

Connectivity Between Research & Development Expenditure and Profits of Indian Pharma Companies

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ABSTRACT: *Pharmaceutical firms need continuous research and development in order to maintain constant market share. It involves considerable expenses and hence it is important to manage research and development expenditure systematically. The purpose of this paper is to study the effect of research and development expenditure on profits of leading Indian pharmaceutical firms. The dependent variable, Net Profit is used as a measure of profitability and the relation between research and development expenditure and net profit is investigated for a sample of 17 firms for a period of five years (2007 – 2011). A very significant relationship between profitability and research and development expenditure has been found in previous empirical work done in various other countries. This research work is aimed at analyzing the effect of research and development expenditure on net profits in Indian scenario. Also, in order to form a model and carry out analysis, time-series regression model is developed using SPSS.*

Keywords: *Net profits, Research and Development Expenditure, Regression.*

I. INTRODUCTION

R & D Expenditure by pharmaceutical Industries is necessary for innovation - that is for introduction of new molecules/drugs or development of new processes for manufacturing. It is believed that R & D expenditure makes a positive difference in a firm's profitability. Firms take decisions to invest in R & D based on the availability of resources at their disposal. This is in keeping with the resource based view of the firm [1]. The intensity of R & D investments is decided with respect to future returns & also the competitive leverage it offers. In this paper, we examine the empirical relationship between R & D intensity and profitability, as measured by reported Net profit, for actual firms in pharmaceutical sector.

II. CONCEPTUAL FRAMEWORK

Investments in operational effectiveness may be required to maintain competitive parity but this may not lead to a competitive advantage. A company specially belonging to pharmaceutical sector, must be proactive, rather aggressive, in Research & Development so as to be different & unique the qualities which must be preserved to out-smart rivals. The focus should be on R & D rather than in competing to carry out similar activities efficiently. This is the prime reasoning to justify the investments in R & D specially by pharmaceutical firms. Investments in other assets like infrastructure will not provide a competitive edge, since, the same can be done by rivals also.

The resource based theory of firms [2],[3] also validates the focus on R & D. It states that a firm's competitive advantages is boosted when the available resources are valuable, non tradable, difficult to imitate & lack viable substitutes. These are the very attributes of R & D programs.

III. DATA AND METHODOLOGY

A sample of 17 firms with 5 years of complete records for R & D expenses, Reported Net profit & Net sales in pharmaceutical Industries, during the 2007-2011 period, was retrieved from the annual reports of the companies. A regression model was used to assess the impact of R & D expenditure on a firm's profitability (Reported Net Profit).

Definition Of Variables

Independent Variable:

R & D Expenditure:

Total R & D Expenses, including Capital Expenditures & Recurring Expenditure, is the primary driven variable. Several studies in the past have used this specification of R & D expenditure, to study R & D & Performance relationship [3], [4], [5].

Dependent Variable:

Reported Net Profit :

The dependent variable is the reported Net Profit. The reported Net Profit is the profit after Tax, Depreciation & other taxes like Deferred Tax & Fringe Benefit Tax. It is an important measure of a company’s performance. Earlier studies conducted by Chandra S. Mishra, King Hung Hsieh & Daud H. Gobeli [6] have also used this variable in their research.

Descriptive Statistics:

Table 1 given provides descriptive statistics of the collected variables. Total observations are 79.

Empirical Analysis:

Table 2 gives Pearson correlation coefficient, for the variables used to assess the impact of R & D Expenses on Net Profits. Pearson correlation determines the type of relationship between the two variables & varies between -1 & +1. +1 indicates that the relationship is perfectly linear. Here the coefficient is 0.676, indicating a significantly positive relationship between R&D Expenditure & Net Profit. Net Profit is significantly positively correlated, as can be seen, with R & D Expenditure.

Regression Analysis:

To measure the impact of R & D Expenses on Net Profit, regression analysis using SPSS tool has been done. Equation -1, as obtained from Table-3, establishes the relation between the two variables.

Net Profit =1.133*(R&D Exp)+122.082 --- Equation - 1

Descriptives:

Table-1

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
EXP	79	0	530	48.71	83.508
PROFIT	79	21	810	177.30	140.123
Valid N (list wise)	79				

CORRELATIONS:

TABLE-2

Correlations

		VAR00001	VAR00002
EXP	Pearson Correlation	1	.676**
	Sig. (2-tailed)		.000
	N	79	79
M	Pearson Correlation	.676**	1
	Sig. (2-tailed)	.000	
	N	79	79

Correlation is significant at the 0.01 **. level (2-tailed).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.676 ^a	0.456	0.449	103.989

TABLE-3

Model	Un standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	122.082	13.567		8.999	0.000
EXP	1.133	0.141	0.676	8.039	0.000

Here, the constant is 122.082 and the coefficient is 1.133; Hence the Equation is

Net Profit = 1.133*(R&D Exp)+122.082 --- Equation -1

IV. CONCLUSION

The study that has been carried out, examined the impact of R & D Expenditure on Profits & indicates a positive correlation between the two, Eqⁿ-1 establishes the relation between the two variables - Net Profit and R&D expenditure.

The preliminary results developed here, open the door for further analysis using other tools, which may give better results.

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