

GREEN ELECTRONIC PRODUCT: A THEMATIC REVIEW AND FUTURE RESEARCH AGENDA

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ABSTRACT

With an upsurge in the consciousness regarding protection of environment and environmental changes, industries have started research and develop products which contemplate the need for environmental conservation as well as provide them to sustain their market share and competitive edge. Currently nations and citizens are extra concerned about environmental protection and hence a new arrangement has come up as Green Business. Many companies use Green marketing as a tool. The eco-friendly process uses less resources which results in reduced environmental impacts, provide customer value and therefore are of great importance. The objective of this paper is to contribute to the comprehension in the area of green electronic product in the domain of green marketing. This study reviews the green marketing and green electronic products. There are many researches related to green marketing but only few have focused on green electronic products in the context of green marketing.

Key words: Green marketing, Green electronic products, Environment protection.

INTRODUCTION

As per American Marketing Association green marketing products preassumed to be environmentally safe products, this concept / construct focuses on process, modification, packaging and branding.

Green marketing alludes to the concept of holistic marketing where the production, consumption and divestiture of products and services is done in such a way that it causes minimum harm to the environment with increase consciousness about the repercussions of global warming, damaging effect of

solid and non- biodegradable waste etc.,(Bhattacharjee & Mukherjee 2015). Green marketing integrates a wide variety of activity particularly modification in product process, alteration in product, amendment in packaging and changed advertisement. In spite of this, to expound on Green marketing is difficult. It is a general belief that green marketing is only about commercialising, fostering and using the products having environmental characteristics. Phraseologies like Environmentally Friendly, Recyclable, Ozone Friendly, Phosphate Free, Refillable are something which the consumers usually relate it with green marketing. In actual, green marketing has a wider vision, it is applicable to industrial goods, consumer products and services. For instance, worldwide many tourism businesses coming out as eco-friendly, like many resorts are promoting themselves as ecotourists, wherein they are offering specialized facilities in such a way that cause minimum harm to the environment. (Ingram and Durst 1989, Troumbis 1991)

With different terminologies the meaning of green marketing has reconstructed several times. From 1980s the word green marketing got a face, consciousness unfolded regarding impending holocaust and environment perilous. In this connection, pressure started exerting on businesses to reduce the wastage and pollution in the process of production of goods and services by environmentalists. The businesses have also responded with the same consciousness in incorporating these ecological considerations in their business activities. (Grant, 2007)

Businesses around the world are putting efforts to go green, they endeavour for minimizing the consequences of their product and services on the different parameters of environment and climate. Not only a healthy environment but also top line progress potential and bottom-line incentives are provided by green marketing. It seems that the setting up an eco-friendly production process may include a start-up cost but it proves to be beneficial in the long run. For instance, setting up solar energy is an expenditure done in the form of investment which will impact the energy cost saving for future. It is allowing your business to approach new markets with competitive advantage and significantly higher profit. The process of green marketing includes internal and external Ps. On incorporating these internal and external Ps, the result will show up through four Ss. The internal seven Ps includes Politicians, Paying customers, Predictions, Providers, Partners, Pressure groups and Problems. The external seven Ps includes Policies, Products, Providing information, Promotion, Place, Processes and Price. The resultant four Ss of green successes are Safety – of products,

Sustainability – of its activities, Satisfaction – of stakeholder needs and Social acceptability –of the company.

The green product concept in various companies is broad concept and different aspects in corporate social responsiveness, conservation, ecological, equality, fair trade, non-profit, new-consumerism, political and sustainability. This happen many times in consumer and other behavior confusion on the meaning of ‘green’ and not giving clear directions to companies willing to become green still Some people have confusion on what constitutes an environmentally friendly product (Baumann et al., 2002, Berchicci and Bodewes, 2005, Kleiner, 1991; McDonagh and Prothero, 1996; Miller and Szekely, 1995; Ottman, 1997; Peattie, 1995; Roy et al., 1996; Silverstein, 1993)

GREEN ELECTRONIC

The green marketing of products and services have set foot in every market segment considering manufacturing machines, medicines, automobiles, electronics, cosmetics, construction, paints and many more. Environment friendly packaging and eco marks on the packages are also being done along with the production of eco-friendly products. As a course of action taken by the government and companies to manufacture green products which gradually reduced the impact of pollutants on the environment.

The consumer electronic industry has observed unusual expansion in the last few years. This development results in the highest level of expansion of electronics in the market. The industry for consumer electronics is showing the inception of new opportunities. The consequences of intersections in technologies give rise to increased demand for consumer electronics.

Different groups of electronic appliances used by private customers are known as Consumer electronics, by and large. There many segments in which this industry is divided like a) Personal Care: Hair Dryers, shavers, electric toothbrushes; b) Traditional“ Consumer Electronics: audio and video equipment; c) White Goods: Household /Domestic Appliances such as washing machines, irons, vacuum cleaners, grinders, etc.; d) Computing Devices: Computers, Calculators, Laptops. (Vijaylakshmi& Srinivasan 2015)

Around the world, the demand for new technology products have driven the electronic industry very effectively and every day new products are being launched in this consumer electronics sector. People are adding new equipment, and retiring the obsolete. Consumers are still not much aware about the significance of using green electronic products to meet their demands.

Many consumers are not manifested to the benefits of using products which are eco-friendly. Also, many consumers are deprived of using the green electronic products because of the high prices as compared to the non-green electronic products. (Hasan 2013).

Environment friendly devices speaks for new standards of reprocessing of electronic nanodevices. Governments from different countries, different communities or international research programs say green program 2030 and Horizon 2020 are some examples which have made great coherent efforts to give new approaches in society and economy. The cornerstone for forthcoming green electronic industry is envisaged by sustained electronics which insinuate technological flow of feedback, to recycling of waste to 99.99% again to reuse as raw material.

In this ambit, recent awareness needs to be equated for a green factory sight: materials reconversion, green energy convertors, lifecycle of electronic technologies, mobile phones eco-rating, recycling electronics, electronic wastes reconversion new technologies, materials reconversion and list goes on.

LITERATURE REVIEW

The conventional electronic goods industry can reallocate their goals to abide to green electronics targets: low voltage-low size, biomaterials in electronics, long life products, solar cells development, bio-medical-eco-electronics, low power consumption, electronics applied in ecology, low quantities of raw materials and resources, sensors network, solar cells development, hysteretic materials with memory property for smart electronics, integrated sensors and biosensors. (Bondarciuc, Ravariu, Bondarciuc, Alecu. 2015)

Manufacturing Green product is now a days need of maximum companies, reason behind this is competitiveness, ecological, legitimacy and responsibility. As the outcome number of companies has enclasp green product or environmental sustainability into their strategies, for this reason progress and engragement of green product is becoming significant (Bansal and Roth, 2000; González-Benito, 2006; Murillo-Luna et al., 2008; Shrivastava and Hart, 1995; Unruh and Ettenson, 2010). The Burgeoning of green products can push companies to accomplish their competitive advantage via strategic tactics to sustainable environment to take new action and underlining the opportunity to gain competitive advantage by creating green products (Porter and Reinhardt 2007). Number of organizations in the world and India are having a little trouble with green products and it is supposed to rapidly grow in the next few years. In the

world outline at the end of 2000 only 50 companies acquired eco labels to their product which grew by more than 1000 at the beginning of 2010.

Some researchers have tried to demarcate 'green product' are those products which are environmental and societal performance, in production, use and disposal, are significantly improved and improving in comparison to conventional or competitive products offerings in companies. Peattie (1995, p. 181). It was observed in many organizations, no consumer product has a zero impact on the environment, in business, the terms 'green products' or 'environmental product' are used commonly to describe those that strive to protect or enhance the natural environment by conserving energy and/or resources and reducing or eliminating use of toxic agents, pollution, and waste. Ottman et al. (2006, p. 24) There are several characterizations, which are interchangeably applied and are mostly confusing and deceptive. Just because a product or service is sold as green, they are considered green and not because they actually are. Green marketing is much more than marketing a product in a greener way or marketing a referred green product. The product must be green in both the manufacturing method and the product. A proper analysis is required for understanding green marketing, along with economic integrity. (Kangis p. 1992). Sarkar (2012) referred green marketing as a comprehensive marketing concept, it is not only limited to eco-friendly production process and disposal of products, and method of marketing but also includes the awareness regarding dangerous impact of harmful non-biodegradable waste, increasing global warming etc., amongst producers, marketers and the consumers as they all are now more tender to the changes taking place in the environment and now they are switching to green products and services. This switch might seem to be costlier in the short run but it is going to be profitable in the longer run. Sustainable marketing and environmental marketing are some other names of green marketing, it is an effort of an organisation at designing, pricing, promoting and product distribution in such a way which is less detrimental to the environment. Pride and Ferrell (1993). Defining green consumers as someone who is less likely to buy a product which will have adverse impact on environment, which cause health danger to consumer, damage environment in the process of production or disposal, use excessive amount of energy, produce waste, use material which is menacing to flora or fauna or affect mankind. [Elkington (1994: 93), Sarkar (2012)].

Numerous green product taxonomies have been developed by different classification purpose, product nomenclature can be based on level of

environmental impacts, types of environment improvement strategies, environmental features, product life cycle phase (material, process, usage and disposal) (Rombouts, 1998; Hanssen, 1999; Park et al., 1999; Rose et al., 1999; Kaebnick and Soriano, 2000).

OBJECTIVE BASED ANALYSIS

The objective of this paper is to contribute to the comprehension in the area of green electronic product in the domain of green marketing. According to Simon (1992) discuss about the principle characteristics of green products are based on nature of product context- with elaboration it was found from literature, Non pollution manufacturing or non -toxic material, condensed raw material, elevated recycled content, less energy or electricity consumption during production/use/disposal, minimal or environment safe packaging or reuse where possible, long useful life, post -consumer collection system and remaking capability are the important tools of green electronic products. Schmidhiny (1992) Eradicate or downgrade unsafe materials, environmentally friendly ingredients or process, reduce volume, restructuring of product for efficient use, enhance life span of green product, eliminate inefficient packing, remaking the product, recyclability. Robert (1995) highlighted the reduction of the use of unrenewable materials and circumvent the consumption of toxic materials. Shrivastava and Hart (1995) lowest environmental effect during consumption, simply composted, restated or recycled. Roy et al. (1996) reduce global environmental issues, energy useful, simply repairable, reused, recycled, minimal waste, minimal use of resources, environmentally safe packaging, making product from profuse resources, reduce logistics requirement, environmental details on product, no harm to human health, overall satisfaction to human need. Luttropp and Lagerstedt (2006) no toxic substances, minimal energy and resource consumption during production, foster repair and upgrading product, recycling. Ljungberg (2007) Reduce the waste material, use proper energy for reducing emissions, intensify the volume of recyclable materials, reverse logistics, minimize the environmental impact.

To fulfill the research objective apart from literature review top 9 electronic companies in India have been shortlisted for evaluated green contribution in electronic production. The top 9 companies are Samsung, LG, Sony, IFB Limited, Crompton Greaves, Voltas, Philips, Panasonic, and Whirlpool India. We found different companies which are manufacturing products keeping these environmental green factors in mind. Voltas is committed to use Metal

components made of MS, copper, aluminium etc used in our products can be recycled and reused helping us save the environment. Paper is the main component used in packaging. Paper can be recycled. It is then used as recycled paper or in products made of paper. The company is pledged to produce green products. E-waste can be considered as a resource that contains useful material of economic benefit for recovery of plastics, iron, glass, aluminum, copper and precious metals such as silver, gold, platinum, and palladium and lead, cadmium, mercury etc.

In Voltas Plastic materials are used for structural components such as the case and cover. The plastic materials that have been collected are recycled as energy resources after going through a heat recovery process. Alternatively, they can be used as a form of recycled plastic once they have been broken down and processed. Recycled plastic can be used to produce products such as traffic cones, plastic fencing, and car bumpers. Taking another company in consideration.

Crompton Greaves Consumer Electricals Ltd., Crompton has a strong record of driving year-over-year continuous improvement and delivering industry-leading EHS performance metrics. In order to meet today's climate targets, statutory requirements and cost-saving methods, the current lighting market is experiencing a technology revolution that affects all segments. They believe that 'We must keep our workers safe on the job while making sure that we peacefully coexist with communities with which we indulge in business. This can be done by complying with environmental laws and regulations, addressing historical contamination issues cooperatively and completely, as well as incorporating this vision into our process and products'. Maintaining high environment, health and safety standards are more than simply a good business practice; it is a fundamental responsibility to our employees, customers, contractors and the environment we all share.

Likewise, IFB Industries Ltd also believes that it is our responsibility to ensure that we do business in such a manner that it enriches our environment and planet. That's why we make sure that we deliver innovative and eco-friendly products to our consumers. We are committed to product stewardship through the life cycle of our electronics, and ensure compliance with E-waste rules in India.

Philips India Ltd, Samsung and LG claim that they have adopted a comprehensive set of key commitments across all the Environmental, Social and Corporate Governance (ESG) dimensions that guide the execution of our company strategy. At Philips, they recognize the threat of climate change and the

effects it can have on human health. That's why, at the COP21 Climate Conference in Paris in 2015, we committed to becoming 100% carbon-neutral in our operations and sourcing all our electricity usage from 100% renewable sources by 2020. Philips India Ltd is also committed to sourcing over 75% of our total energy consumption from renewable sources by 2025, and to reducing CO₂e emissions in our entire value chain in line with a 1.5 °C global warming scenario. LGE's green vision is to provide values that enhance the quality of life for its consumers and create a healthier and cleaner environment. LGE's green management activities comprise: the decrease of greenhouse gas emissions throughout the overall product lifecycle, the "Green Program Plus" which encourages shared growth with its suppliers and green businesses to construct a future development engine. Samsung claims to reduce greenhouse gasses in product usage, collection of waste products and recycling. For making everyday life more convenient and eco-friendlier, Panasonic offers electronics using sensors, also the company has launched many products like vacuum cleaner, refrigerator, washer/dryer and rice cooker which includes recycled resin and vacuum insulation made from recycled glass. Sony is using its technology in an innovative way to extricate environmental problems. The company has become the new major manufacturer to join O2's expedition to liberate the market of redundant mobile phone chargers.

Panasonic is also aware that they have accountability towards the environment and they respect and preserve the fragile nature of the environment. they claim that they endeavor to fulfill the obligation to preserve and nurture the planet's ecology. On the other hand, Whirlpool is also committed to take action to address climate change. By improving efficiency throughout operations, driving product efficiency and reducing GHG emission they are making their contribution in resolving the challenges of the environment.

CONCLUSION

There is still much to be done to uncover green marketing as it has not achieved its zenith impulse is needed by the electronic industries to reconstruct its strategies for marketing to greener marketing strategies. Green marketing is important in conserving our nature for coming generations. In spite of it being costly and also it requires a lot of perseverance, despite this many companies have taken this initiative to go green. The problem related to the environment is increasing day by day not only in India but also in the whole world. Therefore it becomes very important to apply green marketing in business practices. Industries must create

knowledge and consciousness in society and consumers about green marketing and its benefits. Green marketing furthermore acts as a rostrum to allure new customers. The effect of green marketing is found positive in consumers and they are more concerned for the environment. Now it becomes the obligation for marketers to be aware of the challenges occurring and prepare suitable strategies to defeat the challenges. In India the electronic sector makes a significant contribution towards the green marketing and there is a vast potential for eco-friendly products in the electronics sector, provided the company understands the buying behavior of the consumers and adopts new innovative technologies that have less harmful impact on the environment. Green marketing should not neglect the economic aspect of marketing. Marketers need to understand the implications of green marketing. If Marketers think that customers are not concerned about environmental issues or will not pay a premium for products that are more eco-responsible, think again. Marketers must find an opportunity to enhance the product's performance and strengthen the customer's loyalty and command a higher price. Green marketing is still in its infancy and a lot of research is to be done on green marketing to fully explore its potential.

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