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Factors Affecting Green Product Design: Marketing Professional's Perspective

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ABSTRACT

Many organizations try to produce their products less harmful to the environment as environmental concerns have increased over the past few decades. This has made not only consumers but also managers highly concerned about going green. Therefore, the purpose of this study is to identify the marketing managers' attitudes toward green product development in Sri Lanka. A sample of 100 marketing professionals from the manufacturing companies was employed for the study. Results suggested that though the managers are aware about the green product development, they are reluctant to implement green initiatives due to various reasons such as poor technological support for eco-design products, inadequate education and training about the environment related manufacturing issues. However, top management supports and eco-education & training have positive impact on the green product development activities. This research helps understand commitment of managers towards green product development and the practical issues of executing green concept in Sri Lanka.

Keywords : Green Product Development, Marketing Professionals, Green Concept, Sri Lankan Manufacturing Companies

1. Introduction

Green marketing literature has emphasized that businesses require being more socially and environmentally responsible. In this context, shareholders have motivated by achievement of their organizational objectives, have initiated development and modification of some production processes in order to support environmental protection. For many years it has been suggested that going green is not only good for the environment but also can create a competitive advantage to the business (Menon and Menon, 1997). It is also widely recognized that companies need to reduce negative environmental impact resulting from activities such as reducing waste and energy in their production process, using environmental friendly production materials. Thus green/eco design refers to actions taken in product development aimed at minimizing a product's environmental impact during its whole life-cycle process. Hart (2006) explains this as "Product Stewardship" which means the use of processes such as life cycle analysis to measure the impact of a product throughout its life, the introduction of processes to reduce environmental impact and the involvement of external stakeholders in product development and associated processes.

According to Polonsky and Ottman (1998) in green new product development Process (GNPD), it is assumed that environmental issues and performance objectives are equally included along with other product development objectives. Marketing literature suggests that the managers of a firm strongly influence the green product development than other stakeholders. But unfortunately certain organizations were not "green" as they claimed and due to lack of support from the management they have failed to adopt green development process (Hartman and Stafford 1997). Therefore, it is important to analyze managers' attitudes towards green product development in the Sri Lankan context.

As such, it is often argued that some companies have negative effects on environment, consumer and society. Kotler & Keller (2006) point out that certain marketing practice do not consider the social responsibility and are unethical which produce unsafe products. Thus, manufacturing companies face a critical challenge to implement environmental friendly or green marketing practices in building sustainable business environment. Further, understanding the attitudes towards

green product development practices is contextually different. Therefore, the research problem of the study examines; do Sri Lankan managers consider green/eco- aspects in the new product development process and what are cogent factors that affect managers' attitudes towards green product development?

2. Objective of the study

This study mainly attempted to investigate the managers' attitudes towards green product design with factors are acknowledged to affect green product development success in the Sri Lankan context.

1. To describe to what extent marketing managers consider about green aspect in the new product development process.
2. To examine cogent factors that affect managers' attitudes towards green product development.

3. Literature Review

New product development includes several steps like idea generation, screening, concept testing and testing, marketing strategy, business analysis, test marketing and final production (Kotler and Keller, 2006) and marketing managers are involved in each of these steps. Greening new product development is in each of these steps the green aspect has been considered and objectives have included. In each of the steps managers can be effectively play roles to include the green aspect. However moving upon the structure the commitment from all the stakeholders will ensure the learning culture within the organization and managers play a key role in this (Polonsky and Ottman 1999) and they will lay the foundation for green product development process.

3.1 Factors Influencing Manager's Attitudes towards Green Product Development

Literature has suggests different factors that can effect managers perception towards green product development. One major factor has been defined as management commitment and support (Allenby and Fullerton, 1991). This has been referred to aspects such as provision of resources, whether the organizational background supports the green product development. Top management vision, power, competencies are also influence for green product designed.

Another major factor is whether the organization has clear environmental goals not only organization as a whole but has been dropped to products also (Ehrenfeld and Lenox, 1997). Here an important aspect is that environmental considerations should be balanced with commercial goals. This implies that environmental consideration should be taken as a business issue and the operational dimension which is the product development should align with that.

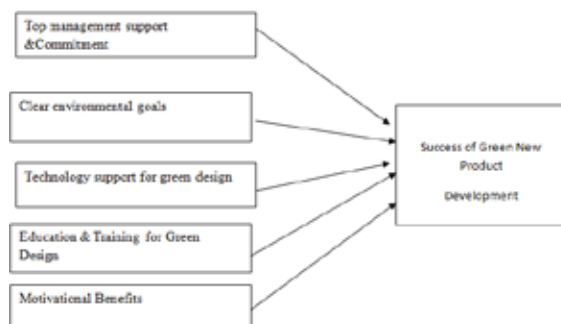
Eco consideration should be taken into account at the idea generation stage (Bhamra et al. 1999) and this implies that it should be considered at the very beginning of the new product development process. For a product to design and produce the technology can have a greater influence and it is vital when we consider about the environmental impact and therefore the technology select by the company has a greater influence for the products environmental performances and since it would automatically influence managers perception (Riitahuhta, et al. 1994). They also mentioned the training that managers get regarding eco designing of products can help to change manager perceptions and this would help managers to develop a new mindset relates decisions about how much attention should be addressed to the environment when developing new products.

McAloons and Evans (1996) argued that managers who show enthusiasm towards green concepts should be rewarded in order to create a positive perception later and it can be integrated to product development process. Therefore, eco-design literature suggests that environmental consideration should be integrated to product development activities. There are many stakeholders that participate in this process and to ensure the environmental issues are considered it is important to review milestones in the product development process (Allenby and Fullerton, 1991) from the marketing professionals' perspective.

3.2 Conceptual Study Model & Hypotheses Development

Based on the above literature review the following study model depicting the hypothesized relationships existing the independent variables and the dependent variable of the study;

Figure 01: Conceptual Study Model



H1: Top Management support and commitment is a positive predictor for the green product development activities.

H2: Clear environmental goals of business are positive predictors for the green product development activities.

H3: Technology support for eco-design is a positive predictor for the green product development activities.

H4: Environmental education and training for eco- design is a positive predictor for the green product development activities.

H5: Motivational benefits to employees are positive predictors for the green product development activities.

5. Methodology

This study is basically correlational in nature. It was designed

to measure the managers' attitudes toward green product development. A convenience sample of 100 marketing executives from manufacturing companies in Sri Lanka was selected. A self administered questionnaire was developed to collect information. Reliability of the constructs and an exploratory principle component analysis was done. Cronbach's alpha was calculated to measure the reliability / internal consistency of the measurement scales. As all dimensions were greater than the 0.7 all the scales were sufficiently reliable for the present study, Nunnally (1967). To measure the construct validity of the study, a factor analysis procedure was used.

Data analysis strategy in the study consisted of both descriptive statistical analysis and inferential statistical analysis. The hypotheses were tested using regression analysis. The Statistical Package for Social Sciences (SPSS) version 16.0 was used for data analysis.

6. Findings and Discussion

Multiple Linear Regression analysis was performed to test the hypothesized relationships depicted in the conceptual model. Beta value of each independent variable was used to explain the predictive power of the respective variables for the dependent variable: green product development. The results of the analysis are shown in table 1. As can be seen, all independent variables were significant positive predictors for the green product development activities at $P < 0.05$. Hence, all hypotheses were accepted. Though the managers have positive attitudes toward green product development they have no strong desire to consider green aspect into the new product development process. It is evident in lower values of Beta coefficients. The results show that the top management commitment, green education & training and are more influential than motivational benefits and ethical business culture & environmental goals in forming managers' perception towards green product development in Sri Lankan manufacturing sector in terms of the relative values of the respective Beta coefficients. Further, coefficient of determination (R^2) shows that the four predictors in the model explain only 57 % of the total variance of the managerial perception towards the new product development activities. This implies that there could be other important predictors away from the four predictors in the model.

Table 1: Results of Regression Analysis

Hypothesis No	Independent Variable	Coefficient of Beta	Significant level (P value).	R2
1.	Top Management Support & Commitment	.356	.008	0.57
2.	Clear environmental goals	.227	.028	
3.	Technological Support for Green Design	.301	.009	
4.	Education & Training for Green Design	.324	.009	
5.	Motivational Benefits	.265	.021	

N=100

7. Recommendations and conclusions

Even though managers in Sri Lankan organizations is aware about the green aspect the level of understanding and involvement is less and more importantly the organizational culture and surrounding do not support the green product development. Therefore, environmental education for managers including new product development team members can be seen as an important factor for increasing a company's awareness of the link between the company new eco-design activities and the environmental impact. The findings were supported by McAloon & Evens (1996). They have mentioned that designers need training in using different eco-design tools and learning about issues to develop good eco-solu-

tions. Hence, Sri Lankan manufacturing companies need to have more advisers from environmental specialists and this will help managers to determine the importance of different environmental issues for the company and suggesting how

the issues can be incorporated in green product developments. Therefore it is important to carry out further qualitative in-depth study of managers' perception towards green product development.

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