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Need for Effective awareness of Green Marketing via Clean Technology Innovations for Sustainability Among Business Management Post Graduate Students

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Abstract : Green Marketing results in sustainable development of Industry, country and countrymen. Green marketing takes several activities such as product modification changes to production process packing and advertising strategies and also increases awareness on compliance marketing amongst industries. Much recent interest has been paid to environmentalism globally whether arising from specific treaties to combat Climate Change or harmful effects of pollution from high profile Industrial reactions. In order to Implant Green Technologies the ACGCI (American Chemical Society Green Chemistry Research Institute) has launched a new Initiative to reach out the Business School. In recent decade's commitments to the Natural environment have motivated firms of all sizes to develop innovative ways to enhance their effectiveness, and gain operational and market related benefits. This has resulted in addressing on increasing quest for developing innovative approaches in Green marketing. To improve environmental Management (EA) more effective the organizations should try full range of Green Human Resource Management (GHRM) Practices.

The awareness of Green Marketing via clean and green technology is essential for Business School Post graduate students to know the concepts of Green Marketing Innovations and the need in the present Global Scenario. In the present study the awareness of Green Marketing via Clean technology Innovations was monitored through a questionnaire among MBA and PGDM Business Management post graduate students selected from three categories of Institutions of Bangalore. The results were statically analyzed by Chi Square method and a hypothesis was tested.

Key Words : Green Marketing Innovations, Environmental Management **EM**, Green Human Resource Management **GHRM**, Sustainable Development, AMO Theory, Climate Change. Inter-governmental panel on Climate Change (IPCC), Renewable Technologies, Green and Clean Technology, Environmental Protection Agency.

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Introduction:

Green Marketing came into lime light in 1980 .In the beginning it considers production, marketing consumption, disposal of products and services should be done in such a way that it is less detrimental to the Environment in relation to arising awareness about the implication of Global warming, non biodegradable solid waste ,harmful effect of pollutants etc.

In order to import Green Technology the ACS GSI (American Chemical Society Green Chemistry Institute) has launched a new initiative to reach out the Business School.

To create A Scholarly net work that links Business and Green Technology/Chemistry Communication [1].

A key Global Challenge in the 21st Century is how to address the Climate Change and reduce Green House Gas Emission GHG's emissions. Government regulatory bodies and consumer Group s have aggressively lobbied for Business to adopt Green Practices [2].

According to Peattie [3], the evolution of Green Marketing has three phases .First phase was treated as "Ecological "Green Marketing, and during this period all marketing activities were concerned to help environmental problems .Second phase was "Environmental "Green Marketing and the focus shifted as Clean Technology, and involved designing of innovative new products ,which take care of pollution and waste issues. Third was "Sustainable" Green Marketing .It came into prominence in the late 1990 and early 2000.

Studies on the consumer's attitude and awareness towards green products have been carried out and reported [4-8] .Green computing is considered as a Gate Way to Green Business [9].

Green Cloud computing and environmental sustainability has been reported by Melbourne University of Australia [10]. In the last four or five decades commitment to natural environment has motivated firms of all sizes to develop innovative ways to enhance effectiveness, and to gain operational and market related benefits[11]. A recent study on Green marketing innovations in small Indian firm has been reported [12].

The Aim of the program me called the Clean Energy investment initiative is to help wealthy investors mobilize \$ 2 Billion Dollars in New Clean Technology. It is highly essential that the MBA and PGDM Business Management Post graduate students should have better awareness of Green Marketing and Innovation Concepts. The ACS GCI, with financial support from USA Environmental protection Agency, worked with Business Schools to produce a series of case studies that can be used in class to discuss important questions facing Businesses as they work to implement sustainable solutions. These cases can be used for different sections of strategic Management and/or marketing class while playing a rather central role in Business sustainability class. The majority of these cases are drawn from Winners of the USEPA's Prestigious Presidential Green Chemistry Challenge Awards which acknowledge outstanding innovation in Green Chemistry techniques offering human and/or environmental health benefits as well as positive and substantial impact on Chemical Industry. The three companies who won the 2012 Presidential Green Chemistry Challenge Award and their techniques are currently in the Market place are Buck man International Inc ,Codex Inc and Dr.Yi Tang UGLA ,Elevance Renewable Sciences Inc.

A review by Douglas Renwick etal reports a range of Green Human Resource Management GHRM practices as revealed through a wide type of papers including case studies Business reports and survey findings .According to their view GHRM practices should be used by organizations in full range to make Environmental Management EMmore effective [13].

The Centre for Sustainable Design (CfSD) has built World class knowledge and expertise for sustainable innovation and product sustainability. The centre reasonably develops and disseminates understanding of present and future sustainability impact of solution related to

Innovation, products, techniques, services and Systems through projects, training and information.CfSD works with partners in Europe, North America and Asia to deliver the high quality results. The Centre is an internationally recognized Centre of Excellence [14].

In 2013 Ottaman and her team launched “ We Hate To Waste .Com” ,a global community of ardent waste hates sharing their stories and tips to ridding their lives of waste and getting the most from the products they buy .Their goals: create new learning on consumer motivations and behavior for preventing waste and conserving resources-in essence ,living what we call the No-Waste Life Style^Rand provide an unique resonance for client-sponsored market research crowd sourcing and marketing platform.[15]. Jacquelyn regularly posts via Jacquie Ottman's Green Marketing Blogupdates extensive list of their clients and friends on key developments in sustainability marketing and conducts online and as well as on –site workshops and trainings. Jacquie Ottoman has written five award –winning Books on Green Marketing and eco-innovation. Her most recent book “The New Rules of Green Marketing Strategies .Tools and inspiration for sustainable Branding”(BerrettKoeneer),2011,252 pp) ,was named by Cambridge University (UK) as one of the 40 sustainability Books of the year. It is required reading in a number of MBA And under graduates curricular around the World.

Materials and Method:

To assess the awareness in Green Marketing and Innovations for Sustainability. Few good Institutions of Bangalore with good Grades from NAAC (National Assessment &Accreditation Committee) were selected under the following categories:

(1)Deemed Universities. (2) Autonomous Colleges (3) Private Colleges In order to obtain full and relevant information from the students from the above mentioned Institutions a Questionnaire was prepared by the investigator. The Questionnaire consisted of 35 questions and being a multiple choice had four answers for each question. The students Were Provided with OMR sheets to circle their correct answers. Before giving the Questionnaire To the students, a brief presentation about Green Marketing via Clean Technology Innovations Forsustainability was made by the Investigator to the students. The Questionnaire was designed in such a way that it covered all the Basic Questions needed For the awareness of Green Marketing innovations For sustainability.

Sample Size:

The sample consisted of the Post graduates students from different Categories as mentioned above for the awareness of Green Marketing and innovations For sustainability is shown in Table-1. The students are Post graduates of Diploma in Management PGDM which is considered equivalent To MBA as recognized by AICTE and post graduates of MBA Degree.

Table-1 SAMPLE SIZE: The number of MBA and PGDM Post Graduate students Under various Categories

SL No	Name of the University/Institutions	Type/Affiliation	Student's Course	No of Students
1	INDIAN INSITUTE OF SCIENCE, IISC;	Public University	MBA Ph.D	07
2	INDIAN INSITUTE OF SCIENCE, IISC;	Public <u>University</u>	PGDM	15
3	BNMIT (BhageerathiBaiNaryanRaoManay)	VTU-Visvesvarya Technical University	MBA	95
4	DyanandaSagar Group of Institutions	Autonomous/VTU	PGDM	28
5	JAIN UNIVERSITY,JNU	Autonomous /AIMA AICTE Approved	PGDM	43
Total Number of Students		188		

It can be seen from the Table-1 that a total number of **one hundred and eighty eight[188]** Business Management post graduates answered the Questionnaire for Green Marketing and innovations for sustainability awareness.

Experimental Investigations:

The Green Marketing and innovations for Sustainability awareness results obtained from the students of various Institutions were assessed depending upon the number of correct answers from the OMR answer sheets of students. These results are shown in Table-2.

Table-2 Awareness Levels among Students

Well aware	Fairly aware	Partly aware	Poorly aware
30	64	80	14

It can be observed from the above Table-2 that the results are categorized under four levels of awareness as follows:

- 1. Well aware level:** Students who obtained percentage between 100-65% by getting 35-23 correct answers from the questionnaire.
- 2. Fairly aware level:** Students who obtained percentage between 64-52% by getting 22-18 correct answers correct from the questionnaire
- 3. Partly aware level:** Students who obtained percentage between 51-31% by Getting 17-11 correct answers from the questionnaire.
- 4. Poorly aware level:** Students who obtained percentage between 30-20% by getting 10-7 correct answers from the questionnaire.

The overall percentage of each level of awareness of the students obtained by the combination of all the categories of the institutions is shown in Table-3

Table-3- Green Marketing innovations Awareness Results of PG Students of MBA and PGDM

SL No	University/Institutions	Well aware	Fairly aware	Partly aware	Poorly aware
1	INDIAN INSTITUTE OF SCIENCE, IISc; MBA PhD	43 %	57 %	00 %	00%
2	INDIAN INSTITUTE OF SCIENCE, IISc; PGDM	20 %	33%	47%	00%
3	BNMIT , Private ,VTU ,MBA	16%	49 %	35 %	00%
4	DYANANDA SAGAR Autonomus, VTU, PGDM	14%	15 %	57 %	14%
5	JAIN UnivAutonomus, AIMA AICTE Approved PGDM	12%	09 %	56 %	23 %

It can be observed from the Table -3 that the well aware and fairly aware percentage of IISc; is highest among all institutions being 43% and 57% in Well aware and Fairly aware respectively. The Partly and Poorly aware percentage is Zero. The percentages of awareness levels of other Institutional categories can be clearly seen from Table-3 and graphically in Fig. 1

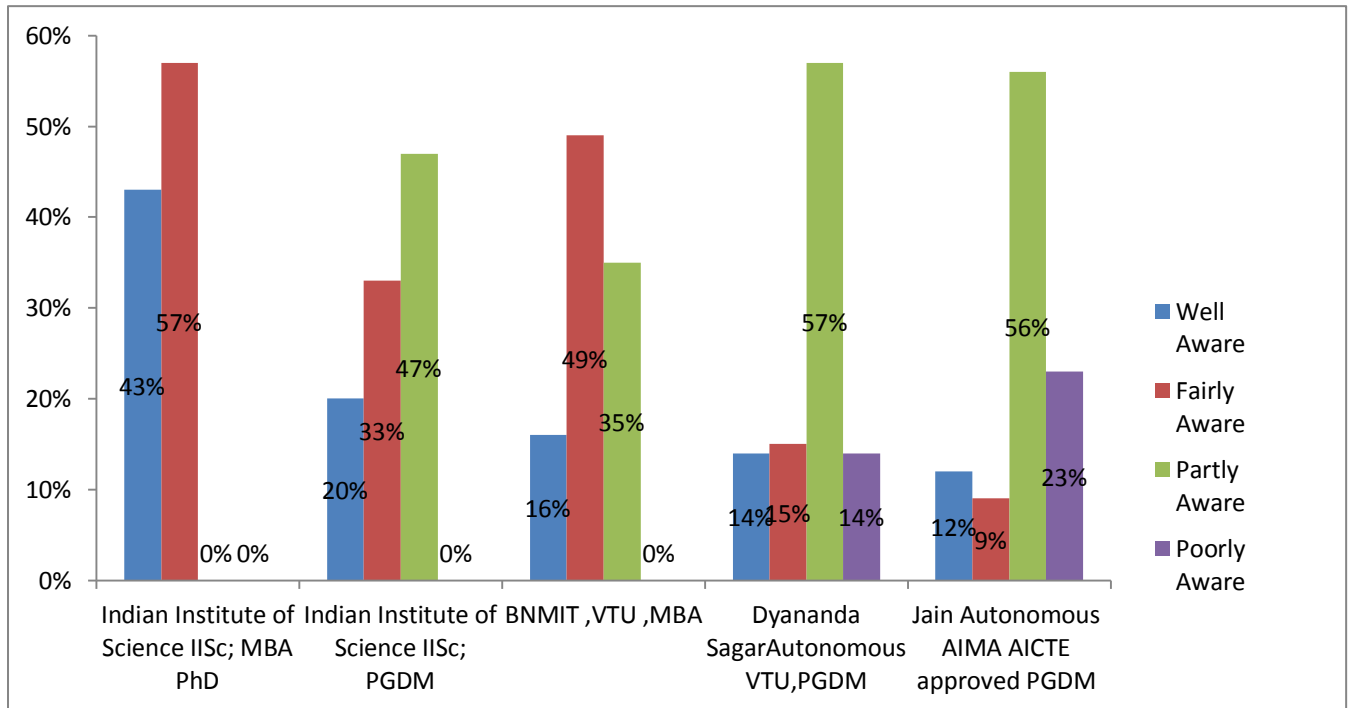


FIG-1 Green Marketing innovations Awareness Results of PG Students of MBA and PGDM

The results of BNMIT a private institution as seen from Table-3 and graph fig-1 ,show 16% in Well awareness level ,49% and 35% in fairly aware and partly aware levels respectively with 0% in poorly aware level. In the Autonomous Institutions category DyanandaSagar Business School shows the levels of 14% in Well aware, 15% Fairly aware, 57% Partly aware and 14% Poorly aware. The Jain University the levels of awareness are seen as Well aware 12% ,Fairly Aware 9% ,Partly aware 56% and Poorly aware 23%.

Further the Overall percentage Awareness levels among 188 students has been calculated and isTabulated in Table-4 follows:

Table-4-Overall % Awareness levels among 188 Students Sample

Well aware	Fairly aware	Partly aware	Poorly aware
16%	34%	43%	7%

The Overall Percentage Awareness levels of total 188 student sample from table -4 reveal that the well aware percentage is 16% and fairly aware is 34%.The partly aware and poorly aware Being 43% and 7% respectively. This indicates that students are fairly aware of Green marketing and innovations for Sustainability basic concepts as and if little more efforts are put during their course they can become better and well aware and contribute effectively for Green Marketing and sustainable growth. The Pi chart clearly reveals the Overall Percentage Awareness levels among 188 Post graduate Business Management students sample which has been investigated in the present study. The Pi chart is shown in Fig-2 as follows:

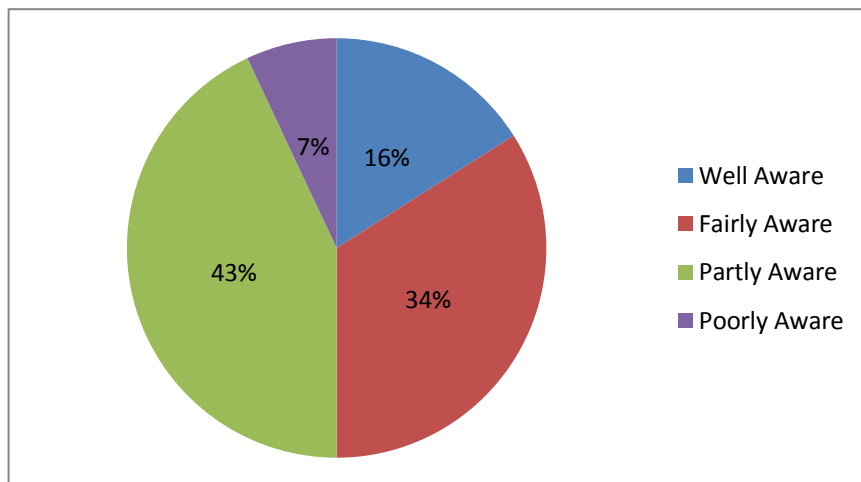


Fig-2 Graphical representation of Overall % of Awareness levels Among 188 Students

Results and Discussion:

Statistical computations by Chi-Square Test have been used for the results analysis. The Chi-Square(X^2) measures the difference between observed (O) and expected (E) frequencies of nominal variables in which subjects are grouped in categories or Cells. The Chi-Square uses the formula as follows: $X^2 = \sum \frac{(O-E)^2}{E}$ Where the letter O represents the observed frequency, the actual count in a given cell. The letter E represents the Expected frequency, a theoretical count for that cell. Its value must be computed. The more O differs from E, the larger X^2 is. When X^2 exceeds the appropriate critical value, it is declared significant. The chi-square Tests can be used on actual numbers and not on percentages.

The results of number of students in different awareness levels of various institutions categories in present study are calculated and are shown in Table-5 as follows:

Table-5 Number of students in awareness levels under 3 categories

Type of Institution	Awareness Levels				Total
	Well aware	Fairly aware	Partly aware	Poorly aware	
Public University	06	09	07	00	22
Autonomous	09	08	40	14	71
Private Unaided	15	47	33	00	95
Total	30	64	80	14	188

The above table-5 shows the **number of students** in various awareness levels of different institutions categories.

The data tabulated in the above Table-5 was subjected for carrying out the **Chi-Square Test** for testing the Hypothesis.

Hypothesis : There is no association between levels of awareness and type of Institutions.

The computation of X^2 test statistics data obtained for testing the for Hypothesis are Tabulated in Table-6 as follows:

Table-6 Number of students in awareness levels From 3 categories

Type of Institution	Awareness Levels				Total
	Well aware	Fairly aware	Partly aware	Poorly aware	
Public University	06 (3.5)	09 (7.5)	07 (9.4)	00 (1.6)	22
Autonomous	09 (11.3)	08 (24.2)	40 (30.2)	14 (5.3)	71
Private Unaided	15 (15.2)	47 (32.3)	33 (40.4)	00 (7.0)	95
Total	30	64	80	14	188

Figures in parenthesis are expected counts/frequencies

Chi-Square Tests (Table 6)

Pearson Chi-Square Value = 48.214

Asymptotic significance = 0.000*, * Significance at 5 %

Interpretation:

As observed from table 6, the chi-square value of 48.214 and a p-value of 0.000 ($0.000 < 0.05$) indicating that the null hypothesis of no association between the type of institution and level awareness is rejected statistically at 5% level of significance. In other words, there is evidence (statistically) that there is an association between type of institution and level of awareness. In other words, the level of awareness among students definitely depends on the kind of institution the students are enrolled.

Conclusions

1. The Awareness depends on the type of Institutions and thus **IISc**; MBA Research and PGDM Students show highest percentage of 43% and 20% respectively in well aware level compared to other Institutions. The Overall awareness results of the students in the present investigation reveals 16% in Well aware level and 34% in Fairly aware level with 43% in partly aware level and Poorly aware level being only 7%, which is a quite positive result.
2. Higher level of awareness can be achieved if students are little more motivated to focus on Green marketing innovations via clean technologies during their course work. With higher level of awareness their efficiency to practice Green Marketing innovations via Clean Technology will become more effective during their carrier as Management Professionals. They should be able to contribute to environmental economical sustainability practices to keep healthier environment by increasing Environmental awareness and commitments on the issues of Sustainability.
3. Today Organizations Understand the Importance of Green Human Resource Management GHRM Practices. It is evolving rapidly as many see it as a necessity to today's Context of Global Warming and Climate Change. Reining the effects of a changing Climate before they become truly catastrophic will require monumental, collective effort. But exactly what that effort will entail is still a matter of Debate. Many different groups and Organizations have proposed Strategies for combating Climate Change by reducing the amount of Carbon dioxide in our atmosphere, and it is both Difficult and Crucial to determine what is best.
4. Business Management Post graduates should be well aware of Green Marketing and Innovations via Clean technology and Green Human Resource management GHRM polices to save the Planet Earth from Global warming and combat CLIMATE CHANGE.

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