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Title

IMPACT OF SELLING EXPENSES ON NET SALES IN PHARMACEUTICAL COMPANIES OF INDIA

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Abstract:

Selling costs, in a down economy, are a major drag on the bottom line. Selling costs are the budget items associated with sales personnel, their support staff, the departmental infrastructure, and the at times considerable expense accounts for the sellers. While bonuses, commissions and similar considerations are often variable and allow for scaling, many companies still find selling costs overwhelmingly disproportionate with performance promises. Instead of driving results, sales costs become a drag on results. Selling expenses do vary according to industry and industry. It also gets differentiates as per market capitalization rate. The paper studies the impact of selling expenses on the sales revenue. This relationship considers varied capitalization rate as large Capitalization, Medium Capitalization, and small capitalization in pharmaceuticals industry. It has been observed that in pharmaceuticals industry selling expenses do have a major impact on figures of sales revenue whereas if observed specifically then only firms with small capitalization value are able to get maximum benefit out of their selling expenses. Firms with large capitalization value do not require much too spend on selling expenses because they already have their brand equity in market and firms with medium capitalization value have more focus on appointment of more and more medical representatives.

Key Words: Market capitalization rate, selling expenses, net sales.

Pharmaceutical Industry in India:

Pharmaceutical consumption in India is expected to grow substantially over the next five years, driven by a rise in disposable income, an ageing population and improving medical infrastructure (Business Insights July 2009). According to latest economic survey 2009-10 report, the Indian pharmaceutical industry currently values about Rs.100611 crore. Indian pharmaceutical sector now ranks 3rd in terms of volume of production with 10 per-cent share of global pharmaceutical market and occupies 14th position by value, says a news release issued by Press Information Bureau from the Ministry of Finance, Govt. of India.

The Indian pharmaceutical industry can be divided into the organized and the unorganized sector. The organized sector of India's pharmaceutical industry consists of around 260 companies which account for 70 per-cent of product on the market. Around 23,000

pharmaceutical companies contribute to rest 30 per-cent of the Indian pharmaceutical market (Dixit 2008). Pharmaceutical sales are growing at a faster rate in India due to the rising disposable income, several health insurance schemes (that ensures the sales of branded drugs) and intense competition among top pharmaceutical companies.

Selling Expenses in Pharmaceutical Industry:

Marketing & selling expenses comprise the second largest cost head for pharmaceutical companies operating in India. Material costs account for about 50 per cent of the operating income of the industry. Marketing and selling expenses account for about 9 per cent of the operating income of the Indian pharmaceutical industry. The pharmaceutical industry is characterised by low fixed asset intensity and high working capital intensity. Both Indian pharmaceutical companies and multinationals are equally prominent in this industry, with each group having a significant role to play. While the Indian companies have a presence in both bulk drugs and formulations, the multinationals are focused primarily on formulations. The selling costs of multinational companies in India have historically been higher than the same for Indian companies. This is because multinationals have traditionally focused on the formulations segment where per unit selling costs are higher as compared with the bulk drugs segment. The selling costs as percentage of operating income, for bulk drug manufacturers are considerably lower than industry average. This is because of the commodity nature of the bulk drugs business.

Selling costs, in a down economy, are a major drag on the bottom line. Selling costs are the budget items associated with sales personnel, their support staff, the departmental infrastructure, and at times considerable expenses accounts for the sellers. While bonuses, commissions and similar considerations are often variable and allow for scaling, many companies still finds selling costs overwhelmingly disproportionate with performance promises. Instead of driving results, sales costs become a drag on results. (Herter 2009).

Pharmaceutical Industry's major strategies involve use of medical representatives for marketing drugs directly to the physicians. A great variety of marketing strategies are being used by pharmaceutical companies that includes samples, small gifts, large gifts, frequent visits, sponsorships to conferences and discounts. Typically, the expense of this sales force of any

pharmaceutical company comprises anything ranging from 15-20% of annual product revenues. Cost reductions are painful and cutting them is difficult and dangerous. This is especially true when rightsizing a selling operation, after all these cuts can hit the cash box (Herter 2009).

Review of Literature:

Much of the empirical research on the relationship between selling expenses and net sales or profitability refers to expenditures on media advertising. There is a rich literature on advertising but little has been written on other non-advertising sales efforts. It is rare that economists have access to data describing differences across firms in an industry in non-advertising sales efforts.

It has been proved that in many industries including pharmaceutical industry, these other sales efforts, as a percentage of industry sales, is important and in terms of size is much higher than the advertising intensity (**Weiss, Pascoe and Martin 1983)**

(Connor and Weimer 1986) supported that a construction of far broader and more meaningful than advertising intensity measures of selling costs, across the food and tobacco manufacturing industries is necessary.

The relevant literature (Carlton and Perloff 1994) (Scherer and Ross 1990) (Oustapassidis 1998) has addressed that it is important to focus on a firm level analysis in a single industry in order to study the performance changes over time by using cross sectional data. By focusing on single-industry firms responses to changing conditions, one can accesses strategies directly by estimating their effects on firm performance.

A preliminary survey of doctors, pharmacies, hospitals, public, and company salespersons' is conducted by the Citizen, Consumer & Civic Action Group. (CAG), Chennai to find the taste of the promotional chain of pharmaceutical drugs promotion. The study clearly points to the expenditure on doctors through promotion. "The top 50 drug companies in India spend about 18. 56% of the total income on selling expenses, which is the highest among all manufacturing activities." **(ET Intelligence Group December 15, 2004)**.

(Lexichin Joel 2008), estimated the pharmaceutical promotional expenses in United States. The researchers' estimate is based on the systematic collection of data directly from the industry and doctors during 2004, which shows the U.S. pharmaceutical industry spent 24.4% of the sales

dollar on promotion, versus 13.4% for research and development, as a percentage of US domestic sales of US$235.4 billion. The authors focused their study on the United States because it is the only country in which information is available for all of the major promotion categories, and it is also the largest market for pharmaceuticals in the world, representing approximately 43% of global sales and global promotion expenditures.

Objectives of the Study:

1. To study the proportion of fund incurred on selling expenses in pharmaceutical sector.
2. To study the selling expenses of pharmaceutical companies segregated as per market capitalization value.
3. To study the proportionate impact of selling expenses on net sales of pharmaceutical companies those are segregated as per market capitalization value.

Research Methodology:

Research Design:

Selling expenses affect the elasticity of demand by differentiating the products. As a main determinant of market structure, product differentiation increases consumer loyalty, makes the demand for the products of the firm more inelastic and in many cases acts as barrier to entry in the market. So higher selling expenses ought to result in higher profitability. Profits are expected to be distributed toward the firms that are most successful in differentiating their brands. However, it is reasonable to assume that there will be a critical level of selling expenses which is necessary in order brands to start to be well known and selling expenses to start to be effective and to lead to an increase in profitability. So the research paper is confined to analyze the impact of selling expenses on the sales revenue of the pharmaceuticals companies. For fulfilling the purpose pharmaceuticals companies are taken up as whole and also bifurcated on the basis of their market capitalization value. This bifurcation is done because it has been found in previous literature that there is difference between the amount spent on selling and advertising on the basis of their capitalization rate. **(Vlachvei, Ananiadis and Oustapassidis 2000)**Here the

expenses under the name of selling expenses for 5 years are only considered to analyze the result. Top 5 companies under the head of small capitalization, mid capitalization, and large capitalization are taken as sample.

Data Collection:

Problems associated with the availability of data did not allow researchers who studied the effects of other than advertising expenses on profit margins at the firm level. Fortunately the data, inc1uding non advertising and other selling expenses under the head of selling and distribution for individual pharmaceutical companies operating in India were available for this work. The ratio of composition of selling and distribution cost in total cost incurred by the companies is considered in relation to net sales of the pharmaceuticals companies taken as samples. The pharmaceutical companies have been categorized as large, medium and small on the basis of market capitalization. Top five companies in each category have been selected for the purpose of data collection and data related to selling distribution cost composition and net sales of five years i.e. from 2006 to 2010 have been taken.

Samples:

For the sample five companies are selected from each of the 3 capitalization level. Under large capitalization umbrella top 5 companies are: Sun Pharma, Dr. Reddy's Laboratories, Cipla, GSK, and Ranbaxy Laboratories. Top 5 companies with Medium Capitalization level are: Natco Pharma, Elder Pharmaceuticals, Dishman Pharma, Shilpa Medicare, and Nector Life Sciences. Companies with Small Capitalization values are: Makson's Pharma, DIL, Kopran, Kilitch Drugs, and Anus Laboratories.

Hypothesis:

$H_0$1: Selling expenses makes significant difference on the sales revenue of pharmaceuticals companies.

$H_0$2: Selling expenses makes significant difference on the sales revenue of pharmaceuticals companies with large capitalization values.

$H_0$3: Selling expenses makes significant difference on the sales revenue of pharmaceuticals companies with medium capitalization values.

$H_0$4: Selling expenses makes significant difference on the sales revenue of pharmaceuticals companies with small capitalization values.

Tool for Data Analysis:

To see the impact linear regression model is used. Linear Regression estimates the coefficients of the linear equation, involving one or more independent variables that best predict the value of the dependent variable. For example, you can try to predict a salesperson's total yearly sales (the dependent variable) from independent variables such as age, education, and years of experience. The linear regression model assumes that there is a linear, or "straight line," relationship between the dependent variable and each predictor. This relationship is described in the following formula.

$$yi=b0+b1xi1+...+bpxip+ei$$

Where

yi is the value of the i^{th} case of the dependent scale variable i.e. Sales revenue of companies

p = is the number of predictors here only one predictor is taken i.e. Selling expenses

bj = is the value of the j^{th} coefficient, j=0,...,p (used when there are many predictors)

xij = is the value of the i^{th} case of the j^{th} predictor (used when there are many predictors)

ei = is the error in the observed value for the i^{th} case

The model is linear because increasing the value of the j^{th} predictor by 1 unit increases the value of the dependent by b_j units.

Descriptives:

It provides the number of valid cases, the mean, and the standard deviation for each variable in the analysis.

Partial Correlation:

A correlation matrix with a one-tailed significance level and the number of cases for each correlation are also displayed. The correlation that remains between two variables after removing

the correlation that is due to their mutual association with the other variables. The correlation values shows the relationship between variables, when the linear effects of the other independent variables in the model have been removed from both.

Model Summary:

The change in the R^2 statistic that is produced by adding or deleting an independent variable. If the R^2 change associated with a variable is large, that means that the variable is a good predictor of the dependent variable. In the linear regression model, the coefficient of determination, R^2, summarizes the proportion of variance in the dependent variable associated with the predictor (independent) variables, with larger R^2 values indicating that more of the variation is explained by the model, to a maximum of 1.

The **ANOVA** table reports a significant *F* statistic, indicating that using the model is better than guessing the mean.

RESULTS:

1. Impact Of Selling Expenses On Sales Revenue In Pharmaceuticals Industry

Descriptive Statistics

	Mean	Std. Deviation	N
Net Sales in Rs Cr	1258.3866	1653.93040	74
Selling Expenses in Rs Cr	103.8197	160.71315	74

Correlations

		Net Sales in Rs Cr	Selling Expenses in Rs Cr
Pearson Correlation	Net Sales in Rs Cr	1.000	.939
	Selling Expenses in Rs Cr	.939	1.000
Sig. (1-tailed)	Net Sales in Rs Cr	.	.000

	Selling Expenses in Rs Cr	.000	.
N	Net Sales in Rs Cr	74	74
	Selling Expenses in Rs Cr	74	74

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Du Wa
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.939	.882	.881	571.39053	.882	539.633	1	72	.000	

a. Predictors: (Constant), Selling Expenses in Rs Cr

b. Dependent Variable: Net Sales in Rs Cr

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	176183386.681	1	176183386.681	539.633	.000[a]
	Residual	23507074.135	72	326487.141		
	Total	199690460.815	73			

a. Predictors: (Constant), Selling Expenses in Rs Cr

b. Dependent Variable: Net Sales in Rs Cr

Here the value of correlation is .939 which says that there is strong linkage between the selling expenses and sales revenue in pharmaceuticals companies. Any increase or decrease in the

proportion of selling expenses brings a corresponding and significant difference in the value of sales revenue. Also it can be observed that the value of R^2 is also .828 which shows that selling expenses is a good predictor of changes in sales revenue.

The difference of regression and residual is also high which too says that selling expenses have high impact on sales revenue. The value of F-statistics is also .000 at 5% level of significance so the hypothesis **H_o1 is accepted**.

2. Impact Of Selling Expenses On Sales Revenue In Pharmaceuticals Industry With Large Capitalization Values

Descriptive Statistics

	Mean	Std. Deviation	N
Net Sales in Rs Cr	3255.9568	1398.14313	25
Selling Expenses in Rs Cr	288.6713	156.61357	25

Correlations

		Net Sales in Rs Cr	Selling Expenses in Rs Cr
Pearson Correlation	Net Sales in Rs Cr	1.000	.798
	Selling Expenses in Rs Cr	.798	1.000
Sig. (1-tailed)	Net Sales in Rs Cr	.	.000
	Selling Expenses in Rs Cr	.000	.
N	Net Sales in Rs Cr	25	25
	Selling Expenses in Rs Cr	25	25

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.798[a]	.637	.621	861.07298	.637	40.275	1	23	.000	.841

a. Predictors: (Constant), Selling Expenses in Rs Cr
b. Dependent Variable: Net Sales in Rs Cr

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29862027.789	1	29862027.789	40.275	.000[a]
	Residual	17053273.474	23	741446.673		
	Total	46915301.263	24			

a. Predictors: (Constant), Selling Expenses in Rs Cr
b. Dependent Variable: Net Sales in Rs Cr

As we know that companies with high large capitalization value have more funds to invest in in companies. So here the value of correlation is .798 which says that there is strong relationship between the selling expenses and sales revenue in pharmaceuticals companies having large capitalization values. Putting more funds in selling expenses does give positive results on sales revenue. The degree of correlation is also high and value of test is also accepted as per the 5% level of significance.

It can also be observed that the value of R^2 is also .637 which shows that selling expenses is good predictor of changes in sales revenue. The value is not satisfactory because as the company

under large capitalization value may not require to do invest funds on selling expenses because they carry a positive brand image in minds of consumers.

The difference of regression and residual is also high which too says that selling expenses have high impact on sales revenue. The value of F-statistics is also .000 at 5% level of significance so the **hypothesis H_o2 is accepted**. But the level of impact is not as much as of the companies under medium capitalization and small capitalization. The reason could be that these companies do not require funds to build their brand equity.

3. Impact Of Selling Expenses On Sales Revenue In Pharmaceuticals Industry With Medium Capitalization Values

Descriptive Statistics

	Mean	Std. Deviation	N
Net Sales in Rs Cr	375.7878	227.63402	23
Selling Expenses in Rs Cr	14.8712	15.12728	23

Correlations

		Net Sales in Rs Cr	Selling Expenses in Rs Cr
Pearson Correlation	Net Sales in Rs Cr	1.000	.708
	Selling Expenses in Rs Cr	.708	1.000
Sig. (1-tailed)	Net Sales in Rs Cr	.	.000
	Selling Expenses in Rs Cr	.000	.
N	Net Sales in Rs Cr	23	23
	Selling Expenses in Rs Cr	23	23

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.708[a]	.501	.477	164.56626	.501	21.094	1	21	.000	.383

a. Predictors: (Constant), Selling Expenses in Rs Cr

b. Dependent Variable: Net Sales in Rs Cr

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	571256.344	1	571256.344	21.094	.000[a]
	Residual	568723.138	21	27082.054		
	Total	1139979.482	22			

a. Predictors: (Constant), Selling Expenses in Rs Cr

b. Dependent Variable: Net Sales in Rs Cr

Here the value of correlation is .708 which says that there is a strong relationship between the selling expenses and sales revenue in pharmaceuticals companies having medium capitalization values. Any change made in the proportion of selling expenses brings a positive corresponding change and significant difference in the value of sales revenue.

Here it can be observed that the value of R^2 is also .501 which shows that selling expenses is good predictor of changes in sales revenue. But the value is not satisfactory as these companies put more emphasis on appointing medical representatives rather than investing funds for promotional purposes. Professional sellers actively pursue new sales by communicating with

their customer and prospects with the intent to cause a transaction or similar outcome. (Herter, Maintaining Sales Capacity in the Face of Staff Reductions 2009)

The difference of regression and residual is not too high which too says that selling expenses have high impact on sales revenue. The value of F-statistics is also .000 at 5% level of significance so the hypothesis H_o3 is accepted. But the value of R^2 shows the level of impact which is moderate and the increases in selling expenses does not make significant difference on sales revenue.

4. Impact Of Selling Expenses On Sales Revenue In Pharmaceuticals Industry With Small Capitalization Values

Descriptive Statistics

	Mean	Std. Deviation	N
Net Sales in Rs Cr	109.6550	78.49638	24
Selling Expenses in Rs Cr	4.6684	4.36373	24

Correlations

		Net Sales in Rs Cr	Selling Expenses in Rs Cr
Pearson Correlation	Net Sales in Rs Cr	1.000	.803
	Selling Expenses in Rs Cr	.803	1.000
Sig. (1-tailed)	Net Sales in Rs Cr	.	.000
	Selling Expenses in Rs Cr	.000	.
N	Net Sales in Rs Cr	24	24
	Selling Expenses in Rs Cr	24	24

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.803[a]	.644	.628	47.87881	.644	39.822	1	22	.000	1.628

a. Predictors: (Constant), Selling Expenses in Rs Cr

b. Dependent Variable: Net Sales in Rs Cr

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	91286.300	1	91286.300	39.822	.000[a]
	Residual	50432.362	22	2292.380		
	Total	141718.663	23			

a. Predictors: (Constant), Selling Expenses in Rs Cr

b. Dependent Variable: Net Sales in Rs Cr

The value of correlation is .803 which says that there exist a high degree of relationship between the selling expenses and sales revenue in pharmaceuticals companies having small capitalization values. Any increase or decrease in the proportion of selling expenses brings a corresponding and significant difference in the value of sales revenue.

Here it can be observed that the value of R^2 is also .644 which shows that selling expenses is good predictor of changes in sales revenue. But the value also shows that sales revenue are affected by the selling expenses by 64%.

The difference of regression and residual is not too high which too says that selling expenses have high impact on sales revenue. The value of F-statistics is also .000 at 5% level of

significance so the **hypothesis H_o4 is accepted**. The companies with small capitalization successfully covers the cost spend on selling expenses with high values of sales revenue.

Conclusion:

These results suggest that total selling expenses must be inc1uded in the analysis along with the other determinants (e.g. advertising) of firm conduct to explain more appropriately the effectiveness of selling efforts on firm profitability in order to have a more complete measure of the selling efforts. The study is based on the selling expenses and its impact on sales revenue. Companies chosen are from pharmaceutical industry and are divided on the basis of their market capitalization rate. Overall there exists a strong impact of selling expenses on sales revenue in pharmaceuticals industry. If specifically considered firms with large capitalization then they are not able to get the best benefit from the selling expenses incurred by them as they do not spend much on selling expenses because of their brand names. Same is the case with medium capitalization firms; they put more attention towards spending more on appointment of medical representatives rather than other promotional expenses. On the other hand firms with smaller capitalization values are best among the three. They are completely benefited with the amount spend by them on the selling expenses. The relationship between market share and profitability is also non-linear. As market share increases, profit margins also in crease until the point where market share is equal to 20.8% (9. 34/ (2x22.44) **(Vlachvei, Ananiadis and Oustapassidis 2000).**

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