

A Simulation Model on Determining the Patrons of a Business in the Era of Green Movement

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Abstract

In an era known as the green movement where businesses are attracted to produce environment-friendly goods, it is inevitable that additional costs are needed which are referred to as the "green premium" in this study. This simulation model aims to predict the number of customers who would continually patronize the business in spite of the premium. It is worth noting that the buyer's willingness and awareness should form part of the picture. It is then determined that there is only a minimal number of customers who will remain loyal hence, giving rise to businesses' implementation of strong green marketing strategies.

Keywords: green premium, green marketing, green movement

1.0 Introduction

The current condition of the planet as evidenced by its deteriorating environmental health reflects the deathly pallor of Mother Earth. Changing climates, devastating disasters, crippling pollution, extinct species, and depleting resources are only but few of the wake-up calls thrown at mankind that forced them to heed the incessant supplications of nursing nature back to health. According to the Declaration of the United Nations Conference on the Human Environment (Stockholm, 1972), humanity has reached that critical point in history where the decisions they make and the activities they undertake must carry a vigilant consideration of the marks it will leave on the environment. Owing to this, mankind responded with a campaign to promote awareness of the destruction that nature continues to sustain in the hands of its stewards and the promotion of actions that are intended to be concerted efforts to address environmental concerns. Such campaign was known as the environmental movement or,

more popularly, the green movement.

Going "green" has, indeed, gone mainstream. Governments, establishments, and people across the globe have chosen to embrace the charge of doing what they can to give back to Mother Nature. This mandate, however, comes with a big challenge to those in the business sector. The direction towards products, services, business processes and business decisions that are "eco-friendly" have an impact on the primary concern for profit and financial sustainability. The cost of going green may jeopardize the bottom line. The expenses related to innovations and changes in line with the green movement will reduce the entity's residual income. Even when the entity should decide to pass on this additional cost to the consumers, this will still affect the bottom line as increasing the selling price may lead some consumers to opt for other alternatives which they consider to be cheaper. The conundrum for businesses, then, is how to ensure financial sustainability through the retention of customers despite the impending

increase in selling prices brought about by the so-called "green premium".

Businesses primarily expose industrialization and the environmental impacts that go with it. In establishing effective strategies that promote industrial development while minimizing impact to the environment, it is essential to assimilate why some firms are responsible for the environment while others are not. Hart et al. (1997) as cited by Shah (2007) quoted that the business world has realized that being environmentally-responsible or irresponsible does affect the business directly or indirectly. Concern for the environment depicts in its public image, relationship with regulatory authorities and interactions with stakeholders, particularly the customers. Thereby, this necessitated for a movement gearing towards generating profit as well as preserving the environment at the same time.

Elim Papadakis, in his book *Historical Dictionaries of Religions, Philosophies and Movements*, as cited by McKinstry (1999) defined the green movement as a collection of varied actions instituted under a communal effort to understand and aid the environment. Vaillancourt (1996) stressed out that the emergence of the green movement was the society's response to the thrust of both economic globalization and environment preservation. However, the increased institutionalization of the movement is prevalent nowadays, leading to the dilemma on how to integrate the "green goals" into concrete programs and products.

Businesses aspire to lay down schemes that would take advantage of the market power of "green" consumers and investors (Lyon and Maxwell, 1999; Reinhardt, 2000; as cited by Shah 2007). Peattie and Crane (2005) assert that most of the

firms boosting their green stance are those that are in the frontline of criticism, such as those in "dirty" industries such as oil, chemicals, pharmaceuticals, and automotive. These industries typically cater to consumers with higher levels of income and are subsequently becoming willing to pay a premium for environmentally-friendly products. In contrast, Manget (2009) as recounted by Vermillion and Peart (2010) stated that a consumer will not pay for a product based solely on its green attribute, pointing out that there must be some value-adding factor such as savings, better taste, or better safety. In connection, assertion of consumers that they make green purchasing decisions is only palpable when there are immediate and tangible benefits other than being more environmentally-friendly.

Customer loyalty is deemed an essential objective in a business endeavor which is defined as an ingrained and conscious decision to consistently and continually patronize a merchandise or service amidst internal and external influences. These may be brought about by marketing efforts intended to entice brand-switching (Oliver, 1999 as cited by Dickinson, 2014). Further, this encompasses both the attitudinal and behavioural components of customer loyalty in the sense that it refers to the deeply-held commitment and repetitive same-brand or same brand-set purchasing acts of the customers, respectively.

Hence, in an ever expanding and rapidly changing environment, trust and commitment of consumers would allow firms to remain competitive (Veloutsou et al., 2002). The creation of customer relationships that would spell loyalty is placed in the limelight. In this connection, relationship marketing has been called upon successfully to establish such bonds of trust and commitment loyal customer relationships

(Morgan & Hunt, 1994). Several studies in the past years have indicated that the technique has a positive impact on firms' business performance. Customer relationships have been found to have supported business viability through increased profitability for a firm over time (Reichheld, 2001). Successful relationship marketing efforts yield customer loyalty regardless of the new schemes implemented by the business, even if affecting the desired value of money taken into consideration by the consumers (Sirdeshmukh et al., 2002).

The relational bond between the business and the patrons would be put into test when the firm is gearing towards environmental products, even if the consumers bear the cost of the company implementing its green objective.

II. Conceptual Framework

This research is based on the Societal Marketing Concept, a marketing management orientation proposed by Philip Kotler and Gary Armstrong. The Societal Marketing Concept is one among five marketing orientations that serve as the backbone to the underlying concepts of marketing. This orientation is an improved version of the Marketing Concept which holds that achieving organizational goals depends on understanding the needs and wants of target markets and being able to satisfy this through the creation of value for customers and building strong profitable relationships with them. What makes the Societal Marketing Concept significant is that it questions whether what the firm does to satisfy the individual's needs and wants is for the benefit of the individual and society in the long term. This concept holds that inherent in every marketing effort should be the intent to deliver products or services that do not only answer the need for value

but looks after the welfare of both the society and the consumer. This concept adheres to sustainable marketing, a brand of marketing tagged to be socially and environmentally responsible. It aims to satisfy the present needs of its consumers while looking after the ability of societies and businesses to provide the said consumers' future needs. The societal marketing concept wants to satisfy three (3) areas to create sustainable success for the firm: First, the Company through earning Profits; second, the Consumers through the Satisfaction of their needs and wants; lastly, the Society through the preservation and enhancement of human welfare or interests. In this concept, firms should attempt to preserve the delicate balance between ensuring its viability, survival, and profitability while at the same time continuously coming up with new and sustainable improvements in the production and marketing of its merchandise (Fuller, 1999:6). This orientation is significant considering that corporations occupy a substantial and important role in society; as such, the influence of the corporations' activities on society and nature cannot be discounted (Hawken, 1993). To view customer satisfaction and the creation of customer loyalty in this manner, further deepen the value of creating a long-term relationship with customers through the inclusion of society's welfare.

This study also utilizes the European Customer Satisfaction Index (ECSI) model. Such model emphasized factors that will determine customer satisfaction, which leads to customer loyalty. The ECSI model cited customer expectations, perceived quality, and corporate image, as factors that affect or form the customers' perceived value of the product or services. This perceived value of the goods and services will eventually determine the satisfaction of customers. Customer Satisfaction is

a function between Customers Expectations and the Perceive Performance of goods and services. In having satisfied customers, companies will eventually move into a direction wherein customers become loyal to their products. For the purpose of this study, it will consider three variables that will determine satisfaction and loyalty. These variables are Price, Projection of Image and Premium (Green Premium). Price shapes the expectations of customers as to how products will perform. Projected Image as interpreted by customers will quantify as to how customers respond to the corporate image the company is trying to project.

The significant variable in this study that will also serve as a variable to either customer's expectations and corporate image is the Premium placed on the 'green' efforts of companies. This premium will embody the shift for most companies to consider the 'green movement' as part of their corporate strategy in order to preserve and enhance society's welfare. On the side of customers, being slowly exposed to rising environmental and social issues, some may have developed a growing

desire for products and services that are actually adhering to the protection and enhancement of the environment and society.

Despite the efforts coming from most firms to enhance their marketing strategies through the creation of more environmentally-friendly products, priced with a premium cost, well distributed to key areas and communicated as a valuable option to consumers, still it would be subjected to factors that will determine consumers' behavior or action towards a product. These factors are the consumer's awareness and willingness to patronize these products. Consumers' action is determined by many factors along with the marketing stimuli done by the company in the form of product, place, promotion and price. Other factors are the amount of knowledge or awareness they possess about certain products. As to the factors that affect their behavior, it includes economic, social, cultural and technological. All of the above-stated factors affect the awareness and willingness of the consumers to buy the product.

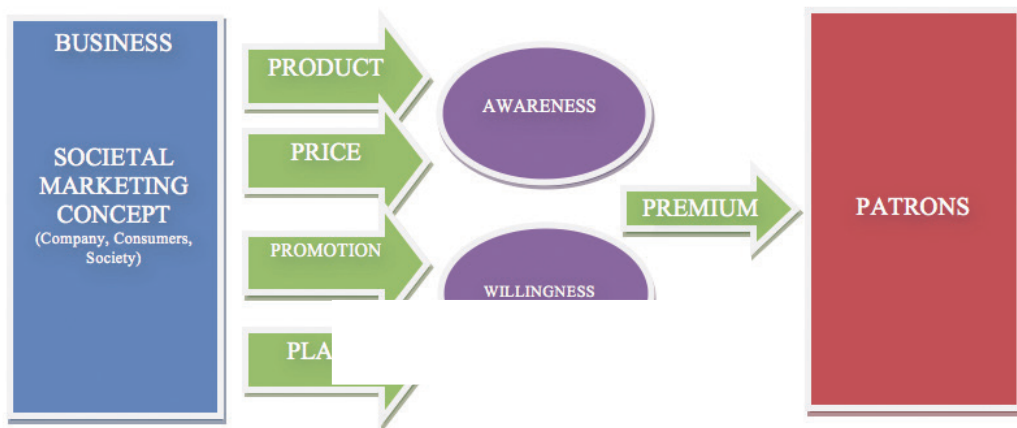


Figure 1: Conceptual Framework

III. Research Design and Methods

The researchers endeavored to look into the effect of the green movement on customer patronage with the use of a simulation model. This paper holds the view that the ability to retain customers will eventually take a substantial role in the sustainability of the business. In addition, this paper also acknowledges that the price is one of the key determinants of a customer's patronage. With the increase in price that comes along with "greening" a product, it is, therefore, relevant that an attempt be made to explore its effect on customer patronage.

Considering that various factors affect one's choice of purchase, this paper chooses to view customer loyalty in the era of the green movement. As such, the researchers explored customer patronage in the context of a consumer's awareness of the green movement together with the "green product" to be purchased and the consumer's willingness to purchase the said product even with the increase in price. As such, the researchers put forward this model:

$$\text{Customer Patronage} = \text{Awareness} * \text{Willingness}$$

To simulate the number of consumers that will patronize the business, the following assumptions were used:

1. The model shall be applicable to all products, regardless of the industry and the time, condition or seasonality of goods.
2. The premium is the determinant of the number of patrons of the business implementing the green movement.
3. The factors considered in determining the number of patrons are willingness and awareness of the buyers.
4. As to willingness, seventy percent (70%)

of consumers would pay an additional 5 percent (5%) for a green product assuming the quality is the same as of a nongreen alternative. As the premium increases, the willingness to pay melts away. For all categories, less than 10 percent (10%) of consumers would still prefer green products even if the premium rises up to 25 percent (25%) (McKinsey&Company, 2012).

5. As to awareness, 87 percent (87%) of the consumers are concerned about the environmental and social impacts of the products they buy. Hence, they are aware of the implications of buying such product (McKinsey&Company, 2007 as stated in Forbes, 2011).

IV. Results and Discussion

Following the formulation of the model, the researchers proceeded to perform an initial simulation run for 100 customers. One hundred random numbers following uniform distribution were generated within the parameters of the 4th assumption. The said random numbers represented the green premium, taking into consideration that 70% of the consumers are willing to shoulder an increase in price of up to 5%. The researchers then proceeded to factor in customers' awareness within the confines of the 5th assumption. The awareness factor is assumed to be 87% depicting the number of consumers putting more weight on the environmental impact of their purchases. In simulating such, the Bernoulli distribution of probability is utilized.

A customer may be aware of the importance and necessity of reflecting our concern for the environment through the products we choose but may not necessarily be willing to purchase

the product. As such, customer's willingness to purchase is simulated with the use of the 4th assumption. A Bernoulli distribution is used, with 1 representing willingness to purchase and 0 representing the opposite. Table 1 presents the first simulation for 100 customers.

Table 1: First Simulation Run, n=100 customers

Customer no.	Green Premium	Simulation Model				
		Awareness	*	Willingness	=	Customer Patronage
1	0.213303962	1		0		0
2	0.181661612	1		0		0
3	0.243927986	1		0		0
4	0.035109019	1		1		1
5	0.218587319	1		0		0
6	0.076358336	1		0		0
7	0.010307955	1		1		1
8	0.194156162	1		0		0
9	0.076767713	1		0		0
10	0.081815241	1		0		0
11	0.072364713	1		0		0
12	0.217503737	1		0		0
13	0.062924314	1		0		0
14	0.078441249	1		0		0
15	0.221899701	1		0		0
16	0.216738827	1		0		0
17	0.208712961	1		0		0
18	0.042965626	0		1		0
19	0.112020327	1		0		0
20	0.026983714	1		1		1
21	0.026775314	0		1		0
22	0.142845162	0		0		0
23	0.088878378	1		0		0
24	0.039180865	1		1		1
25	0.038716227	1		1		1
26	0.19649695	1		0		0
27	0.23667468	1		0		0
28	0.162810411	1		0		0
29	0.210609919	1		0		0
30	0.138087855	1		0		0

31	0.032760685		1		1		1
32	0.114335598		1		0		0
33	0.207234134		1		0		0
34	0.079826012		1		0		0
35	0.112569369		1		0		0
36	0.143680262		1		0		0
37	0.143562848		1		0		0
38	0.168614239		1		0		0
39	0.068213363		1		0		0
40	0.080652533		1		0		0
41	0.023529472		1		1		1
42	0.213957296		1		0		0
43	0.078368468		1		0		0
44	0.210790062		1		0		0
45	0.222666291		1		0		0
46	0.202715743		1		0		0
47	0.242956106		1		0		0
48	0.149241324		0		0		0
49	0.222677461		1		0		0
50	0.1914401		1		0		0
51	0.219484624		1		0		0
52	0.011250618		1		1		1
53	0.014246362		1		1		1
54	0.152811528		1		0		0
55	0.055145506		1		0		0
56	0.068373256		1		0		0
57	0.055631691		1		0		0
58	0.173555589		1		0		0
59	0.217030172		1		0		0
60	0.24804686		1		0		0
61	0.246123428		1		0		0
62	0.057427262		1		0		0
63	0.083138455		1		0		0
64	0.146867777		1		0		0
65	0.055566246		1		0		0
66	0.238340256		1		0		0
67	0.024689201		1		1		1

68	0.248246032		1		0		0
69	0.132397908		0		0		0
70	0.003430724		1		1		1
71	0.150636621		1		0		0
72	0.154020948		1		0		0
73	0.06046561		1		0		0
74	0.033017197		1		1		1
75	0.098356979		1		0		0
76	0.110215592		1		0		0
77	0.24734242		1		0		0
78	0.159604773		0		0		0
79	0.249877137		1		0		0
80	0.171795429		1		0		0
81	0.184502989		1		0		0
82	0.21770773		0		0		0
83	0.048396912		1		1		1
84	0.210408214		1		0		0
85	0.036718423		1		1		1
86	0.168748211		0		0		0
87	0.185422928		1		0		0
88	0.070692426		0		0		0
89	0.119202828		1		0		0
90	0.228697457		0		0		0
91	0.100087144		1		0		0
92	0.059277928		1		0		0
93	0.071518648		1		0		0
94	0.039634751		1		1		1
95	0.213183167		1		0		0
96	0.19361967		0		0		0
97	0.075348968		0		0		0
98	0.19240986		1		0		0
99	0.115638678		1		0		0
100	0.238774532		0		0		0
Number of patrons							15

Table 1 show that, given random price percentage increases attributed to a company's efforts to provide green products, 87 out of 100 customers are found to exhibit an awareness of the

importance of “going green”. However, only 17 out of the 100 customers in the first simulation run are willing to purchase the product. Using the model proposed by the researchers where $\text{Customer Patronage} = \text{Awareness} * \text{Willingness}$, Table 1 shows that only 15 patrons can be expected out of a batch of 100 customers.

The researchers further performed 99 other

simulation runs in order to find the average number of patrons a business may expect in moving towards green products. In total, then, there were 100 simulation runs performed, with each simulation comprised of 100 customers. A summary of the 100 simulation runs is shown in Table 2.

Table 2: Summary of results for 100 simulations runs, n=100 customers per run

Simulation Run No.	No. of patrons
1	15
2	13
3	19
4	16
5	22
6	18
7	15
8	13
9	11
10	19
11	17
12	23
13	22
14	18
15	12
16	16
17	15
18	14
19	21
20	13
21	16
22	21
23	18
24	17
25	24
26	21
27	11
28	17

29	15
30	23
31	15
32	20
33	15
34	20
35	26
36	23
37	14
38	19
39	22
40	13
41	20
42	17
43	14
44	19
45	13
46	27
47	16
48	21
49	18
50	18
51	14
52	12
53	23
54	20
55	13
56	15
57	27
58	19
59	12
60	26
61	20
62	14
63	17
64	17
65	13
66	11
67	13

68	19
69	24
70	16
71	18
72	14
73	16
74	22
75	17
76	15
77	9
78	17
79	27
80	19
81	13
82	15
83	23
84	20
85	23
86	15
87	14
88	22
89	16
90	13
91	18
92	13
93	17
94	19
95	17
96	9
97	17
98	16
99	14
100	16
Average no. of patrons	17.340
Standard deviation	4.088
Minimum no. of patrons	9.000
Maximum no. of patrons	27.000

As shown in Table 2, there is an average of 17 out of 100 customers that would become patrons of the business in support of the company's efforts to "go green". Table 2 also showed that, in the 100 batches of simulations made, a company can have as little as 9 to as many as 27 patrons in a given group of 100 customers. Consequently, the researchers then proceeded to look into the trend of the number of patrons per 100 customers that a business can expect and is shown via a time series plot in Figure 2.

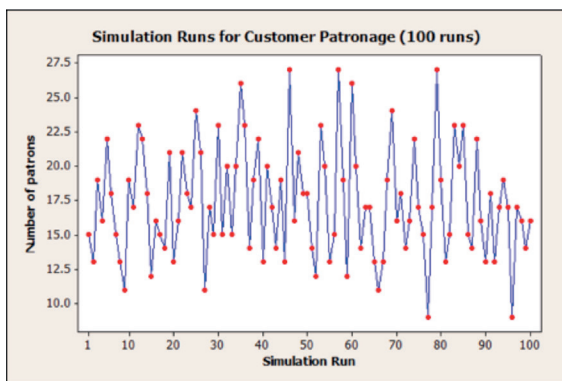


Figure 2: Time Series Plot of the number of patrons

Figure 2 displays the erratic movement of the number of patrons a business can retain wherein, it can be inferred that there is an inconsistency in terms of the number of customers who remain loyal to the business in the midst of increasing prices attributed to the green premium which may place businesses in the conflicting circumstance of striving to go green to ensure their viability.

However, it must be noted that, aside from marketing stimuli coming from the companies, other factors also exist that affect the willingness and awareness of consumers. These factors may concern the varying effects of demographic, economic, social and cultural conditions. Marketing

initiatives do not only shape willingness and awareness; they are affected as well by conditions within and outside the consumers. Overall, one can also say, that willingness and awareness are also outcomes of a person's behavior and profile.

V. Conclusion

In the company's effort to adopt the green movement, a specific amount is added to its selling price, thereby affecting the patronage of the consumers. The amount added, referred to as the "green premium", shapes the consumers' willingness to buy and pay for products that are supposed to protect and help preserve the environment. Green marketers have already known that buyers will continually insist in surveys that they are willing to shoulder more for socially and environmentally superior products but during the actual purchase, considerations pertaining to the price of the merchandise may outweigh their preference for "green" products. While the societal marketing concept is genuinely aiming for the welfare of society by taking initiatives like going green, the perception of consumers on products that are deemed to be "expensive" has affected their willingness to take action. Awareness still is a factor for every person's behavioral tendencies towards products and the willingness still is heavily relying on factors such as price. Products viewed as "green" may slowly gain popularity, but the consumers may not be willing to pay or make a purchase if the product entails additional cost on their side. Perhaps, several strategies can be done by businesses; it could be increasing awareness about the effects of not being conscious with environmental issues. If the company's intention to uphold the welfare of society is genuine, it should make green marketing efforts embedded

effortlessly in their traditional marketing stimuli so as customers will not feel the burden of having to choose products that in the end will protect their own welfare. Considering the need for looking after the environment and the concern over a business' survival and sustainability, there may exist a need for other factors and actions that would help bolster and strengthen the campaign to go green. Government support may be called upon to ensure that implementation of programs and regulations in aid of healing and caring for the environment are exhaustively scrutinized to ensure that all aspects and all stakeholders are considered. In addition, ensuring that awareness is instilled in every household is imperative. Organizations, institutions, educational systems, and governments must come up with action plans to ensure this. In the end, for the green movement to truly and fully permeate commerce and industry, there is a need for a collective effort that goes beyond a business' willingness to promote green products. "Greening" the economy, then, entails a united determination of all sectors concerned.

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