharing, using public transport etc., conserving water & energy and auditing the consumption pattern for better efficiency. It is socially beneficial for a education institution to have an ecofriendly campus, they can contribute to sustainability reporting & even gain a reputation & efficiency. Academically the educational institutions can conduct more awareness programs, include sustainability reporting as part of their curriculum, take up more topics on this and account the changes. Sustainability reporting requires investment, commitment & lifelong contribution.

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