

Green Marketing: Role of Demographic Variables on Awareness and Purchase of FRP Products

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Abstract— The Conception of the present exploratory and empirical research paper is based on the growth of interest on “Green marketing” particularly “Green buildings” and consequently to analyse the application of the concept of green products. The paper attempts to analyse the scope of application of various FRP (Fibreglass reinforced plastics) products as green products in the development of construction of structure and infrastructure.

The research methodology was framed with the thought that many marketing problems can be solved by looking beyond the secondary data. The questionnaire for primary data was presented to 700 respondents out of which received back only 550. For analysis of data, 200 questionnaire of those respondents who were aware of FRP material, and were the residents of Himachal Pradesh who took part in the decision making process regarding the purchase made at the residential level, were taken. The hypothesis was framed regarding the impact of demographic variables on the awareness and purchase behavior of the consumers. After the analysis of the results the hypothesis related to demographic variables was accepted.

Index Terms — Age, Consumer Behaviour, Demographic variables, Education, Fibreglass Reinforced Plastic Products, Gender, Green Marketing, Green products, Profession.

1 INTRODUCTION

IN order to analyze the application of the concepts of green technologies leading to green marketing for the promotional role of the FRP (Fibreglass reinforced Plastic) products in developing construction of structure and infrastructure, it is essential to understand consumer behaviour and its variables. Green marketing is a marketing strategy involving an emphasis on protecting the natural environment. (Soloman, 2011, p 623,) [1] and promote healthy, reusable and ecofriendly products (Schiffman, Kaunf and kumar, [2], 2010, p.479; Dakode & Yerkari, [3], 2012, p. 414).

This resulted in initiating the first step by the scientists, to start with green revolution to protect the environment and to carry out innovative research aimed at development of globally accepted technology. The outcome of this was a need for cleaner, safer and ‘greener’ technologies. The word green applies to the impact the building has on the environment. According to CII website a green building is similar in functionality and appearance to the conventional one but the difference is in the approach. The focus is on resource conservation and increase work productivity, by influencing the outdoor as well as indoor eco- friendly environment. Green Building is a dynamic, rapidly growing and evolving field driven by confluence of rising public concerns about global climatic change, cost and availability of energy sources, and the impact of the built environment on the human health and performance.

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The growing interest in green concept made Kotlar, Kartajaya and Seiawan [4] to write “These trends are moving green buildings into mainstream markets” (2010, p. 165). They further summarized that they underscore the importance of value based companies moving towards a green commitment... Companies that promote environmental sustainability are practicing Marketing 3.0. They also vividly summarized that “... the era of Marketing 3.0 is the era where marketing practices are very much influenced by changes in consumer behaviour and attitude” (p. 21). In India too, Bhardi [5] (2012, p. 1093) quotes, “Several organizations responded to this by applying green principles to their company such as using environmental friendly raw materials, reducing usage of power.”

2 REVIEW OF LITERATURE

The growth of interest on green buildings lead to formation of LEED® (Leadership in Energy and Environmental Design) the nationally accepted benchmark for the design, construction and operation of high performance green buildings and USGBC, which are the registered trademarks of the US Green Building Council (Thapar, 2008, p.1) [6]. It (U.S. Green Building Council, 2002) [7] describes itself as “the nation’s foremost non-profit coalition of nearly 3000 companies and organizations from across the building industry promoting high performance green buildings that are environmentally responsible, profitable and healthy places to live and work.” It developed LEED® as a voluntary, consensus- based national standard to support and validate successful green building design, construction and operations. The project level after completion may be certified by LEED® as Silver, Gold or Platinum. From

its founding in 1993 to 2007, the council has grown to more than 1200 member companies and organizations, a board of portfolio of LEED® programs and services has been developed, the industry Green Build International Conferences and Expo was organized. ("A National Green Building Research Agenda", 2007) [8].

However, there has been a question mark and gap between the planning and implementation of green concept. Laroche, Bergeron and Barbaro-Forleo [9] (2001) reported that although today's ecological problems are severe, the corporations do not act responsibly towards the environment and that behaving in an ecologically favorable fashion is important and not inconvenient. From the consumer point of view, Bonini and Oppenheim [10] (2008), D'Souza, Taghian and Lamb [11] (2006) and Yam-Tang and Chan [12] (1998), results have shown that consumers' environmental concern is not reflected in their purchasing behaviour. "Environmental concern is still not a strong motive for majority of these well-educated respondents to purchase eco-friendly products" according to Anjankar [13] (2012, p.66) empirical research work.

Jethani & Uttarwar [14] (2012, p. 1376) concludes in their research study that "Green marketing should not be considered as just one more approach to marketing, but has to be pursued with much greater vigor, as it has an environmental and social dimension to it. With the threat of global warming becoming large, it is extremely important that green marketing becomes the norm rather than an exception or just a fad." Although many researchers today, Anjankar, (2012), Jose and Helena, [15] (2012), Chopra & Marriya, [16] (2012), Bhardi, (2012,) have based their research on eco-friendly products in general. Chopra & Marriya (2012, p.809) believes that, "Green marketing is still in its infancy and a lot of research is to be done on green marketing to fully explore its potential." This calls for more research work to gain knowledge into the insight of consumers. The need of an hour is initiation from educational and academic experts, government and businessmen to induce people to channel their attitudes into actions based on empirical research work.

"Adopting green construction techniques are usually beneficial compared to conventional construction" quotes (Jose and Helena, 2012, p.39). Kansal & Paliwal [17] (2012, p. 884) also talks about the same concept by writing "Sustainable business is about implementing environmentally friendly and socially responsible practices while still maintaining commercial success. First steps often include improving resource efficiency, and considering renewable resources and technologies.

In spite of acceptance of this fact and with lots of emphasis on environment many organizations and marketers are practicing "greenwashing" concept that is making inflated claims about the product's environmental benefits. Hence the deterioration of the natural environment has been a major global problem. The effect of the greenhouse gases leading to the depletion of the ozone layer (Nifadkar, and Dongre, 2012) [18] has been one of the major problems, today. They quoted clearly on the sector which is maximum responsible for it "...where the measure for indirect emissions takes into account both direct emissions and the emissions arising from the

production of inputs required to produce the inputs and so on (e.g. construction components for the case of construction and the materials required to produce those components and so on). Surprisingly, the construction sector is the highest even though the energy used for construction at the site is very small. This is because energy intensive materials such as steel, aluminum, bricks..... are used in contribution" (p. 22). This gives rise to the need of understanding the awareness, acceptance, and knowledge and purchase behaviour of new materials.

One of the ways to counter this problem is to enhance the application of new innovative eco-friendly or greener materials (Jethani & Uttarwar, 2012, p. 1374) in construction, which are technologically advanced. And, one of such materials is Reinforced Fiberglass Plastics (FRP or GRP) or composite material as it does not have an effect on the ozone layer. This is supported by reviewing the scientific literature which clearly points out ".....Fiberglass board do not deplete ozone", Wilson, [19] (2001, p.161) specifies non-ozone depleting roof insulation in an Energy, Environmental and Economic Resource Guide. In another application Master and Ela [20] (2008, p. 243) quoted, "Fibreglass Insulation..... also contains no CFCs". Thus we have selected this material for our research study.

Fiberglass Reinforced Plastic, is a polymer based technologically advanced and revolutionary material which offers many advantages over the traditional materials chief among them are- optical translucency, formability, high strength, light weight, flexibility in design parts, consolidation, high dielectric strength, dimensional stability, corrosion resistance and low tooling and maintenance costs (Thapar, 2008, p.2). Many international researchers (Finger, [21] 1972; Mc Garry, [22] 1970) in the past have been stating importance on the role of Fiberglass Reinforced materials in building systems. Even in this century, the research works (Kurkjian & Matthewson, [23], 2007; Ryvkin & Aboudi, [24], 2007; Neto & Rovere [25], 2007; Mouhmid et al, [26], 2006; & Giraldi et al [27], 2005) based on the utility of these products is on full swing in various applications.

In India, NIIR - National Institute of Industrial Research, consisting of consultants and engineers, published many books on polymers and the resin materials. The Complete Technology Book on Fibre Glass, Optical Glass and Reinforced Plastics, 2007 written by NIIR reviewed as, "Although many natural materials were used in the past by man, answering his instinctive urges to prevent heat loss from or entry into his dwellings, no material in modern technology has satisfied the all around requirements as has fiber Glass. Fiber glass, Optical glass and reinforced plastics have important applications and uses in the making of various products." Bakshi and Sir Lal, [28], Professor of Chemistry, University of Delhi (2007, p. IT-7) quotes, "..... with the advantages of polymers such as light weight, great workability, resistance to corrosion and low cost have such a vast scope of diverse applications and these are being called the materials of 21st century."

While not quite a household name it has worked its way into a seemingly endless number of applications. Hence, mar-

keting activities especially based on the consumer behaviour analysis can prove to be vital in growth and expansion of these products. History of aluminium has also revealed that in its initial years it was not successful and accepted as it was different from conventional material. It was only after marketing strategies were planned and implemented, which were based on the knowledge of the product that the product gained acceptance.

Similarly for expansion of application of FRP products in different sectors, it is important to frame well planned marketing strategies. These marketing strategies have to keep in mind the different variables on which the behavior of the consumers' is influenced. As understanding of customers is the heart of market research (Aaker et al, [29], 2011, p. 12), the empirical studies based on consumer behaviour of different regions can prove to have a vital effect. The behaviour of the consumer in turn is affected by number of variables. These variables can be categorized into demographic, psychographic, cultural, product based and market based variables etc.

Keeping this need in mind, the empirical study reflecting the behaviour of the consumers of Himachal Pradesh (Kuthiala, 2012, p. 621) [30], was conducted. As the case of almost all segmentation is demographic (Schiffman, Kaunf and Kumar, 2010, p.59) in the present study the impact of various demographic variables are studied and analyzed. They further mention that "demographic offer the most cost effective way to locate and reach the specific segment because most of the secondary data compiled about any population is based in demographic....." In addition to this he also quoted that " demographic also enables marketers to identify business opportunities..... and many consumption behaviours, attitude and media exposure patterns are directly related to demographic variables." There are many demographic variables. As it would be very confusing to study the impact of all of them, the researcher selected age, gender, education and profession for this study. Products need often vary with consumer's age, gender, education and profession (Kuthiala, 2012) [31]. Age, (Kuthiala, 2012), gender (Chopra & Marriya, 2012) Education (Anjankar, 2012. p.64) and profession have an impact in the knowledge which in turn affects the awareness level of the customers.

Anjankar (2012) research paper assesses Indian consumers' pro-environmental concerns, knowledge of environmental issues, awareness of eco-friendly products, effects of educational levels and any potential effect that these factors may have on green buying behaviour .Chopra & Marriya, (2012 p. 801) concluded that Education plays important role in determining the buying behaviour of the consumers. Further (p. 808) they stated that as the education increases the awareness also increases. Being more product specific (Kuthiala, 2012, p. 849) hypothesized that FRP is an innovative advanced technological product with different concept from conventional materials used, the impact of education and occupation would be significantly high on awareness. This hypothesis was accepted as per the results of the data collected in the research study.

For marketers who hope to achieve success in India and other emerging markets, information and buyer behaviour

and the overall business environment is vital to effective managerial decisions (Keegan and Green, 2005, p 189) [32], . Kotler et al [33], (2009, p. 80) stated three key principles for avoiding Green Marketing Myopia (Ottman et al, 2006) [34], as Customer Value Positioning, Calibration of Consumer Knowledge and Credibility of Product Claims. One of the recommendations giving by them for the first key is to promote and deliver the consumer desired value of environmental products by targeting relevant consumer market segment. Whereas in the calibration of consumer knowledge the three recommendations given by them are as follows:

1. Educate consumers with marketing message that connect environmental product attributes with the desired consumer value.
2. Frame environmental product attributes as solutions for consumer needs.
3. Create engaging and educational Internet sites about environmental products' desired consumer value.

Definitely it can be that, in all the three recommendations demographic variables of the consumers are going to have an impact on their awareness and purchase behavior of different FRP products.

Further, while explaining the third key concerning Credibility of Product claims, the following recommendations are given by them, which in turn would also be influenced by the demographic variables:

1. Employ environmental product and consumer benefit claims that are specific, meaningful, unpretentious and qualified.
2. Procure product endorsements or eco certifications from thrust worthy third parties, and educate consumers about the meaning behind the endorsements and eco certificates.
3. Encourage consumer evangelism via consumers' social and internet communication network with compelling, interesting, and/or entertaining information about environmental products.

Now the question arises whether the same principles and recommendations can be applied for the promotion of green strategy for expansion of green FRP products in various applications. Hence the following objective for the present empirical study can be expressed as below:

3 OBJECTIVES

Keeping the above principles and recommendations as a base, the following objectives are framed for the current research study.

1. To understand the impact of demographic variables especially age, profession and education on the awareness and knowledge level of FRP products.
2. To predict the future potential for the expansion of FRP products.

4 RESEARCH METHODOLOGY

“In today’s technology, driven business environment many marketing problems, can be solved by looking beyond secondary data” (Hair, Bush, and Ortinore, 2008, p. 175) [35], This thought resulted in designing a research methodology for collecting and analyzing the primary data for providing the decision makers with current real time information and observations of consumer behaviour. It consisted of the following steps:

4.1 Hypothesis

In the background of overall objective of the study and after reviewing the existing secondary data, the following hypothesis has been developed.

H Demographic variables would significantly affect the awareness and purchase behaviour of the prospective consumers of FRP products. Important demographic variables which would have a significant impact on the awareness and purchase of FRP products are age, gender, education and profession.

4.2 Sample

The universe, for the exploratory and empirical research study was the consumers and potential consumers of Himachal Pradesh, and the sample was collected from its capital, Shimla. Non probability and convenience sampling were used. Random sampling was used while selecting the data. The data from residential sample was collected for this study, from the respondents who make the decision for purchase of various products. Sample size of 200 respondents was taken for the study. Questionnaire was presented to 700 respondents randomly, out of which received back only 550 filled up questionnaires. Out of 550 respondents 200 were aware of FRP products. These respondents were people according to themselves, who took part in the decision making process regarding the purchases at their respective homes.

4.3 Data Collection

A self-framed and developed questionnaire with both closed and open ended questions was used to collect the data. The initial questions consist of demographic features of the respondents thus contributing towards demographic variables. Rest of the questions contribute to psychographic variables consisting of product properties and subsequently reflecting respondent’s knowledge leading to consumer benefits sought and thus giving valuable insight into the awareness and knowledge level of the respondents who could be the potential consumers in the future.

4.4 Data Analysis

Both descriptive and quantitative analysis of the study was

undertaken. For descriptive analysis the assessment of answers from the questionnaire were done to identify the major variables which would have a significant impact on the awareness and purchase behaviour of the potential consumers. The quantitative analysis of the data was undertaken by using both Microsoft excel and SPSS (Statistical Package of social sciences). The data was organized into an easily assimilated, tabulated, understandable form and various statistical and mathematical tools were used for analysis.

5 RESULTS

The data analyzed for this research study, consisted of 200 Questionnaires, which were filled by the respondents who were aware of FRP Material. 36.36 % of respondents were found to be aware of FRP material.

Demographic variables: 69% of respondents who are aware of the FRP material are below the age of 40 years. Only 31 % of respondents above the age of 40 are aware of FRP products. Out of which 69.6% of administrators above the age of 40 are aware of Reinforced Fibreglass plastics. The ratio of male: female in the total data is approximately 13:9 whereas in the awareness of FRP material it is just 31:9. The percentage of awareness of FRP products is much more in respondents with technical education.

After comparing the data of actual purchase made of FRP products, it is evident that the percentage of purchase made is more in the age group 40- 60 years, followed by age group above 60 years for all FRP products. Taking the individual products of FRP, the case of purchases made of FRP sheets the result is the same, whereas in the case of bathtubs, maximum purchases are made in age group between 20-40 years. The results of the study revealed that higher purchases are made by the respondents in the professional categorization of others, businessmen and administrators.

6 INTERPRETATION OF RESULTS

This study tried to unveil the area of consumer behaviour with impact of the different variables on the awareness and knowledge of Fibreglass application and properties leading to customer satisfaction and expectations, and its relationship with various parameters through structured and customized market research techniques (Sathish and Venkatramar Raju, 2012, p 115) [36].

Demographic variables: Although the number of respondents in both the age groups that is above and below forty are approximately equal but the percentage of respondents in the age group below 40 years have a much higher percentage than the other group. This is probably because FRP products are comparatively new material which is now intensively being used in construction as well as many other industries successfully.

The involvement of younger middle age group is on the rise as the result of present changing scenario of our society. The data shows that age group between 20- 40 years of age are

actively involved in decision making activities which ultimately lead to the purchase of the product, especially related to the usage and application of the FRP materials, used in the construction and other activities. The results of the research match the claim made by the Managing Director of Mumbai based Hiranandani Construction, Niranjani Hiranandani, that an average age of buying a house has come down from 44 to 30 (V.Sahad, 2003, p. 43-47) [37]. This is probably the result of the rise in income of the people between this age group, which is due to the increase in the Corporate, organizational and industrial organizations.

The results of the data indicate that in these activities which are related to the technical field, the dominance of male gender is prevalent. Chopra & Marriya, (2012), study also supports this fact. The involvement and awareness with respect to the fiberglass Reinforced plastics and their application is approximately three times more in males than in females. The result clearly reflected that a purchase of FRP products in all type of customers is higher in males. While in comparing the data between the respondents aware of and who actually purchased FRP products, the difference between the percentages of purchases made by females (44.5%) is quite close to that made by males (52.5) as compared to the difference between the percentages of awareness between the two gender groups which is notable quite high. This can be supported by the fact which Singh [38], (1997, p.173) stated vividly that, "Hill woman is sociable and independent and carries a reputation of family and social dignity. These qualities have given her the status of a better half in reality and she commands a place of honour and dignity in the hill society."

As far as the result of education variable is concerned the awareness of FRP products is highest in the engineers, followed by the doctors. This is due to their type of education and their scientific based professions. The product is a revolutionary product consisting of high technical and chemical engineering knowledge; hence the awareness of FRP product is significantly high in these professions, but unfortunately the number of such people is very less when compared with the entire population. The data clearly reflects that the percentage of professional people especially engineers and scientists are very less.

The professional category is followed by the administrators and the businessman. This can be attributed to their occupation and on the job experiences. These categories are then followed by teachers, others, advocates and students. Consequently the percentage of people who are not aware of FRP products is notably less in the profession of engineers and maximum in students.

To study the relationship between age and profession together on the awareness of FRP products can be generally described as, with the increase in age the awareness decreases when the time is constant. Thereby, indicating inversely proportional relationship between the two variables age and profession on the material awareness. The result clearly reveals that the FRP products are of new technology, and hence the knowledge about the product decreases in the older age groups in all of the professions taken for the study in this re-

search, except in the case of administrators. In the case of administrators the directly proportional relationship of age and profession on awareness can be due to two reasons.

1. On the job-learning for the administrators play a significant role, regarding the awareness of FRP products rather than their professional and educational, formal qualifications.

2. As Shimla, the capital of Himachal Pradesh is an administrative town, rather industrial town; the corporate culture is missing from this area. Due to which most of the people at high administrative posts are above the age group of 40 years.

In the case of comparison of the category 'others' though the relationship within the two age groups is inversely proportional but the drop of awareness from the percentage of people below the age group of 40 years that is 63.3 to 56.7 in people above 40 years, is comparatively very less. This is due to the fact that in this category lot of retired administrative officers had been included. (Kuthiala, 2012, p. 843),

It should however be noted that in the age group above the age of 40 years, the drop in the number of respondents who is aware of FRP products is significantly less in the professional groups like engineers, doctors and teachers as compared to other categories, like students and housewives. The reason for this is that FRP products are a scientifically and technically manufactured, and due to limited use at present the common people are not aware of its properties and hence consequently have limited knowledge (Kuthiala, 2012,) [39], regarding its advantageous over the traditional construction materials.

H. After interpretation of the data of the research study, the hypothesis H. is accepted

7 CONCLUSION

Green Marketing Strategy is the key of success in the context for the development of structural and infrastructural environment by enhancing the application of the revolutionary products like fiberglass.

Rightly suggested several important factors in order to ensure long-term sustainability in the green space (Jethani & Uttarwar, 2012, p. 1375) in their research study as per the need of today's era is, "an eco marketing campaign should have several important factors in order to ensure long-term sustainability in the green space:

- Your green claims should be genuine and verifiable. Above all, be transparent and explicit about any environmental claims you make.
- Informed consumers are loyal consumers, so educate your consumers about the benefits of your product or service for the environment.
- Make it possible for your customers to give back to the environment by choosing your service or product."

The same is true for the promotion of FRP products in different applications. In fact, to overcome marketing "greenwashing" concept the FRP organizations are suggested to pub-

lish some regular scientific newsletters to verify the claims they make. In addition to this, they should seek to get quality certificates to ensure the quality standards and get them updated regularly.

This would prove to be helpful and effective as from the data there is a clear reflection of the fact that people of this area are both quality and environment conscious. Chopra, and Marriya (2012) had conducted a study in Chandigarh, the geographically nearest metopolitan city to Himachal Pradesh, on the behaviour analysis of consumers towards green marketing. They concluded that "In nut shell it can be said that while buying product consumers consider technical quality, price durability and latest model as their first preference but they do consider environment factors also though it may not be the deciding factor (p.806)". Another, countrywide survey of the best cities to live in revealed Chandigarh as a green city (Chandigarh 'best green' city, 2012, p.4) [40]. As people of Himachal Pradesh are greatly influenced by this city, it supports that they too are environment conscious and hence would be accept the greener products.

Anjankar (2012, p.66) interprets that "Results support a generally prevailing notion that more educated people tend to be green buyers". She further also says that, "The results also show that fewer respondents know about environmental problems and their solutions." (p.67). Hence, Strategic planning and Green marketing of FRP, concerned with the structural development, has the capability to adapt to the technologically advanced polymer material which is able to meet the changing consumers' structural needs. Thus, a two-fold advantage is provided that is, of fulfilling the requirement of the customers and protecting and maintaining the environment for the future generations. Thus need for eco and consumer friendly materials intensify in the state of Himachal Pradesh. The polymer based materials like Fibreglass can prove to be of immense value in the developmental activities of the region in the coming years. The message of saving environment by choosing green FRP products should be highlighted clearly in the promotional campaign of Green marketing strategy for these products, and the need for spreading of knowledge of FRP products with their properties has to be based on the demographic variables of the potential customers.

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