

Optimizing Modeling in Performance Controlling and Evaluation for Enterprise's Green Marketing

Yong Yang

Management College, Henan University of Technology, Zhengzhou, China

Email: irot@sina.com

Abstract: Based on the sustainable development theory, green marketing is the important marketing concept. This article will discuss green marketing performance system, and denotatively divide it into three sub-systems: enterprise, social environment and ecology environment, and argue its development level, sustained level and coordinated level connotatively, establishing the optimizing model through which enterprise can control the green marketing performance.

Keywords: green marketing; marketing performance; optimizing model

1 Introduction

Competition of modern enterprise largely depends on the competition of green marketing, which is the important marketing concept based on the scientific development. Green marketing is a social requirement that can identify, anticipate and adapt to the consumption, it is also a management process that can bring the profits and permanent operation. (Coddington, Walter, 1990). Under the requirements of sustained development, green marketing can be interpreted as the tools for the enterprise to guide and satisfy customer's continuous consumption, facilitate the sustained development, actualize marketing objective, pursue the balance among profit, customer's desire and social benefits in the process of R&D, production, selling, after-sales service from the point of undertaking social responsibility, protecting environment, fully utilizing the resource, long-term development, as the result, the enterprise can effectively allocate the limited marketing resource, achieve the enterprise's sight marketing behavior and long-term marketing strategy, also include the good coordination with the social, economy, resource, environment and the enterprise's long-term development. Though green marketing is a scientific, advanced marketing method, because of the numerous affecting factors and complex mechanism, in the real world, it is difficult for green marketing behaviour to achieve the anticipated purpose, also include the final performance, therefore, it is necessary to supervise and control the behaviour and process continuously

2 Enterprise's Green Marketing Performance Controlling System

On term of connotation, green marketing is a systematic project, the enterprise's connotation and affecting factors are very complex issues. Therefore, implementing green marketing performance controlling needs to establish green marketing performance system, theoretically, the enterprise must understand the relationship between the situation of the sub-system and controlling variables deeply, controlling the behavior of system, and actualizing the coordination of the different sub-system.

2.1 Denotation-based Enterprise's Green Marketing Performance Controlling System

According to the concept of green marketing and the scope covered, the green marketing performance system can be divided into enterprise sub-system, social environment sub-system and ecology environment sub-system, which entirely reflect the performance of green marketing and define the controlling object to implement performance system.

2.1.1 Enterprise's Sub-system

The enterprise is the micro basis of economy movement and the major body of green marketing; on the other hand, it is not only the most important affecting factor, but also the most important aspect of green marketing performance evaluation. Enterprise's sub-system includes moving effect, marketing efficiency, competitive effect, and financial effect. To every effect, it can further be divided into some kinds of indexes.

2.1.2 Social Environment Sub-system

Social environment includes idea, ethical system, and so on, the effectiveness of enterprise's green marketing in this regard, not only reflect the recognition and preference from the society to enterprise, prompt the information of the goodwill in the society, but also is the important aspect of the external features of green marketing, its value is directly related the performance of green marketing behavior in the social environment, which is the important part of green marketing performance. Specifically, it includes public effectiveness, service standard, social orientation, and social service etc.

2.1.3 Ecology Environment Sub-system

The natural environment, especially, in which the deterioration of ecology environment and the grossly utilization of resource, are the major barrier to the enterprise's sustained development, this is the right reason why green marketing is prompted, its total implementation functions obviously on the method and effectiveness of changing ecology environment and the utilization of resource, hopefully, the ecology environment sub-system evaluation index will reveal and comment on the performance of green marketing in this field. There are two paths for green marketing to influence ecology environment, the first is direct way through the ecology service, and the second is indirect influence through the production of green product.

Therefore, ecology environment performance of green marketing can be divided into environment attribution index, resource attribution index, energy attribution index, and ecology service attribution index.

2.2 Connotation-based Enterprise's Green Marketing Performance Controlling System

According to the connotation of green marketing and performance, the enterprise's green marketing performance can be analyzed as three aspects: development level, sustained level, and coordination level.

2.2.1 Development Level

Development level is the measurement to integrated influence of green marketing to enterprise, ecology environment, and social developing situation. The height of green marketing mainly perform that it can push the en-

terprise to grab more market share, sale more green products, obtain more profit, as the result, it can develop rapidly and healthily and boost the development of social and ecology environment. Green marketing does not oppose the development of enterprise's sub-system, but against the development by sacrifice of environment, against one-sided development, against isolated development, against short-term development, it advocates the health and total development that is sustained and coordinated. The growth of enterprise and the progress of society are the major content and purpose.

2.2.2 Sustained Level

Sustained level is the measurement to the integrated influence of green marketing behavior to enterprise, ecology environment and social environmental sustained development; herein the sustained level refers to the situation that some matter or system maintains the normal or better one.

2.2.3 Coordinated Level

The development and sustained level cannot indicate the detail of green marketing. Because they both cannot always be unified, even controversial, on the other hand, conflict existed among the different sub-system, sometimes, in order to maintain one sub-system development must pay the expense of another one. Therefore, the coordination of the all kinds of relationships must be emphasised when evaluating the performance of green marketing. The coordination level is used to measure the integrated influence of green marketing to enterprise, ecology and social environment. Measuring on the coordination of the enterprise and environmental sub-system includes the coordination of different sub-system and affecting factors, and their influence by each other. Only under the coordinated situation of enterprise's development with ecology and social environment can the green marketing achieve the higher level.

From the above analysis, development is the major purpose and the core content of green marketing; persistence is the requirement on development, in other word, the development must be sustained, otherwise, it can not last; the coordination of all kinds sub-system and factors create the conditions to sustained development; devel-

opment must be the coordinated one so that the enterprise, ecology environment and social environment can continue, this is also their internal logics.

3 Green Marketing Performance Controlling Model

The controlling model of green marketing performance is to calculate the optimal value of green marketing performance under the given conditions of timing, spatial, inputted variables and the parameters of other green marketing system.

3.1 The Construction of Optimized Controlling Model of Green Marketing Performance

According to the connotation of green marketing and its performance system, the controlling model is constructed as follows:

The target of green marketing performance controlling: $\max P = f(P_{en}, P_{ec}, P_s, T, C)$ (1)

Development Restriction:

$$\frac{dD_i}{dt} = g_i(D_{ent}, D_{ec}, D_{st}, C) \geq 0 \quad (2)$$

in this equation, $i = 1, 2, 3$, separately represent enterprise's sub-system, ecology environment sub-system and social environment sub-system.

Sustained Restriction:

$$\frac{d^2 D_i}{dt^2} \geq 0 \quad (3)$$

Coordinated Restriction:

$$\frac{\partial P}{\partial D_i} \geq 0 \quad (4)$$

$$P \geq \sum_{i=1}^3 P_i \quad (5)$$

Inputted Variables Restriction:

$$C_i(T) \in [c_i, \bar{c}_i] \quad i = 1, 2, \dots, n \quad (6)$$

Othe Green Marketing Factors Restriction:

$$E_i(T) \in [e_i, \bar{e}_i] \quad i = 1, 2, \dots, m \quad (7)$$

3.2 Illustration on Optimized Controlling Model of Green Marketing Performance

(1) P, P_{en}, P_{ec}, P_s green marketing performance, enterprise performance, ecology performance, and social performance. (1) formula represents that the green marketing performance is the function of the performance, timing, and controlled variables of all kinds of sub-systems. All these sub-systems has covered all factors that affect the green marketing.

(2) D , based on the different suffix, they separately represent the development level vector under the function of one inputted controlled variable and one specific time point, it is the function of timing.

(3) $[c_i, \bar{c}_i]$ and $[e_i, \bar{e}_i]$ separately represent the feasible collection of controlled variables and other factors, the variables, besides the meaning mentioned before, are possibly the changing combination of 4P, or the changing of marketing plan, or the revision to any affecting index; e_i represents an affecting factor of any one sub-system.

(4) in this model, (2)–(5) not only indicate the connotation of green marketing performance, but also reflect the characteristic of development, being sustained and coordination.

(5) in this model, (6) and (7) reflect the influence of external controlling variables and internal variables and their mutual function to green marketing performance.

(6) the above model can not directly solve the specific controlling problem on the green marketing system because of the requirements of further research on the specific green marketing system, variables, parameters, and functions, but theoretically, this model gives an abstract and general description to the connotation and mechanism of green marketing, this is to help to understand the green marketing scientifically, also has the significance to the specific green marketing controlling system.

References

- [1] Coddington, Walter. How to Green up Your Marketing Mix. Advertising Age, 3(September), 1990.
- [2] Henion, Karl E. Ecological Marketing. Columbus, Ohio: Grid, 1976.
- [3] Yang Shi Yao, Systematic Science, BeiJing, Agriculture Publisher, 1986.