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- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

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- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19-22 June.

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- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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**SIZE, AGE AND GROWTH IN INDIAN SELECTED PHARMACEUTICAL COMPANIES**

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**ABSTRACT**

*This study identifies the relationship between size, age and firm growth of selected companies in pharmaceutical industry in India. It is based sample of 10 companies drawn from the list of companies from the Capital Line database. It covers the period of ten years, i.e., from 2001-02 to 2010-11. The growth of the firm measured in terms of sales, and size in terms of total assets and Age is treated from the company establishment to initial year of the study. And Growth in net sales treated as dependent variable and Size and age are the depended variables. Correlation is used to know the relationship between the variables. It shows Age and Size both are positively significant with Growth. Multiple regression analysis results reveal that Size of the selected pharmaceutical companies determining its growth.*

**KEYWORDS**

Age, Determinants, Growth, Net Sales, Size.

**INTRODUCTION**

Many economists attracted in the world Size, Age, Profitability, Research development and growth of the firms etc., in an industry. This study focused on Size, Age and Growth of selected companies of pharmaceutical industry. Precise information about the size, age and growth variables.

**Size:** Size in economic terminology, may be defined as 'scale'-it may be scale of production, output or operation and may constitute, one of the important elements determining efficiency of a firm. It is of essential importance for the firms to be of optimum size. If the firms are too big or too small, the efficiency of the firm in general and its competitive power in particular, may be seriously impaired. The factors affecting the size of the firm may be technical, marketing, financial and entrepreneurial (Beacham, 1958). In order to measure the Size of the firm different people considered different variables. Assets are used in the studies of Aislable (1971), Barna (1962), Cohen and Smyth (1973), Davenport (1971), Sing and Whittington (1968). This study focusing the Assets are the measure of size of the firm.

**AGE:** This study focusing age as initial year of study (2002) minus the year of first registration as a company, as reported in the stock exchange official directory. Some arguments suggest that young firm's with an unstable growth performance. But on the hand, economists give another argument, that young firms have more potential. They are more dynamic and more volatile in their growth experience than older firms.

**GROWTH:** Growth is important dimension of the firm, whether it is small or large. Through growth, the firm will be able to enlarge its size. The larger the firm, the more perfect the control it assumes over its environment and the higher the efficiency with which it plans its overall activities. Downie, 1958; Marris, 1998 argued that growth is a necessary condition for the long run survival of the firm in an uncertain and constantly changing environment. Each one is supported by different key functions shared by different departments in the company. Barringer et al. (2005) reviewed more than 55 works on high-growth businesses, and since then other studies have followed, with different empirical and theoretical perspectives (Chan et al., 2006; Gollann, 2006; Moreno and Casillas, 2007, 2008; Rauch et al., 2005; Storey, 2011 Wiklund et al. 2009). Galbraith (1967) argued that the firm may maximize the rate of growth of sales subject to an acceptable level of dividends and retained earnings.

**THE INDIAN PHARMACEUTICAL INDUSTRY: AN OVERVIEW**

The Pharmaceutical industry in India meets around 70% of the country's demand for bulk drugs, drug intermediates, pharmaceutical formulations, chemicals, tablets, capsules, orals and injectables. There are approximately 250 large units and about 8000 Small Scale Units, which form the core of the pharmaceutical industry in India (including 5 Central Public Sector Units). Overall, the Indian market for pharmaceuticals is projected to grow at an average annual rate of between 15 and 20 percent during 2005 - 2010. The Indian Pharmaceutical industry is one of the growing sectors in India's science-based industries. The demand for pharmaceutical products in India is significant and is driven by low drug penetration, rising middle-class & disposable income, increased government & private spending on healthcare infrastructure, increasing medical insurance penetration etc. The Indian pharmaceutical industry is growing at about 8 to 9 percent annually according to "A Brief Report Pharmaceutical Industry in India," published in January 2011. McKinsey & Company's report, "India Pharmacy 2020: Propelling access and acceptance, realizing true potential," predicted that the Indian pharmaceuticals market will grow to US\$55 billion in 2020; and if aggressive growth strategies are implemented, it has further potential to reach US\$70 billion by 2020. Further, McKinsey reports Healthcare grew from 4 per cent of average household income in 1995 to 7 percent in 2005 and is expected to grow to 13 per cent by 2025.

**REVIEW OF LITERATURE**

The empirical studies in India, as well as abroad are presented to find out the gaps in the studies, it is relevant to review the available literature on the related aspect of the present study.

Kumar. P (1985), in his study on "Corporate growth and profitability in the larger Indian Companies", has examined the relationship between profitability and growth in 83 large companies in India's corporate sector during 1969-79. The study reveals a significant inter study. The very low value of  $R^2$  in all the cases shows that only a small fraction of the growth of firms in India corporate sector has been explained by profitability.

Hall and Mairesse (1998) studied a sales model based on a Cobb-Douglas production function and performing OLS and GMM estimations. The most important conclusion is the high productivity of research and development in increasing the sales. These results were achieved for the United States data, and they used the GMM methodology to control for the simultaneity and firm heterogeneity. Additionally they found that the contribution of R&D to the Sales productivity declined during the 1980s, and the simultaneity bias was higher in the US than in France. This bias was probably due to the higher liquidity constraints for R&D Investments in the US firms than in the French firms.

Geroski (1999), together with Machin, and Walters (1997) studied the growth and profitability rates. Geroski concluded that the firm size follows a random walk, corporate growth is history dependent and every firm seems to have its own history. He described the theories of corporate growth and the implications in the

growth models for every theory. A very important conclusion, due to Geroski, is the finding of the irregular and erratic innovation by the majority of the firms, and the existence of a threshold to get signs of learning or increasing returns to the innovative activity. The results of the joint work show the unpredictability of corporate growth due to the unpredictability of future shocks, and the link between current growth and changes in the market value of firms.

Shanmugam K R and Bhaduri Saumitra N (2002), "Size, Age and firm Growth in the Indian manufacturing sector", *Applied Economics Letters*, Vol.9, pp 607-613, analyzed the growth of 390 Indian manufacturing firms. The statistical tools mean standard deviation and regression, shows significant results that age positive and size negative impact on growth of the firms.

Cox, Camp and Ensley (2002) surveyed 672 members of the Entrepreneur of the Year Institute and found a positive relationship between sales growth rate and profitability growth.

Cowling (2004) investigated UK firms across industries and concluded from a series of regression analyses that profit and growth tended to move together.

Niskanen, Mervi and Niskanen Jyrki (2005), "The Determinants of Firms growth in small and Micro Firms. Evidence on relationship lending Effects". This study has done between 1994 and 1997 with objective of examining the determinants of growth of small and micro firms with sample size of 100 Finland firms.

S. Chandrakumarmangalam and P. Govindasamy (2010) had analyzed under their study - "Leverage" – An Analysis and its Impact on Profitability with Reference to Selected Cement Companies in India, that the leverage and profitability and growth are related and the Leverage is having impact on the profitability of the firm.

Most of the studies have identified a positive impact of leverage on sales growth (e.g. Heshmati 2001, Honjo and Harada 2006, Hermelo and Vassolo 2007 and Huynh and Petrunia 2010). The autoregressive dynamic models were used in the Geroski, Machin and Walters' research when regressing the growth rate of the firm by previous growth rates and changes in current expectations of future profitability.

Our research differs in three main aspects when compared with the above mentioned previous research. Firstly, it differs in the specification of the econometric models; secondly, in the variables used and thirdly in the conclusions. The rest of studies are based on a static Cobb-Douglas production function where the production output is a function of labour, capital, and knowledge or R&D capital as specifically applied by Hall and Mairesse. Our research is based on Size, Age and Growth relationship by using mean standard deviation. It gives clear idea about consistency and variance of above variables of selected companies. And also multiple regressions have also run among the dependent and independent variables by using SPSS, which shows the significant results.

## STATEMENT OF THE PROBLEM

The Pharmacy industry in India is playing a vital role in the healthcare area of the nation. With the implementation of product patents from the year 2005, there will be a tough competition for the global market share. The foremost objective of a business firm is to achieve maximum profit. It can be achieved through various factors. However, today's business aims for value addition towards equity shareholders. If the profit of a firm increases, then the growth and value of shareholders also increases. To achieve its objective, a firm should take proper financial decisions-which can be done through the Growth. It can be done through various factors. This study concentrates the Size, Age and Growth relationship in Indian selected pharmaceutical industry.

## OBJECTIVES OF THE STUDY

1. To analyze the growth of the selected Indian pharmaceutical industry.
2. To examine the relationship among size, age and growth of the firms.

## RESEARCH METHODOLOGY

Methodology is the science of dealing with principles of procedure in research and study. It deals with the definition of the research problem, research design method of data collection, sampling design, statistical tools employed and elucidation of survey data.

**RESEARCH DESIGN AND PERIOD OF THE STUDY:** The design of the present study is descriptive and analytical in nature and covers the period of 10 years, from 2001-2002 to 2010-2011.

**SOURCES OF DATA:** In the present study, secondary data were used. The data was collected from Capital line and Prowess Database.

**SAMPLE SELECTION CRITERIA:** The selection was made based on the following criteria:

1. The Pharmaceutical companies having continued availability of data.
2. The pharmaceutical companies which had nonstop net sales during the study period.

**SAMPLE SELECTION:** Among 661 Indian pharmaceutical companies 561 companies are public limited, 78 companies are listed in the NSE, and 210 companies are listed in BSE. The sample companies were reduced to 10 companies based on the availability of data.

**TOOLS AND TECHNIQUES:** The variables considered for the analysis include growth of sales, Size and age. The statistical tools such as Descriptive, correlation, Regression analysis done by using SPSS Software.

**SCOPE OF THE STUDY:** Irrespective of company's scale whether it is small or large growth have important dimension of the firm. So the present study focuses on analyzing the factors influencing the growth, as it is useful for decisions like financing and investment to maximize the profits.

## HYPOTHESES OF THE STUDY

1. Size has positive relationship with growth of pharmaceutical selected companies.
2. Age positive relationship with growth of pharmaceutical selected companies.

## CONCEPTUAL FRAME WORK

**Variables And their Definitions:** The study examines the determinants of the growth (Net Sales) of the Indian pharmaceutical Industry. For examining the various factors that affect the Growth (Net Sales) of the companies in India the present study considers growth (Net Sales) as a dependent variable and the Size and Age are consider as independent variables in the present study.

**Growth:** Growth is important dimension of the firm, whether it is small or large. Through growth, the firm will be able to enlarge its size. The present study measures growth in terms of compounded average annual growth. Rate of Sales has been taken as the Proxy.

**Size:** The firm size has been one of the cost common variables used in explaining a company's Growth. Size of the firm is measured either by a natural logarithm of assets or of sales. For this study, natural logarithm of assets is used as a proxy for the firm's size.

**Size:** logarithm (Total Assets)

**AGE:** This study focusing age as initial year of study (2002) minus the year of first registration as a company, as reported in the stock exchange official directory.

## ANALYSIS AND INTERPRETATION

**ANLYSIS OF DATA:** The data were analyzed by using descriptive statistics, matrix. The regression line fitted, taking sales growth as a dependent variable and size and age are used as independent variables.

**DESCRIPTIVE STATISTICS:** It gives a numerical and graphical procedure to summarize a collection of data in an understandable manner. In this study, the descriptive statistics of mean, standard deviation, minimum and maximum were used.

TABLE 1: DESCRIPTIVE STATISTICS

Variables	Obs.	Mean	S.D	Minimum	Maximum
Growth	100	.224	.95476	-1.00	6.45
Age	100	.009	.18502	-1.00	.52
Size	100	.0018	.16733	-1.00	.62



Table 1 provides a summary of descriptive statistics of the dependent and independent variables. The mean of net sales of the company is .224. This means that more than 22% of the company's growth depends on the net sales. Age mean value is .009 and size mean value is .0018.

#### CORRELATION MATRIX

It is a mathematical tool that is used to describe the degree to which one variable is linearly related to the other, in other words it is measuring the degree of association of the two variables. The table 2 shows the correlation matrix between dependent and explanatory variables. The results show that Age and Size are positively correlated with growth (net sales), which is significant at 1% level.

TABLE 2: CORRELATION MATRIX

Variables		Growth	Age	Size
Growth	Pearson correlation Sig (2-tailed)	1	.540** .000	.620** .000
Age	Pearson correlation Sig (2-tailed)	.540** .000	1	.846** .000
Size	Pearson correlation Sig (2-tailed)	.620** .000	.846** .000	1

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

#### REGRESSION MODEL SPECIFICATIONS

The present study examines the determinants of growth (net Sales) of the pharmaceutical industry by using multiple regression analysis. All four explanatory variables are included in the regression study. The model is represented as follows:

$$\text{Growth}_{it} = \beta_0 + \beta_1 \text{Age}_{it} + \beta_2 \text{Size}_{it} + \epsilon_{it}$$

The variables are for clarification given below:

**Size<sub>it</sub>** = Natural logarithm of Total assets for a firm *i* in period *t*

**Growth<sub>it</sub>** = compound annual growth rate of sales for a firm *i* in period *t*

**$\epsilon_{it}$**  = Residuals

TABLE 3: REGRESSION RESULTS

Variables	Beta( $\beta$ )	Std. Error	T	P values
(constant)	.216	.076	2.840	.005
Age	.277	.771	.359	.720
Size	3.280	.853	3.847	.000

Table 3 indicates the regression results of explanatory variables. Age is positive relationship with growth (Net sales) but not significant as the p-value shows .720. And it is clear that Size has positive relation with growth. The results are statistically significant (p-value, .000). Hence, the hypothesis has been accepted, and it can be concluded that Size of the Indian pharmaceutical industry, taken as the sample, is positively correlated with growth (Net Sales). The results are statistically not significant (p-value, .720) at any level of significance, thereby rejecting the hypothesis which implies that Age does not affect the determinants of Growth (net sales).

F Statistics giving value p value .000 depicts that regression model is highly significant in this study.

TABLE 4: MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.621 <sup>a</sup>	.386	.373	.75608

The table 4 presents the value of R Square, which is equal to .386 and suggests that 38.6% of the variation in the Growth (Net Sales) has been explained by the explanatory variables such as Size and age.

#### STEP-WISE REGRESSION

Step-wise regression analysis has been used to find out the explanatory variables contributing the most towards the variation in the Growth (Net Sales) of the Indian pharmaceutical industries. Size of the selected companies of pharmaceutical industry.

TABLE 5: STEP-WISE REGRESSION RESULTS

Model		Beta( $\beta$ )	Std. Error	T value	P values
1	(Constant)	.218	.075	2.894	.005
	Size	3.539	.452	7.828	.000

The Table 5 shows the step-wise regression results. It reveals Size is positively correlated with growth, indicating them as statistically significant (p value is .000) and, therefore, hypothesis is accepted.

#### SUMMARY OF FINDINGS

- From this study, it is found that Growth (Net Sales) had high mean value of .224. This means 22.4% of pharmaceutical companies are growing in terms of sales.
- The results show that the Size and Age has positively correlated with growth (Net Sales)
- The regression results of explanatory variables make it clear that Size of selected companies only determining growth of pharmaceutical industry.
- The step-wise regression result also shows that Size has more significant relation with growth (Net Sales) of the companies.

#### SUGGESTIONS

- Growth of the firm is positively related to the pecking order theory. Hence, the suggestions from this theory are recommended that to have a long term benefit.
- This study suggests that Size is enhancing the growth of the pharmaceutical industry. So it suggests that improvement of total assets.

#### CONCLUSION

This study analyzed the size, age and growth association by taking 10 Indian pharmaceutical companies from 2001-02 to 2010-11. By using multiple correlations, it is clear that Size and Age have high positive influence with the Growth (Net Sales). And also the results confirm the significance of Size as determinants of Growth by the statistical tool of multiple regressions. Finally the Indian pharmaceutical companies are growing drastically in terms of sales and total assets and also have a wide scope in the future. So they could decide on for more Sales, size to enjoy the benefits to increase their shareholders' value.

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