A Study of Green Marketing Practices Adopted by Indian Telecom Service Providers

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Abstract
In recent years, collective voices around the world to protect the ‘Planet Earth’ have become louder. The issues like depletion of natural resources, increasing environmental pollution and level of greenhouse gases, deforestation in tropical areas, hole in ozone layer and global warming have attracted the attention of every government, business houses, non-government organizations and individuals. The concern about the environment has invited green movement worldwide. This green movement has necessitated green marketing practices, which aim at those business practices those do not adversely affect the environment.

The present paper investigates the driving forces behind green marketing and the green marketing practices followed by the Indian telecom service providers. The study has brought out that the main approaches used by the Indian Telecom operators are Green Network, Green sites, Green IT, Green Data Centers & Waste Management.

Introduction
Green Marketing is all goods and services designed to generate and facilitate any exchange intended to satisfy human needs and expectations causing minimum detrimental impact to environment Green Marketing is of great importance as there are limited resources to satisfy unlimited demands of humans. Moreover producers are facing great competitive environment due to increasing demand of green products and due to government pressure. These were some external reasons of going green. Internal reasons include cost and profit issues of a firm and also nowadays firms consider going green as their social responsibility.

Green Telecom
Growing telecommunications infrastructure requires increasing amount of electricity to power it. Part of the electricity comes from the grid and remaining through burning of fossil fuel like diesel. Both of these sources contribute to emission of greenhouse gases (GHG) with the attendant negative environmental effects. Reduction of the GHG produced or caused to be produced by the telecom sector is referred to as greening of telecom. Green telecom has many facets. It can be classified broadly in terms of greening of telecom networks, green telecom equipment manufacture, environment friendly design of telecom buildings and safe telecom waste disposal. These aspects are briefly described below:

• Green Telecom Networks: In telecom networks greening would refer to minimizing consumption of energy through use of energy efficient technology, using renewable energy sources and eco-friendly consumables.

• Green Manufacturing: The greening process would involve using eco-friendly components, energy efficient manufacturing equipment, electronic and mechanical waste recycling and disposal, reduction in use of hazardous substances like chromium, lead and mercury and reduction of harmful radio emission.
• Design of green central office buildings: optimization of energy power consumption and thermal emission, minimization of greenhouse gas emission

• Waste disposal: disposal of mobile phones, network equipment etc., in an environment-friendly manner so that any toxic material used during production does not get channelized into the atmosphere or underground water.

**Green Marketing Practices Adopted by Indian Telecom operators:**
Environmental sustainability plays vital role to ensure long term survival and well-being. The choices it makes and the actions it takes today impact the future. Going beyond the conventional, Indian telecom operators has taken conscious steps to manifest its commitment towards a sustainable tomorrow.

**LEED Buildings:**
Leadership in Energy and Environmental Design (LEED) is a certification program for the design, construction, operation and maintenance of high performance green buildings. LEED offers third party validation of a building project’s green features and corroborates that the building is operating precisely the way it was designed to.

In order to receive LEED certification, building projects need to fulfil certain prerequisites and earn points to achieve different levels of certification.

Some of the initiatives employed in these buildings have been:
• Occupancy sensor operated LED lighting which consumes 50% less power
• Low emission glass façade to prevent heat transmission and reduce the heat load of building
• Day light sensors to take maximum benefit of sunlight
• In house Reverse Osmosis (RO) filtration plant
• Sensor operated water faucets to optimise water usage
• Rain water harvesting to maintain ground water.

**Green Network**
Network forms backbone of India’s telecom operations. In order to provide seamless connectivity, it requires consistent energy feed, to run the large network continuously. This task is made more difficult with an unreliable supply of electric power across vast areas of the country. Vodafone India, in its own way, has initiated and implemented several steps to make its network energy efficient and reduce its overall carbon footprint.

**Green Sites**
Deployment of innovative solutions, latest battery technology and close monitoring of sites has led to complete diesel free operations at these sites making the cities greener and cleaner. Companies continue to take definitive steps to reduce its energy footprint. Given that the majority of these base stations are located in regions where availability of grid electricity is unreliable, Diesel Generators (DG) is commonly used for round-the-clock running of the network. The deployment of energy efficient and renewable energy technologies helps the company manage fuel consumption and reduce its diesel consumption.

**Green IT**
Indian telecom operators has made conscious efforts to make its operations greener and more efficient with the adoption of sustainable practices and new technologies as they evolve even as it intensified its efforts to reduce and suitably manage the carbon footprint created.
Green Data Centres
Increasing needs for storing information, computing and analysis has led to capacities of existing data centres being expanded and new ones being set-up. In addition to the power consumed by the servers and other IT equipment that are housed in there, these centres require consistent ambient conditions of temperature, humidity, dust free environment etc. to be maintained 24x7. Indian telecom operators worked with its suppliers and partners to deploy energy efficient cooling systems that use recycled water instead of only air conditioners to maintain the desired weather conditions. This has resulted in reduction of the overall peak demand for electric power and reduced Greenhouse Gases (GHG) emissions.

Waste Management
Waste management ensures adequate and appropriate disposal of all types of waste. Initiated in FY 2011-12, it has enabled telecom operators to establish a uniform and holistic approach towards waste management, in compliance with local laws, regulations and in accordance with best practices. Based on three “R’s” – Reduce, Reuse and Recycle, this endeavour raises awareness about waste Management amongst employees and communities while defining an end-to-end management process of wet waste, paper and plastic waste.

Objectives:
The key objectives of the study are
1) To study green marketing practices adopted by Indian Telecom service providers
2) To study factors contributing towards adoption of green marketing practices by Indian telecom service providers.

Research Methodology
The research design is descriptive study which was conducted in Maharashtra & Goa telecom circle. It was a census survey as it focused on licensed the telecom service providers. There are ten companies that were actively providing GSM telecom services. These are Bharti Airtel, Vodafone Cellular Ltd., Idea Cellular Ltd., Reliance Telecommunications, BSNL, Aircel, Tata Docomo, MTS, Videocon and MTNL.

Data Collection
- Primary Data
Primary data was collected using a semi structured questionnaire which was distributed to the respondents. The respondents were drawn from midlevel management. The questionnaire had three parts; part one gave background information of the company; part two contained the green marketing practices while part three contained the factors contributing towards adoption of green marketing practices. The questionnaire was made using Likert scale.

- Secondary Data
Secondary data was collected from both internal & external sources. Internal secondary data was collected from annual reports, sustainability reports & company websites. External secondary data was collected from Published books, Articles, Newspapers, Magazines, Research papers & Journals.

Statistical Techniques for Data Analysis
Descriptive statistics was used to analyze the data. This involved use of factor analysis in the SPSS 16 module. Factor analysis was used to summarize the large number of variables into fewer numbers. The standard deviation and mean scores were used to show the distribution of the findings. These results were used to validate the objectives of the study.
**Scope of the Study**
The main focus of this research was to study the green marketing practices adopted by Indian telecom service providers. The research was conducted on ten major telecom service providers in Maharashtra & Goa (M&G) circle. The scope of the project is limited to M&G circle, as the research has been basically carried out on the telecom service providers in M&G circle only. Though the sample has been taken from different telecom service providers but doesn’t represent the complete Indian scenario. Recommendations were made on adoption of new green marketing practices in the most efficient way.

**Findings of the Study**
1) Demographic profile of respondents: all respondents were midlevel management in their respective companies, one respondent was targeted in each companies.
2) Respondent were asked about awareness green marketing practices adopted by their companies, 90% said yes they are completely aware & 10% somewhat aware.
3) **Factor Analysis**
The next section outlined various green marketing practices. These variables listed under green marketing practices were analyzed through factor analysis & Eigen values used to summarize the green marketing practices employed by the companies surveyed.

**Factor Loading of Variables**

<table>
<thead>
<tr>
<th>Component</th>
<th>Factor</th>
<th>Reliability Coefficient</th>
<th>Eigen Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Participate in environmental clean-ups</td>
<td>0.713</td>
<td>1.934</td>
</tr>
<tr>
<td>F2</td>
<td>Use of locally manufactured products to reduce carbon emissions associated with shipping in similar goods from abroad</td>
<td>0.85</td>
<td>1.884</td>
</tr>
<tr>
<td>F3</td>
<td>Encourage staff to switch off lights not in use by posting reminders at the power switches</td>
<td>0.885</td>
<td>1.803</td>
</tr>
<tr>
<td>F4</td>
<td>Encourage customers to use electronic top-ups or virtual air time</td>
<td>0.785</td>
<td>1.71</td>
</tr>
<tr>
<td>F5</td>
<td>Endeavoring to source for supplies from environmentally conscious suppliers</td>
<td>0.884</td>
<td>1.623</td>
</tr>
<tr>
<td>F6</td>
<td>Use of office furniture made of recycled wood products like Medium Density Fiberboard(MDF)</td>
<td>0.725</td>
<td>1.598</td>
</tr>
<tr>
<td>F7</td>
<td>Use of natural lights during the day to save on electricity</td>
<td>0.694</td>
<td>1.521</td>
</tr>
<tr>
<td>F8</td>
<td>Use of biodegradable paper for making scratch cards</td>
<td>0.801</td>
<td>1.455</td>
</tr>
<tr>
<td>F9</td>
<td>Open up windows during the day to let in fresh air as opposed to using air conditioning system in the office</td>
<td>0.712</td>
<td>1.381</td>
</tr>
<tr>
<td>F10</td>
<td>Consider uses of various forms of energy in various projects like wind energy, solar energy and others</td>
<td>0.72</td>
<td>1.315</td>
</tr>
<tr>
<td>F11</td>
<td>Printing internal correspondence in back to back format</td>
<td>0.8407</td>
<td>1.26</td>
</tr>
</tbody>
</table>
The reliability in the factors was achieved through calculation of Cronbach Alpha coefficient; it explains to what extent the variable in the study are explained by the factors. From above table it is evident that Factor one explains variables by 71.3% with the high Eigen Value of 1.934 meaning that participation in environmental clean-ups is the most widely adopted green marketing practice by the telecom service providers. The rank of each factor reduces with the reduction in the level of Eigen Value.

4) Descriptive Statistics – Green Marketing Practices

<table>
<thead>
<tr>
<th>Factors</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of biodegradable paper for making scratch cards</td>
<td>F8</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Printing internal correspondence in back to back format to save paper</td>
<td>F11</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>Encourage customers to use electronic top-up or virtual air time</td>
<td>F4</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>Participate on environmental clean-ups</td>
<td>F1</td>
<td>4</td>
<td>4.25</td>
</tr>
<tr>
<td>Open up windows during the day to let in fresh air as opposed to using air conditioning system in the offices</td>
<td>F9</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Use of office furniture made of recycled wood products like Medium Density Fiberboard (MDF)</td>
<td>F6</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Use of natural lights during the day to save on electricity</td>
<td>F7</td>
<td>4</td>
<td>3.5</td>
</tr>
<tr>
<td>Use of locally manufactured products to reduce carbon emissions associated with shipping from abroad</td>
<td>F2</td>
<td>4</td>
<td>3.5</td>
</tr>
<tr>
<td>Consider use of alternative source of energy in various projects like wind energy, solar energy and others</td>
<td>F10</td>
<td>4</td>
<td>3.25</td>
</tr>
<tr>
<td>Endeavoring to source for suppliers from environmentally conscious suppliers</td>
<td>F5</td>
<td>4</td>
<td>2.25</td>
</tr>
<tr>
<td>Encourage staff to switch off lights not in use by posting reminders at power switches</td>
<td>F3</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td>Overall Mean Score</td>
<td></td>
<td></td>
<td><strong>3.66</strong></td>
</tr>
</tbody>
</table>

Above table shows that the overall mean score of the extent to which mobile phone internet providers practice green marketing is 3.66, meaning that most firms practice green marketing to a larger extent. The use of biodegradable paper for making scratch cards had a mean score of 5 meaning that it is practiced by the firms to a very large extent while encouraging staff to switch of lights not in use by posting reminders at power switches is practiced to a very small extent with a mean score of 1.5. The standard deviation gave the deviations of various responses from the mean; in the case of considering use of alternative source of energy in various projects like wind energy, solar energy and others, there was divergent opinion as shown by Std. 2.062 since respondents gave non consistent response.

5) Descriptive Statistics – Factors Contributing Towards Adoption of Green Marketing

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate social responsibility-giving back to the community that you serve</td>
<td>4</td>
<td>5.00</td>
</tr>
<tr>
<td>Having concern for the environment</td>
<td>4</td>
<td>5.00</td>
</tr>
<tr>
<td>Adhering to government policy requirements</td>
<td>4</td>
<td>5.00</td>
</tr>
<tr>
<td>Competition for scarce resources</td>
<td>4</td>
<td>5.00</td>
</tr>
<tr>
<td>Personal satisfaction for contributing towards a sustainable environment</td>
<td>4</td>
<td>5.00</td>
</tr>
<tr>
<td>Having better and superior products that ensure repeat business from customers</td>
<td>4</td>
<td>5.00</td>
</tr>
<tr>
<td>Increasing the firms market share</td>
<td>4</td>
<td>5.00</td>
</tr>
<tr>
<td>Having a competitive advantage in the market</td>
<td>4</td>
<td>5.00</td>
</tr>
<tr>
<td>Enhanced corporate image that lures investors</td>
<td>4</td>
<td>5.00</td>
</tr>
<tr>
<td>Posting higher returns on investment</td>
<td>4</td>
<td>5.00</td>
</tr>
<tr>
<td>Producer responsibility-every firm is held accountable for their products’ impact on the environment</td>
<td>4</td>
<td>4.50</td>
</tr>
<tr>
<td>Serving green conscious consumers</td>
<td>4</td>
<td>4.25</td>
</tr>
<tr>
<td>Complying with environmental pressure groups</td>
<td>4</td>
<td>4.25</td>
</tr>
<tr>
<td><strong>Overall Mean Score</strong></td>
<td></td>
<td><strong>4.85</strong></td>
</tr>
</tbody>
</table>

The overall mean score as shown in Table is 4.85 meaning that all the factors are very important when it comes to contribution in the decision that a firm makes on whether to adopt green marketing or not. Corporate social responsibility was taken to be the most important factor in contributing to the adoption of green marketing while complying with environmental pressure groups was the least contributing factor. The Standard deviation for all the factors was less than 1 meaning that, the responses were almost similar to each other. All the factors listed were deemed to be of equal importance to the companies surveyed in contributing to their decision to adopt green marketing.

**Green Marketing Initiatives by Indian Telecom Operators**

**E-waste management and sale of electronic scrap:** Scrap is tracked and pooled centrally. It is then stored in cordoned areas and sold to licensed recyclers. Disposal of hazardous material like lead acid batteries is a crucial element of waste management and is managed through a predefined process to licensed recyclers.

**Battery Cell Revival:** Dead cells generated in the network operations are revived to give a life extension of 6-12 months. Besides being environmental friendly, this initiative also meets the local regulatory compliance.

**Change in Bill Envelope:** In order to reduce the consumption of paper, the size of the bill envelope has been reduced from A4 size to A5 size, half the standard size.

**E-bill promotion:** Phone bills are distributed through electronic means like e-mailers, softcopies in CDs and likewise to reduce the use of paper.
Change in Recharge Coupon size: With an objective to reduce the consumption of paper, the size of recharge coupons has been reduced by five times (approximately).

Change in SIM size: To reduce the consumption of PVC, telecom operators now use the quarter card. ¼ the size of the standard SIM card, these are made of recyclable grade PVC.

Reducing environmental impact: Operating in the area of environmental responsibility, Telecom India not merely complies with regulations but also works responsibly towards reducing its environmental impact. The accomplishments of telecom operators to date have significantly reduced the environmental impacts of its operations and products.

Green Bill: Every 3,000 (considering normal copier paper GSM as approximately 75 GSM and GSM of envelope paper as approximately 120 GSM) sheets of paper cost us a tree. Mindful of this excess, telecom operators have gone a step ahead of the static e-bill. Its Green Bill initiative allows customers to access their bill through various links, make payments, register on direct debit and even sort bills. Promotion of online payment modes has witnessed an increase in digital payments. The Green Bill penetration has also increased thereby saving millions sheets of paper.

Tree Plantation: To promote tree plantation in the years to come, India’s telecom Operators have joined hands with NGO’s for Tree plantation Campaigns. Millions of trees will be planted over the years. This initiative has led to the utilisation of waste land by farmers; that was earlier only used for cattle grazing.

Conclusion:

From the findings, it was evident that all ten mobile phone service providers practice green marketing. Various factors were found to have driven the companies into adopting green marketing practices. The findings further indicated that all the factors identified were deemed important in making the decision to adopt green marketing practices by each company. The green marketing practices adopted by the mobile phone service providers to a very large extent were: use of biodegradable paper for making scratch cards; printing internal correspondence in back to back format to save paper; encouraging customers to use electronic top-up or virtual air time and participating in environmental clean-ups. Opening up windows during the day to let in fresh air as opposed to using air conditioning systems in the offices; use of office furniture made of recycled wood products like Medium Density Fiberboard (MDF); use of natural lights during the day to save on electricity; use of locally manufactured products to reduce carbon emissions associated with shipping from abroad was practiced to a large extent. Use of alternative sources of energy in various projects like wind and solar energy; endeavoring to source for supplies from environmentally conscious suppliers and encouraging staff to switch off lights not in use by posting reminders at power switches was practiced to a very small extent.

As the country’s telecom penetration has grown, operators' demand for energy usage has also grown immensely. The undependable electric power grid in the country has led telecom tower companies into using diesel generators and other source of power to guarantee network continuity. This has further raised several environmental concerns as India's 420,000 plus telecom towers currently consume over three billion liters of diesel and emit more than six million tons of CO2 into the atmosphere each year. This is not only causing environmental concerns but also raising the costs. Naturally, telecom companies are looking for alternative sources of energy. Several telecom experts have also raised questions over the erratic supply of electricity and demanded the electricity boards to be accountable as well. The government and the experts have started advocating the usage of renewable solutions to power the country’s telecom towers. This has compelled DoT to come up with a directive that says that 75 percent of rural towers and 33 percent of urban towers need to be powered by hybrid energy by the year 2020.
Overall to make Green Telecom, a balanced and joint approach is required from both government and telecom operators. All the policies and directives need to be framed, considering the tangible market situation.

**Recommendations:**

- Encourage innovation in equipment and backup technology for reduction in Power consumption at Network Sites, technological innovations like energy efficient BTS, longer backup life batteries.
- Increase spectrum availability, optimal amount of spectrum per operator can result in reducing the requirement for the number of sites and their energy consumption.
- Government can help speed up the process by providing fiscal incentives to companies which are undertaking replacement of legacy BTSs.
- Encourage renewable energy service companies & deployment of solutions based on renewable energy sources.
- Support and monitor non-Solar Renewable Energy Options Drive greater EB availability for telecom sector Government to formalize and finalize the carbon credits policy so the industry can use this to augment its investments in alternate energy sources.
- All telecom companies must give much greater priority to a transparent and more accountable business model and disclose their carbon emission throughout the industry.
- To preserve its own economic interest and make long term investment plans for the co-development of renewable energy source for its telecom tower infrastructure and lead the low carbon race.

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