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MARKETING IS ALL ABOUT TAKING MONEY FROM CUSTOMERS (AN APPLICATION OF TOBIT MODEL)

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Abstract

One of the key dimensions of business is marketing and when we say marketing we talk about creating more revenue every second. Sales are an important key to success for revenue generation and for this purpose various marketing strategies have been developed. Sales are always driven by customers/consumers, and this thought is in practice since the inception of the concept of business. This paper is an appreciation on the comprehension of various marketing strategies (i.e. Single Segment Strategy, Differentiated Strategy, Un Differentiated Strategy, Product Development, Establishing The Brand, Innovation strategy, Market Growth Shares, Porter Cost Leadership, Market Expansion, Pricing, Diversification), which only aim at generating revenues while proposing the Tobit model to assess the relationships of outlined various marketing strategies with the revenue generation (sales of the products/ services). The comprehensive findings of this research reveals that all strategic means are important for generating revenues in relevance to the products/ services which are being offered and confirms that all outlined marketing strategies are designed and configured with the intent to grab the money from every pocket, but single segment strategy and market growth share strategy matter the most in this connections. Whereas, the Tobit model is revealed as an appropriate and robust model to predict the outlined relationship.

Keywords: Marketing Strategies**,** Sales, Customer Relationship, Marketing, Revenue, Tobit Model

JEL Classification: C01, C02, M31.

1. Introduction

21st century has brought a revolution in the business. For instance, a diverse change has been observed in increasing products availability for consumers. Customers were the centric to the business growth but now customers have an influential power and number of options of their own interest to decide what they wish to buy.

Retaining with your old customers and building a strong relationship and interaction over time builds customer loyalty, which ultimately leads to the growth of the organization. The relationship with customers focuses on cost & profitability for the life-time value of customers. The ultimate goals of the firms are to get maximum sales/ revenues and for the purpose different marketing tools, mix, communication channels, strategic plans are deployed. If the customer are satisfied and delighted and purchase again and again then the firms shifts towards the prospering zone and can further extend their business venture. This paper points the fact that different marketing strategies at the end of the day increase the revenue of the organization.

2. Literature Review

The growth prospect of the businesses heavily relies on the consumers. In the previous studies it has been confirmed that consumers play a vital role in shaping the success of the organization in any sort of business. Bagozzi (1988) has provided an updated theory of perception that the buyers show their interest where they are interacted Rust (1997) reviews that the input and output of business is to be equal to the input and output of customer interest towards that business. Customer indeed is important for making sales for the item for this purpose, the customers are supposed to be satisfied.

Fornell (2002) stated that customer satisfaction overall evaluation is based on the purchase and consumption of a good or service. The Sales get active and running once the customer has a good relationship with the brand it always refer to the overall sales portion in a business is based upon a strong relationship with customers, which paves the way for organizations to formulate its various marketing strategies.

2.1 The Aggressive Marketing Strategies

The marketing strategies are applied to push or pull the consumer to buy products or brands. The strategies, which are specially designed according to the socio-economic environment and caters all social classes in order to entice the individual, pull towards the pit in which they are entitled to pay and get possession.

The following are different **target market strategies** that can be and are employed by the marketers to earn and maximize their objectives:

2.1.1. Single-segment strategy

Catering to the single market as that the target market and providing products and services.

2.1.2. Differentiated strategy

More than one target market is catered and offered products and services accordingly.

2.1.3. Undifferentiated Marketing strategy

This relates to the mass market that the wider market as in whole and offering the products and services (Corner & Hinton, 2002).

2.1.4. Market expansion

This strategy is used when marketer wants to increase the sales more of the existing products/services and the organization can approach single or multiple target markets.

2.1.5. Market growth share

A strategy to snatch the market share of the competitors and gain one's own company share. For this purpose, a strong marketing scheme is required to pull the customers from the competitors' i.e. using aggressive marketing tactics to make customers believe that the other company is not that good.

2.1.6. Product Development

To modify or update organization's existing brand or adding a new product in the existing product line that can also cater to a new nice (Maynard, 1995).

2.1.7. Establishing the Brand

Brand creates a authentic mark to the services as well as there is not much of physical evidence in service industry hence, it's important for the service to have a brand name, which is consistent over time with its marketing promotional and to which customers can easily comprehend and relate to (Gurău,2005).

2.1.8. Innovative strategy

When the new products are developed, innovative strategy comes into play. This deals with the organization's revolutionary technologies and innovation-oriented means (Fjermestad & Romano, 2004).

2.1.9. Porter Cost Leadership

The competitive advantage of the low cost leader is to be able to product at a low cost but not necessarily price low for consumers as well. Producers could price at competitive equality, taking advantage of the benefits of a larger margin than competitors.

2.1.10. Porter Differentiation

Differentiated goods and services satisfy the needs of customers through a sustainable competitive advantage. This basically generates a relatively higher price and a better margin. If an organization focuses on differentiating their products and services, they will incur more costs, which should be recovered through sales.

2.1.11. Pricing

It is one of the marketing mix, and important strategic tool for the product positioning. It relates to estimate demand curve, calculate costs, profit maximization, revenue maximization, skim pricing, penetrating pricing.

2.1.12. Diversification

This strategy works on increasing the profitability through greater sales volume obtained from new products and new markets. If diversification is at business unit level then the business units expand further i.e. formation of new segments within the same industry and if it's at corporate level, then it's basically extending to new horizons of the business i.e. entering into a new scope of industry.

3. Research Methodology

3.1. Description of Data, Sampling, and Variables

A sample of 5000 private sector employees (2500 marketing managers and marketer) and customers (2500 active customers) were approached from the various major cities of Pakistan which includes Karachi, Hyderabad, Lahore, Multan, Islamabad, Rawalpindi, Quetta and Peshawar while the Personal survey technique is employed to collect the responses on a structured questionnaire through using convenience sampling. To assess the research question various constructs of marketing strategies were used which include Single Segment Strategy, Differentiated Strategy, Un Differentiated Strategy, Product Development, Establishing the Brand, Innovation strategy, Market Growth Shares, Porter Cost Leadership, Market Expansion, Pricing, and Diversification. Precisely, it was interrogated that whether or

not theses outlined constructs effect the amount of revenue generation in relevance to the product and services which are being offered for the customers.

3.2 Econometrical Methodology (Application of Tobit Model/ Censored Regression)

This paper aims to estimate the impact of various marketing strategies on the amount of revenue generation which comes through the sales of the products/ services while proposing the Tobit model to assess the impacts. Since the data of amount of revenue generation is supposed to be censored as there are the wind falls which also increase the amount of revenue generation and may obdurate and hamper the actual impact of various outlined marketing strategies on the amount of revenue generations, therefore, the data for the amount of revenue generation is made censored for the period when there was a wind fall. Keeping in mind the nature of dependent variable/ censored variable (amount of revenue generation) the tobit model is proposed to interrogate the data and the associations. The regression model based on censoring the distribution of dependent variable is referred to as the **censored regression model** or the **Tobit model** (Tobin, 1958). The regression is obtained by making the mean in the preceding correspond to a classical regression model. The general formulation is usually given in terms of an index function,

$$y_i^* = \mathrm{x}_i'\beta + \varepsilon_i$$

$$y_i = 0 \quad \text{if } y_i^* \leq 0,$$

$$y_i = y_i^* \quad \text{if } y_i^* > 0.$$

Since the data of revenue generation is censored therefore, there are potentially two conditional mean functions we considered, which reflects the purpose of the study. While, for the index variable, sometimes called the *latent variable,* $E[y_i^* | \mathrm{x}_i]$ is $\mathrm{x}_i'\beta$.

For an observation randomly drawn from the population, which may or may not be censored, the following equation can be used for computing latent variable.

$$E[y_i^* | \mathrm{x}_i] = \Phi\left(\frac{\mathrm{x}_i'\beta}{\sigma}\right)\left(\mathrm{x}_i'\beta + \sigma\lambda_i\right),$$

Where,

$$\lambda = \frac{\phi\left[\left(0 - \mathrm{x}_i'\beta\right)/\sigma\right]}{1 - \Phi\left[\left(0 \quad \mathrm{x}_i'\beta\right)/\sigma\right]} = \frac{\phi\left(\mathrm{x}_i'\beta\right)/\sigma}{\Phi\left(\mathrm{x}_i'\beta\right)/\sigma}.$$

As we are intending to confine our attention to censored observations, then the results for the truncated regression model may not apply, because the truncated regression model is no more amenable to least squares than the censored data model. It is an unresolved question which of these functions should be used for computing predicted values from this model. Intuition suggests that $E[y_i | \mathrm{x}_i]$ is correct, for predicting the amount of revenue generation, say, to plan for an upcoming event via using outlined multiple marketing strategies, as the censored mean is obviously the relevant quantity. On the other hand, if the objective is to study the need for a new facility, then the mean of the latent variable y_i^* would be more interesting.

3.3. Marginal Effects in the Tobit/ Censored Regression Model

In the Tobit model the marginal effect of all outlined various marketing strategies on the amount of revenue generation can be calculated by the following. While, Assuming that ε is a continuous random variable with mean 0 and variance σ^2, and$f(\varepsilon|x) = f(\varepsilon)$. Whereas, a and b are constants, let $f(\varepsilon)$and $F(\varepsilon)$denote the density and cdf of ε .

$$\frac{\partial E[y|\mathrm{x}]}{\partial \mathrm{x}} = \beta \times \text{Prob}\,[\mathrm{a} < \mathrm{y}^* < b].$$

3.4. Proof

$E[y|\mathrm{x}] = a\ \text{Prob}\,[y^* \le a|\mathrm{x}] + b\ \text{Prob}\,[\mathrm{y}^* \ge \mathrm{b}|x] + \text{Prob}\,[a < y^* < b|\mathrm{x}]\ E[y^*|\ a < y^* < b|\mathrm{x}]$

Let, $\alpha_j = \frac{j - \mathrm{x}'\beta}{\sigma}, F_j = F(\alpha_j),\ f_j = f(\alpha_j), and\ j = a, b. Then$

$E[y|\mathrm{x}] = a\,F_a + b(1 - F_b) + (F_b - F_a)E[y^*|a < y^* < b, \mathrm{x}].$

Since, $y^* = \mathrm{x}'\beta + \sigma[(y^* - \beta'\mathrm{x})/\sigma], the\ conditional\ mean\ may\ be\ written$

$$E[y^*|a < y^* < b, \mathrm{x}] = \mathrm{x}'\beta + \sigma\, E\left[\frac{y^* - \mathrm{x}'\beta}{\sigma}\middle| \frac{a - \mathrm{x}'\beta}{\sigma} < \frac{y^* - \mathrm{x}'\beta}{\sigma} < \frac{b - \mathrm{x}'\beta}{\sigma}\right]$$

$$= x'\beta + \sigma \int_{\alpha_a}^{\alpha_b} \frac{(\varepsilon/\sigma) f(\varepsilon/\sigma)}{F_b - F_a}\, d\left(\frac{\varepsilon}{\sigma}\right).$$

Collecting terms, we have

$$E[y|\mathrm{x}] = a\,F_a + b(1 - F_b) + (F_b - F_a)\beta'\mathrm{x} + \sigma \int_{\alpha_a}^{\alpha_b} \left(\frac{\varepsilon}{\sigma}\right) f\left(\frac{\varepsilon}{\sigma}\right) d\left(\frac{\varepsilon}{\sigma}\right).$$

Now, differentiate with respect to x. The only complication is the last term, for which the differentiation is with respect to the limits of integration. We use Leibnitz's theorem and use the assumption that f(ε) does not involve x. Thus,

$$\frac{\partial E[y|\mathrm{x}]}{\partial \mathrm{x}} = \left(\frac{-\beta}{\sigma}\right) a f_a - \left(\frac{-\beta}{\sigma}\right) b f_b + (F_b - F_a)\beta + (\beta'\mathrm{x})(f_b - f_a)\left(\frac{-\beta}{\sigma}\right) + \sigma[\alpha_b f_b - \alpha_a f_a]\left(\frac{-\beta}{\sigma}\right).$$

After inserting the definitions of α_{a} and α_{b}, and collection terms, we find all terms sum to zero save for the desired result,

$$\frac{\partial E[y|\mathrm{x}]}{\partial \mathrm{x}} = (F_b - F_a)\beta = \beta \times \text{Prob}\,[a < y_i^* < b].$$

censoring at zero and normally distributed disturbance, the result specializes to

$$\frac{\partial E[y_i|\mathrm{x_i}]}{\partial \mathrm{x_i}} = \beta\ \Phi\left(\frac{\beta'\mathrm{x_i}}{\sigma}\right)$$

Although not a formal result, this does suggest a reason why, in general, least squares estimates of the coefficients in a Tobit model usually resemble the MLEs times the proportion of non limit observations in the sample. McDonald and Mofitt (1980) suggested a useful decomposition of $\partial E[y_i|\mathrm{x_i}]/\partial \mathrm{x_i}$,

$$\frac{\partial E[y_i|\mathrm{x_i}]}{\partial \mathrm{x_i}} = \beta \times \{\Phi_{\mathrm{i}}[1 - \lambda_{\mathrm{i}}(\alpha_{\mathrm{i}} + \lambda_{\mathrm{i}})] + \phi_i(\alpha_i + \lambda_{\mathrm{i}})\},$$

Where, $\alpha_{\mathrm{i}} = \mathrm{x_i}'\beta, \Phi_{\mathrm{i}} = \Phi(\alpha_i)$ and $\lambda_i = \phi_i/\Phi_i$. Taking the two parts separately, this result decomposes the slope vector into

$$\frac{\partial E[y_i|\mathrm{x_i}]}{\partial \mathrm{x_i}} = \text{Prob}\,[y_i > 0]\frac{\partial E[y_i|\mathrm{x}_i.\,\mathrm{y_i} > 0]}{\partial \mathrm{x}_i} + E[y_i|\mathrm{x}_i.\,\mathrm{y_i} > 0]\frac{\partial\,\text{Prob}[y_i > 0]}{\partial \mathrm{x}_i}$$

Thus, a change in x_i (i.e. various marketing strategies) has two effects: It affects the conditional mean of y_i^* (amount of revenue generation) in the positive part of the distribution, and it affects the probability that the observation will fall in that part of the distribution. The log-likelihood for the censored regression model is

$$\ln L = \sum_{y_i > 0} -\frac{1}{2}\left[\log(2\pi) + \ln\sigma^2 + \frac{(y_i - \mathrm{x}_i'\beta)^2}{\sigma^2}\right] + \sum_{y_i = 0} ln\left[1 - \Phi\left(\frac{\mathrm{x}_i'\beta}{\sigma}\right)\right]$$

The two parts correspond to the classical regression for the no limit observations and the relevant probabilities for the limit observations, respectively. This likelihood is a nonstandard type, since it is a mixture of discrete and continuous distributions. In a seminal paper, Amemiya (1973) showed that despite the complications, proceeding in the usual fashion to maximize log *L* would produce an estimator with all the familiar desirable properties attained by MLEs.

The log-likelihood function is fairly involved, but Olsen's (1978) reparameterization simplifies things considerably. With $\gamma = \beta/\sigma$ and $\theta = 1/\sigma$, the log-likelihood is

$$\ln L = \sum_{y_i > 0} -\frac{1}{2}[\ln(2\pi) + \ln\theta^2 + (\theta y_i - \mathrm{x}_i'\gamma)^2] + \sum_{y_i = 0} ln[1 - \Phi(\mathrm{x}_i'\gamma)]$$

The results in this setting are now very similar to those for the truncated regression. The Hessian is always negative definite, so Newton's method is simple to use and usually converges quickly. After convergence, the original parameters can be recovered using $\sigma = 1/\theta$ and$\beta = \gamma/\theta$. The asymptotic covariance matrix for these estimates can be obtained from that for the estimates of $[\gamma, \theta]$ using Est. Asy. Var $[\hat{\beta}, \hat{\sigma}] = \hat{\mathbf{J}}$ Asy. Var $[\hat{\gamma}, \hat{\theta}] = \hat{\mathbf{J}}'$, where

$$\mathbf{J} = \begin{bmatrix} \partial\beta/\partial\gamma' & \partial\beta/\partial\theta \\ \partial\sigma/\partial\gamma' & \partial\alpha/\partial\theta \end{bmatrix} = \begin{bmatrix} (1/\theta)\mathbf{I} & (-1/\theta^2)\boldsymbol{\gamma} \\ \mathbf{0}' & (-1/\theta^2) \end{bmatrix}$$

Researchers often compute ordinary least squares estimates despite their inconsistency. Almost without exception, it is found that the OLS estimates are smaller in absolute value than the MLEs (Greene, 1981). A striking empirical regularity is that the maximum likelihood estimates can often be approximated by dividing the OLS estimates by the proportion of non limit observations in the sample (Greene, 1981; Goldberger, 1981; Chung & Goldberger, 1984). The effect is illustrated in the last two columns of Table 1.

4. Findings and Results

Table 1: Tobit Estimates for amount of revenue generation due to various marketing strategies

Predictors	**Revenue Generation**		**Scaled OLS**	**Ordinary Least Squares**
	Coefficient (T-Value)	Slope		
	1502.44			
Constant	(9.13)			
Single Segment Strategy	1741.15	421.27	676.72	329.74
	(20.11)			
	49.09	217.00	22.02	16.79
Differentiated Strategy	(1.81)			
Un Differentiated	299.03	90.90	307.17	102.11

Strategy	(4.93)			
	184.17	70.05	43.35	26.14
Product Development	(2.89)			
Establishing The Brand	3.99.48	123.06	367.28	309.63
	(7.77)			
Innovation strategy	585.98	183.81	400.03	265.78
	(9..67)			
	851.87	331.45	666.16	349.69
Market Growth Shares	(12.64)			
	34.37	13.72	44.01	36.05
Porter Cost Leadership	(2.05)			
Market Expansion	342.76	29.52	765.70	321.91
	(6.92)			
	27.73	25.71	31.32	23.87
Pricing	(1.85)			
	349.26	285.03	479.08	199.15
Diversification	(14.01)			
σ	2231			
Sample size	5095			
Proportion working	0.490			

The finding of this paper suggested and revealed few very pondering insights, as they are shown in table 1. It is found that all of the marketing strategies in relevance to the varieties of products / services are objectively designed and implemented with the clear a intent to just make and grab money from each pocket which comes to market, concisely all outlined marketing strategies paves the clear and straight way to generate overwhelming amount of money as the betas for all outlined constructs of marketing strategies are found vigorously thick and significant at $t > 1.5$.While, the Tobit model/ censored regression is revealed as the robust model in comparison of the results of ordinary least square model, to investigate the effects of all outlined marketing strategies on the censored variables i.e. amount of revenue generation.

5. Discussions and Conclusions

This paper concluded that marketing strategies no matters to which category they belong, all are constituted for one similar reason which is not anything else except of making money for the respective organization. In fact and in short these strategies are formulated and implemented to achieve the excepted outlined target of revenue generation which every company desires. It is also notable that the single segment strategy and market growth share strategy are found to have the highest impacts on the amount of revenue generation but all other marketing strategies are also significantly involved in making money in relevance to the products/ services for which they are aimed. In support to the above stated concluding thoughts Rust (1997) found that the various marketing strategies are purposely designed and operationally implemented to meet the one common objective of revenue generation and its maximization.

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