

An Empirical Evidence of Measuring Growth Determinants of Indian Firms

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Abstract

This study identifies the determinants of growth of selected companies in India. It is based on a sample of 250 companies given in the PROWESS database developed by Centre for Monitoring Indian Economy (CMIE). It covers a period of ten years, i.e., from 2004-05 to 2013-14. The growth of companies is measured in terms of compounded annual growth rate of net sales and market capitalization. In order to study the determinants of growth, fourteen explanatory variables—size (total assets or net sales), profitability (ROCE or RONW or net profit ratio), age, advertising intensity, retention ratio, solvency position (current ratio or quick ratio), efficiency ratio (asset turnover ratio), leverage, diversification, market share, research and development intensity, export ratio, market value added ratio and industry type were chosen for empirical investigation. Multiple regression analysis is used to develop a model to identify the determinants of growth of companies. The results reveal that size of a company, advertising intensity, age, profitability, and research and development intensity, solvency, leverage, efficiency, diversification and nature of industry are statistically significant in determining the growth of Indian firms.

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1 Introduction

In today's world of cutthroat competition, growth is an ambiguous phenomena and it can be measured and interpreted in a variety of different ways (Bains, 1951; Mehta, 1955; Kakani et al., 2001; and Jones et al., 2006). For an economic planner it is efficient utilization of resources (Miles and Snow, 1978), while a welfare economist views it as equitable distribution of gains apart from the efficient utilization of resources. From the

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national viewpoint, growth indicators are conceived as a multidimensional process involving major changes in social structure, national institutions, reduction of inequality, eradication of absolute poverty as well as in the acceleration of economic growth etc (Todaro, 1977, Zahra, 1993; and Jennings, 2000). Thus, growth is viewed differently from different perspectives.

The growth of firms is something inherent to their actual existence. Throughout their life, firms must grow continuously if they want to maintain their competitive position with in an environment where other rival firms may be growing at a faster pace. Nevertheless, if a firm wishes to improve its relative position, then it will have to grow faster. In short, enterprises must seek continuous growth with the aim of increasing or simply maintaining their sales and profit levels, so that their survival can be guaranteed. However, this does not mean that the growth of firms takes place in an unplanned way (as happens in any living being); it actually occurs in a premeditated, organized way and is the fruit of a conscious strategic decisions (Claver et al., 2006). Thus, growth is the outcome of a number of strategic decisions taken by a firm in the ever-changing business environment. It might be due to the influence of various company specific attributes. Hence, this paper focuses on identifying the various determinants of corporate growth in India in the post liberalisation period.

2 Review of Literature

A number of studies have been undertaken on the issue of determinants of corporate growth in different countries. A synoptic view of these studies has been presented in Table 1:

Table 1: Empirical Studies on Determinants of Corporate Growth

Authors	Objective	Time period/ Sample size/ Country	Dependent variable	Independent variable	Statistical technique	Significant variables
Mowery (1948)	Analyzing the impact of firm size and research employment on firm's growth	1921-46 200 American manufacturing firms	Average annual increase in firm sales	Firm size as value of assets, research activity in scientific personnel employed	Stepwise regression & correlation	Larger firms are no more research intensive. Research activity increases with firm survival, and its growth.
Radice (1971)	Effects of control Systems on the growth of large firms	1957-67. 89 firms from three industries	Average rate of return	Control type, opening size of net assets	Simple regression & correlation	Management control firms are better in growth and profit
Kuar (1982)	Determinants of growth of corporate sector	1969-70 to 1978-79, 100 private Indian firms	Total assets compounded annually and Average change in annual turnover	Pretax profit, sales, selling cost, oligopoly, valuation ratio, retention ratio, liquidity ratio, long term finance, size, diversification, market share	Regression, correlation, Man Whitney & factor analysis	Sales, oligopoly, long term finance, capacity utilization are positively and statistically significantly where as size is negatively and significantly associated with growth of a firm as measured in terms of total net assets.
Bharatwaj et al., (1993)	Estimating the impact of growth on market share	276 Indian firms	Business sales / total sales in served industry	Profitability, return on sales, return on capital employed, advertising intensity, market growth rate, intangibles and R&D expenditure	Descriptive & multivariate analysis	Profitability, research and development, intangibles Are positively and significantly associated with growth in market share.
Geroski et al. (1997)	Relationship between corporate growth and profitability	1976-1982, 271 large quoted UK firms	Average annual turnover	Firm size as log of sales, profitability in return on sales	Simple correlation & regression	Variation in growth rate are significantly associated with both size as well as profitability
Kaur (1997)	Identifying the various determinants of growth and profitability	1971 to 1990, 235 Indian firms	Compounded growth rate of total assets, fixed assets, and net assets	Size as measured by total assets, fixed assets, and net assets; age, profitability, advertising intensity, diversification, retention ratio, liquidity ratio, turnover ratio, valuation ratio, long term finance, market share, and capacity utilization.	Correlation regression & chi-square.	Turnover ratio, valuation ratio, market share, advertising intensity, diversification, long term finance, and retention ratio positively and significantly affect growth where as size, age, and profitability are negatively associated

Glancey (1998)	To investigate determinants of growth and profitability in small entrepreneurial firms	1988-90, 38 Tayside region firms	Average annual growth rate of total assets	Profitability as ROA, size, age, location, diversity, and inter industry difference	Simple regression & correlation	Larger of smaller firms grew faster. Older firms grow less rapidly. Weak evidence is found that stronger firms are located in urban city.
Narayan (1998)	Identifying the major determinants of growth	1981 to 1996, 11 Indian firms	Rate of change in annual sales turnover at current prices	Size, profitability, vertical integration, capital intensity	Multiple regression & correlation	Size, vertical integration, and firm size are negatively and significantly associated with growth where as capital intensity and profitability are positively associated.
Rama (1998)	Identifying internal forces associated with long run global growth in large multinational of Spain	1977-1994 64 F&D MNC's from AGRODATA Of Spain	Average rate of expansion of the sales value	Multi as % of foreign sales to total sales, Spread as no. of foreign countries in which the firm has affiliates, Div, Size, Profit, Age, DOI, Global, Agri, Retail, Tech	Regression & Correlation	Global, size are positively associated where as DOI, and Multi are negatively associated
Feeny & Rogers, (1999)	Measuring performance of large private Australian enterprises	1993-1996, 653 Australian enterprises	Growth in revenue	ROA, ROE, EBDIT Margin, debt to equity, export intensity, R & D intensity, Tobin's q	Multiple regression & correlation	Profitability, Growth of revenue, export intensity, and innovation are positively and significantly associated with growth.
Bonn (2000)	To examine characteristics that are significant for the large manufacturing companies.	1982-1993, 100 largest manufacturing companies in Australia.	Average increase in sales	Environment, Organization and ownership characteristics.	Two tail Wilcoxon, chisquare, correlation & regression.	Sizes, planning system, corporate direction, research and development and ownership characteristic are significant.
Mak & Kusnadi (2001)	Studying the relationship between firm size and value	1999-2000, 550 Singapore firms	Size measured in Total assets	Market value of equity, leverage, assets turnover ratio, and Tobin's q	OLS & multiple regression	Negative and significant relationship between size and firm value

Kakani et al., (2001)	Measuring the post liberalization financial performance.	1992-1996, & 1996-2000, 566 large Indian firms	Financial performance measured in growth, risk, Tobin's q, and profitability	Size, age, leverage, public holding, net exports, working capital ratio, industry effects, business group affiliation, internal diversification, marketing expenditure	Correlation & linear multiple regression	Growth is positively and significantly associated with size, and internal diversification where as age, public holding, working capital ratio are negatively associated.
Shanmugam et al. (2002)	Analyzing growth of the Indian manufacturing companies	1990 to 1993, 390 Indian manufacturing firms	Growth in sales	Age and size	Mean, standard deviation, & regression	Age positively influences growth and size has negative and significant impact on growth
Kaen & Baumann (2003)	Measuring the profitability of US companies	1990-2001, 64 industries US	Return on assets	Sales, EBITDA, EBIT, EBITDA margin, EBIT margin, total assets, and number of employees.	Regression & correlation	In about half of industry, firms profitability increases at decreasing rate and eventually declines as the firms become larger. For remaining, half no relationship between profitability and size was found.
Rao and Rao (2003)	Studying the effect of trade openness on the growth rate of firms	1972-2002, all manufacturing firms of Fiji	Level of output	Size, level of capital stock, level of employment, stock of technology, trade openness.	Full modified OLS & Granger Earnest method	70% of variation in growth rate is explained by factor accumulation and trade openness.
Harabi (2003)	Identifying the determinants of firm's growth	1998-2000, 370 Private Morocco firms	Average annual growth rate of sales	Firm size, location, age, financial status, innovation, market size and market structure	Multiple regression & correlation	Age, firm size, innovation through product mix are negatively associated with growth where as limited liability, location, market size, and diversification in existing product line has positive and significant impact on growth.

Kalirajan & Bhide (2003)	Measuring the post reform performance of Indian manufacturing sector	1997-2000 NIC Chemical+transport+electrical equipment industries in Prowess India	Growth in output	Export intensity, raw material import intensity, technology import intensity, R&D intensity foreign collaboration and advertising intensity	Regression	Input growth, technical efficiency, and technical progress contributed positively to output growth, but the contribution of input growth was the most significant one.
Liu and Hsu (2004)	Identifying the determinants of growth of Taiwan manufacturing firm's	1991-2002, 280 Listed Taiwan firm's	Growth rate in net sales	Size, age, capital intensity, R&D, export ratio, investment ratio, profitability, debt equity ratio, retention ratio.	Correlation & regression	Growth is positively and significantly related to firm size, age, and capital intensity, lagged R&D; export ratio, investment ratio, and profitability.
Niskanen (2005)	Examining the determinants of growth of small and micro firms	1994-1997, 100 Finland firms	Average annual growth in sales	age, size, profitability, location, financial status and financial structure	Backward regression, & correlation	Location, financial status, financial structure, and firm size are positively and significantly associated with growth.
Calver et. al (2006)	Determining the growth factors of hotel firms	2001-2003, 444 Spanish firms	Average annual return on sales	ROA, Indebtedness level, net turnover, age, working assets.	Binomial logistic regression model and Correlation	Diversification either related or unrelated, age and size are positively and statistically significant.

A perusal of review of literature reveals that a number of studies have been carried out the world wide to analyze the determinants of growth of firms. The variables studied were: size of a company, age, profitability, research and development, retention ratio, liquidity ratio, turnover ratios, market share, advertising intensity, long term finance, Tobin's q, export ratio, internationalization, diversification, valuation ratio, MNE affiliation, vertical integration, raw material import intensity, technology import intensity etc. These studies differ from each other because of period taken ranging from 2 years (as seen in Harabi, 2003; and Claver et al., 2006) to 30 years (Rao and Rao, 2003); and sample size between 11 firms (Narayan, 1998) to 653 firms (Feeny and Rogers, 1999).

All the studies are country specific and firm specific other than Radice, (1971), Kalirajan & Bhide, (2003) and Claver et al., (2006) which are industry specific. Most of the researchers have used correlation and multiple regression to know the inter relationship of explanatory variables and identifying the factors affecting corporate growth. However, Kumar, (1982) has also used Factor analysis and Mann Whitney; Kaur, (1997) Chi-square; and Bonn, (2000) Two-tail Wilcoxon.

3 Need and Objective of the Study

The review of literature reveals that a large number of studies have been carried out all over the globe on analyzing the determinants of corporate growth, but still there is a dearth of literature on this subject in the Indian context. Only ten studies i.e. Barthwall, (1977); Kumar, (1982); Nagarajan and Barthwal, (1990); Bharatwaj et al., (1993) Kaur, (1997); Narayan, (1998); Shergill and Sarkaria, (1999); Kakani et al., (2001); Shanmugan et al., (2002); Kalirajan and Bhide, (2003) and Chander and Aggarwal (2007) have been carried out to analyze the determinants of corporate growth in India. Seven of these studies Barthwall, (1977); Kumar, (1982); Nagarajan and Barthwal, (1990); Bharatwaj et al., (1993) Kaur, (1997); Narayan, (1998); Shergill and Sarkaria, (1999) have covered either pre or initial liberalization period when the Indian economy was a controlled economy. The studies conducted by Kakani et al., (2001) and Kalirajan and Bhide, (2003) have focused on the post liberalization period and that too up to 2000. However Chander and Aggarwal (2007) has covered the period from 1995-96 to 2004-05 of only few selected companies of Indian drugs and pharmaceutical industry.

Thus, the foregoing discussion reveals that no comprehensive study has been conducted in India, which essentially covers a longer post-liberalization period, to analyze the different determinants of corporate growth. No single study has covered the impact of a large number of variables on corporate growth i.e. size of company, age, profitability, research and development, retention ratio, liquidity ratio, turnover ratio, market share, advertising intensity, long term finance, export ratio, diversification and valuation ratio. Besides, a longer time span of 10 years i.e. from 2004-05 to 2013-14 covering the post liberalised era has also not been included in the past research.

This period witnessed radical changes in public policy in India that affected the macroeconomic environment within which firms operate. Such changes in business environment have been brought about by liberalization, privatization and globalization policies adopted by government of India in 1991, which were followed by financial sector reforms, internationalization of capital and financial markets, heavy investment in the equity of Indian companies by FIIs, listing of securities of Indian companies on the foreign stock exchanges, mandatory status of the accounting standards, internationalization of accounting profession, and India emerging as a most competitive nation of the world.

Keeping into consideration these facts, it becomes inevitable to analyze the different determinants of corporate growth in India during the post liberalization period. Hence, the proposed study has been undertaken.

The major objective of this study is to identify and determine the factors of corporate growth in India in the post liberalization period.

4 Data Base and Methodology

The study covers a period of ten years from 2004-05 to 2013-14. To avoid factors, such as temporal stability and business cycle fluctuations, we used a longer period of ten years. The significance of this period for the Indian firms needs hardly to be emphasized, as Indian economy passed through a phase of increasing competition, deregulation and restructuring during this period. The twelve year period of study shows full impact of liberalization. This was the period when many policy changes occurred and the regulators

such as, Securities Exchange Board of India (SEBI), Bombay Stock Exchange (BSE), National Stock Exchange (NSE) and Reserve Bank of India (RBI) streamlined themselves. A longer time span of twelve years would generally make the performance more rigorous to take the impact of business cycles on the firms chosen for the study.

5 Data Collection

BT-500 companies from the private sector rated on the basis of their market capitalization constitute the universe of this study (BT-500 India's Most Valuable Private Sector Companies for the year ended March 31, 2007).

The following filters were applied to select the sample:

- I) The companies belonging to the financial service sector (i.e. banks and financial institutions) were eliminated.
- II) The companies not existing in 'PROWESS', database of CMIE were eliminated.
- III) The companies, for which data regarding all the explanatory variables for a period of 10 years (i.e. from 2004-05 to 2013-14) was not available, were eliminated.

Thus, as a result of these filters, a resultant sample of 250 non banking and non financial companies was selected and studied for the period 2004-05 to 2013-14 to identify the determinants of corporate growth.

The data relating to all the dependent and independent variables were taken from 'PROWESS'.

Regression analysis was done using SPSS version 15.0.

6 Specification of the Model

A review of empirical literature (Kumar, 1982 and Kaur, 1997) has revealed that compounded annual growth rate of net sales (CAGRNS) and market capitalization (CAGRMC) have been used as growth measures.

Therefore, both of these measures have been used to represent corporate growth.

In order to study the impact of various determinants on corporate growth, multiple regression analysis has been done. The following model has been developed:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14-25} X_{14-25} + \varepsilon$$

Where

Y = Compounded annual growth rate of net sales and market capitalization of a company;

X_1 = Size of a company measured by total assets or net sales;

X_2 = Profitability of a company measured in ROCE or RONW or Net Profit Ratio;

X_3 = Age of a company (from year of incorporation till March, 2007);

X_4 = Advertising intensity of a company;

X_5 = Retention ratio of a company;

X_6 = Solvency position of a company expressed in current ratio or quick ratio;

X_7 = Efficiency ratio of a company measured by asset turnover ratio;

X_8 = Leverage position of a company;

X_9 = Diversification of a company measured as a proxy of number of products;

X_{10} = Research and development intensity of a company;

X_{11} = Export ratio of a company;

X_{12} = Market value added ratio of a company measured by market price to book value of outstanding shares;

X_{13} = Market share of a company measured as proportion of firm's sales in the total sales of industry to which it belongs in the same period ;

X_{14-25} = Industry type²

β = Slope of the independent variables while β_0 is a constant or the value of Y when all values of X are zero;

ϵ = The error term, normally distributed about a mean of 0.

7 Hypotheses Development

On the basis of the theoretical framework and the review of literature, the following hypotheses were developed:

H₁: The size of a company as measured by net sales or total assets has a positive impact on its growth.

H₂: The profitability of a company as measured by ROCE or RONW or Net profit ratio has a positive impact on its growth.

H₃: The age of a company has a positive impact on its growth.

H₄: The advertising intensity of a company as measured by the ratio of advertising and marketing expenditure to net sales has a positive impact on its growth.

H₅: The retention ratio of a company has a positive impact on its growth.**H₆**: The solvency position of a company as measured by current ratio or quick ratio has a negative impact on its growth.

H₇: The efficiency ratio of a company as measured by assets turnover ratio has a positive impact on its growth.

H₈: The leverage of a company has a negative impact on its growth.

H₉: The diversification of a company as measured by number of products has a positive impact on its growth.

H₁₀: The research and development intensity of a company as measured by the ratio of research and development expenditure (both current and capital) to net sales has a positive impact on its growth.

H₁₁: The export ratio of a company as measured by exports to net sales has a positive impact on its growth.

H₁₂: The market value added ratio of a company as measured by the market price to the book value of shares has a positive impact on its growth.

H₁₃: The market share of a company measured as proportion of a company's sales to the total sales of an industry to which it belongs in the same period has a positive impact on its growth.

H₁₄: The nature of industry to which a particular company belongs affects its growth.

²14=Agro; 15=Capital & Engineering Goods; 16= Cement; 17= Chemical; 18= FMCGs; 19= Media, Entertainment; 20= Petrochemicals; 21= Life sciences & Pharmaceuticals; 22= Software, IT, and ITES; 23= Steel; 24= Textiles; 25= Automotive (Dummy).

8 Analysis and Discussions

The model described above has been estimated for all the 250 companies in India for the whole period of 10 years. The analysis is based on simple linear model; where in the growth of a company is determined by some explanatory variables. These have been chosen both for their importance in the context of this study and ease of their measurement. Compounded annual growth rate of net sales (CAGRNS) and market capitalization (CAGRMC) have been used as growth measures.

8.1 Correlation Analysis

Before proceeding to the results of regression analysis, it is an implied condition to check the existence of multicollinearity or colinearity, the situation where two or more of the independent variables are highly correlated. It can have damaging effect on the results of multiple regressions. The correlation matrix is a powerful tool for developing a degree of relationship between predictors. The suggested rule of thumb is that, if the pair wise or zero order correlation coefficient between two regressors is high, say in excess of 0.8; then multicollinearity is a serious problem (Gujrati, 2006, p.345, 359.). The solution is to drop that variable and then run regression analysis with rest of the variables.

To examine the correlation between various variables, Pearson product moment correlation (r) was computed. A correlation matrix of all the values of r for the explanatory variables along with dependent variables was constructed and has been shown in Table 2. The table contains a vast amount of significant information about the relationship of various variables in the context of the selected firms.

Table 2: Pearson's' Product Moment Correlation Matrices (2004-05 to 2013-14)

Pearson Correlations	Net Sales	Total Asset	Mkt. Cap	Age	ROCE	RONW	Current Ratio	Quick Ratio	Mkt. Share	Leverage	Mkt. Value Added Ratio	Retention Ratio	R&D Intensity	Advertising Intensity	Export Ratio	Diversification	Efficiency Ratio	Net profit Ratio
Net Sales	1																	
Total Asset	.906(**)	1																
Mkt. Cap	.700(**)	.747(**)	1															
Age	.250(**)	.164(**)	.184(**)	1														
ROCE	.041	.147(**)	.208(**)	.130(*)	1													
RONW	.054	.020	.143(*)	-.012	.291(**)	1												
Current Ratio	-.383(**)	-	-.006	-.210(**)	-.064	.044	1											
Quick Ratio	-.172(**)	-.096	.144(*)	-.208(**)	.053	.086	.684(**)	1										
Mkt. Share	.337**	.324**	.101	.407*	.418*	.394*	.136	.094	1									
Leverage	-.044	-.051	-.110	-.007	-.141(*)	-.139(*)	-.037	-.003	.132	1								
Mkt. Value Added Ratio	.034	-.013	.450(**)	.112(*)	.366(**)	.052	.113(*)	.191(**)	.287**	-.103	1							
Retention Ratio	-.034	-.051	-.014	-.119(*)	.049	.195(**)	-.023	.007	.181	.050	-.023	1						
R&D Intensity	.006	.005	.136(*)	-.049	.098	.077	-.005	.044	.140	.028	.081	-.021	1					
Advertising Intensity	.114(*)	.073	.105	.203(**)	-.025	-.084	-.158(**)	-.145(**)	.117	.055	.020	-.106	.057	1				
Export Ratio	.131(*)	.042	.105	-.176(**)	.108	.077	.178(**)	.310(**)	.310**	-.027	.129(*)	.002	.143(*)	-.123(*)	1			
Diversification	.462(**)	.454(**)	.293(**)	.236(**)	-.107	-.006	-.192(**)	-.210(**)	.024	-.048	-.080	-.021	-.040	.024	-.205(**)	1		
Efficiency Ratio	.180(**)	-.198(**)	-.075	.170(**)	.450(**)	.074	-.257(**)	-.187(**)	.076	-.015	.154(**)	.042	-.046	.076	-.255(**)	-.003	1	
Net profit Ratio	.182(**)	.066	.262(**)	-.031	.319(**)	.213(**)	-.164(**)	.289(**)	.050	-.074	.157(**)	.027	.143(*)	-.050	.224(**)	-.055	-.029	1

Note: *, **, *** significant at 1%, 5% & 10% respectively

In interpreting the correlation coefficient, some of the highest correlations or multicollinearity obtained exists between those variables, where there is an almost tautological relationship i.e. between two measures of size of a company i.e. between net sales and total assets (.906) at 1 percent level. We got rid of this problem by preferring to choose total assets as a measure of size of a company. Thus, the given set of independent variables is transformed into a new set of predictors that are mutually independent by using only one of the variables in a highly correlated set of size variables.

It can also be observed from table 2 that size of a company as measured by total assets is positively and significantly correlated (.906) with the compounded growth of a company at 1 percent level. It means that larger companies are leveraging their size to obtain better deals in financial as well as product or other factor markets. Age is significantly and positively associated with various measures of size and growth of companies (net sales, .250; total assets, .164; and market capitalization, .184) at 5 percent level. This shows that older companies are giving huge turnovers with large assets. Also the solvency position of companies (i.e. both short term, -.172; and long term, -.383) is negatively and significantly associated with compounded growth at 5 percent level. This negative relationship exhibits that high growth older companies have high level of current assets leading to excessive liquidity. Their return on assets is low, as funds tied up in idle cash and stock earns lesser than the minimum rate of return and high levels of debtors reduce profitability. R&D intensity is significantly and positively associated with the growth of a company as measured by market capitalization (.136) at 5 percent level. Hence change is the need of the hour and companies bringing innovation are outperforming their stagnant counter parts. Further, advertising intensity ratio of company is positively and significantly related with growth measured in net sales (.114) at 5 percent level. It reveals that advertising is helping the companies in generating the advantages of uniqueness leading to higher profitability for them. Diversification of the companies as measured by the number of products is significantly and positively associated with growth of companies (i.e. net sales, .462; total assets, .454; market capitalization, .293) at 1 percent level. Hence product portfolio of diversified companies leads to risk reduction through economies of scope and utilising assets to their full capacity. Efficiency of a company, measured in asset turnover ratio is significantly and positively associated with compounded growth in net sales (.180) at 1 percent level. It shows that companies are efficient enough in the utilisation of their assets and thus, are able to produce a large volume of sales for a given amount of net assets. Thus, this relationship is evidencing that older companies, with diversified portfolios, doing quality expenditure on R&D and advertising, holding large market shares, with strong profitable background, and who are also utilizing their assets effectively are showing a positive growth in net sales and market capitalization. Hence, the correlation results show the predicted direction as evidenced by empirical research (David, 1948; Whittington et al., 1975; Kumar, 1982; Geroski, 1997; Bonn, 2000; Harabi, 2003; Claver et al., 2006).

8.2 Multiple Regression Analysis

For measuring the growth of firms two indicators have been used.

- 1.) Compounded Annual Growth Rate of Net Sales
- 2.) Compounded Annual Growth Rate of Market Capitalization

Therefore two separate regression models were tested for each of these dependent variables. Different equations have been run with the different surrogate measures of

profitability (i.e. ROCE or RONW or net profit ratio) and solvency (i.e. current ratio or quick ratio) for each of these dependent variables. The best fit equation has been picked for discussion with each of the dependent variable and is presented in table 3.

Model 1 in table 3 shows the results of multiple regression analysis between dependent variable of compounded annual growth rate of net sales (CAGRNS) and various independent variables. Model 2 in the same table shows the results of regression analysis but with compounded annual growth rate of market capitalization (CAGRMC) as dependent variable. In the model 1 net profit ratio has been used as a measure of profitability and current ratio as a measure of solvency with CAGRNS as dependent variable. However, in the model 2 ROCE as measure of profitability and quick ratio as a measure of solvency have been chosen for CAGRMC as dependent variable.

Model 1 explains 80 percent of variation in the compounded annual growth of net sales of firms under study. Adjusted R^2 is .769 which suggests that approximately 77 percent impact on CAGRNS is explained by these independent variables while the remaining 23 percent is because of some other variables that need to be explored. The value of F- test shows that the value of Adj. R^2 is significant at 1 percent level of significance. The value of Durbin Watson is 2.532, which suggests that there is no serious problem of auto correlation. The coefficients offer strong support to our hypotheses that total assets as a measure of size (positively significant at 1 percent level), age (positively significant at 1 percent level), efficiency as measured by assets turnover ratio (positively significant at 1 percent level), net profit ratio as a measure of profitability (positively significant at 5 percent level), market value added ratio (positively significant at 10 percent level), current ratio (negatively significant at 10 percent level) and diversification (positively significant at 10 percent level) are associated with CAGRNS of firms under study. However, nature of industry (i.e. steel industry and life sciences and pharmaceutical industry) is negatively and significantly associated with growth at 10 percent level. Further, export ratio, market share, advertising intensity, R&D intensity and retention ratio are positively related with growth in net sales though, these relationships are statistically non-significant.

Table 3: Multivariate Regression Analysis with CAGRNS and CAGRMS

Dependent Variable→ Independent Variable↓	CAGRNS Model 1	CAGRMC Model 2
Total Asset	.986*	.711*
Age	.009*	.013
Mkt. Value Added Ratio	.036***	.425*
R&D Intensity	.005	.004
Net Profit Ratio	.011**	—
ROCE	—	.049
Quick Ratio	-.005***	-.073***
Steel Industry	-.049	-.049
Agro Industry	-.018	.018
Capital & Engineering Goods Industry	-.020	-.038
Cement Industry	-.009	.006
Chemical Industry	-.018	-.014
FMCG's Industry	-.007	-.027
Media & Entertainment Industry	-.025	.008
Textile Industry	-.014	.002
Petrochemical Industry	-.002	-.001
Software, IT & ITES Industry	-.017*	.078
Life Sciences & Pharmaceuticals Industry	-.025	.062*
Advertising Intensity	.005	.003
Leverage	-.005	-.012
Retention Ratio	.146	.000
Efficiency Ratio	.008*	.011
Diversification	.079**	.003
Export Ratio	.021*	.062
Market Share	.009	.006
R	.869	.840
R ²	.800	.705
Adj. R ²	.769	.682
Sig.FCh.	.000	.000
D/W	2.532	2.380

Note: *, **, *** significant at 1%, 5% & 10% respectively.

Similarly model 2 explains 70 percent of variation in the compounded annual growth of market capitalization of firms under study. Adjusted R² is .682 which suggests that approximately 68 percent impact on CAGRMC is explained by these independent variables while the remaining 32 percent is because of some other variables that need to be explored. The value of F- test shows that the value of Adj. R² is significant at 1 percent level of significance. The value of Durbin Watson is 2.380, which suggests that there is no serious problem of auto correlation. The coefficients offer strong support to our hypotheses that total assets as a measure of size (positively significant at 1 percent level), market value added ratio (positively significant at 1 percent level) and quick ratio (negatively significant at 10 percent level) are significantly associated with CAGRMC of firms under study. Further, age, export ratio, market share, advertising intensity, R&D intensity, efficiency ratio, diversification and retention ratio are positively related with growth in market capitalization, though, these relationships are statistically non-significant.

8.3 Testing the Hypotheses

H₁: The size of a company as measured by net sales or total assets has a positive impact on its growth.

The results of regression analysis reveals that a positive and significant relationship exists between size of a company as measured by total assets and compounded growth rate measured both in terms of net sales and market capitalization. So, this study corroborates the past research (Kumar, 1982; Nagarajan and Barthwal, 1990; Grinyer and Mc Kiernam, 1991; Narayan, 1998; Rama, 1998; Fenny and Roger, 1999; Bonn, 2000; Davidsson et al., 2002; Carpenter and Peterson, 2002; Harabi, 2003; Reichatein and Dahl, 2004; Niskanen, 2005; Ito and Fuka, 2006; Claver et al., 2006). The reason might be that larger firms are leveraging their size to obtain better deals in financial as well as product or other factor markets (Mathur & Kenyon, 1998). Large organizations also get access to cheaper financial resources (Kakani et al, 2001; Hiu and Hsu, 2004).

Thus H₁ has been accepted at 1 percent level of significance for both the measures of corporate growth.

H₂: The profitability of a company as measured by ROCE, RONW and Net profit ratio has a positive impact on its growth.

The regression analysis explains that the profitability of a company as measured by net profit ratio in case of CAGRNS is positively associated with its growth at 5 percent level of significance. This result is strongly supported by empirical evidence (Barthwal, 1977; Bharatwaj et al., 1993; Narayan, 1998; Feeny and Roger, 1999; Shergill and Sarkaria, 1999; Shergill, 2001; Kean and Bauman, 2003; Liu and Hsu, 2004; Niskanen, 2005; and Claver et al., 2006). Hence it implies that Indian companies are efficient in the utilisation of available funds. Further sound profitability of these companies is supporting them in their potential expansion plans; payment of interest and repayment of principal amount regularly (Drucker, 1968). Also, profitable companies are contributing towards the social overheads, for the welfare of society at large (Whittington et al., 1975 & Feeny and Roger, 1999).

Thus, H₂ has been accepted at 5 percent level of significance for compounded annual growth rate of net sales.

H₃: The age of a company has a positive impact on its growth.

The regression analysis explains that the age of a company is found to have positive and significant association with both the measures of growth (i.e. CAGRNS and CAGRMC) at 1 percent level. Smallbone and North (1995), Rama (1998), Kakani et al. (2001), Davidsson et al. (2002), Shanmugham et al. (2002), Liu and Hsu (2004), Reichatein and Dahl (2004), Ito and Fuka (2006), Claver et al. (2006) have observed that older companies benefit from their dynamic economies of scale, easy availability of capital, brand names, corporate reputation and also by learning from their experiences. Hence, the results of this study are in consonance with those of the past research

Therefore, H₃ has been accepted at 1 percent level of significance for compounded annual growth rate of net sales.

H₄: The advertising intensity of a company as measured by the ratio of advertising and marketing expenditure to net sales has a positive impact on its growth.

The results of regression analysis reveal a positive association between the advertising intensity of a company and its growth. It implies that the advertising and marketing expenditure is helping the companies in generating advantages of uniqueness. Thus H₄ has been accepted for both the measures of corporate growth and the findings of this study are in tune with the literature advanced (Camanor and Wilson, 1969; Esposito and Esposito, 1971; Bothwell et al., 1984; Kaur, 1997; Kakani et al., 2001; Kalirajan and Bhide, 2003).

H₅: The retention ratio of a company has a positive impact on its growth.

The results of multiple regression analysis has revealed that the retention ratio does not significantly influences growth of companies but has positive association with it as expected, though, it did not enter in the final model in step wise regression analysis with both measures of corporate growth. This positive relationship exhibits that with higher retention ratio; higher growth can be expected as funds can be channelized properly in different directions (Rao and Rao, 1975 and Kaur, 1997). Thus H₅ has been accepted though it is statistically insignificant for both the measures of corporate growth and is in tune with the literature (Kaur, 1997; Kakani et al., 2001; Carpenter & Peterson, 2002; Kalirajan and Bhide, 2003; and Liu & Hsu, 2004).

H₆: The solvency position of a company as measured by current ratio or quick ratio has a negative impact on its growth.

The results of regression analysis reveals that there is significant and negative association between solvency position of a company as measured by quick ratio and its growth in net sales and market capitalisation at 10 percent level of significance. This negative relationship indicates that lower the liquidity, higher is the growth and vice-versa. This means that high growth companies do not keep high level of liquid assets with them. Hence the result is in line with the evidences advanced by the literature (Jones et al., 1973; Kaur, 1997; Rama, 1998; Feeny and Roger, 1998; Kakani et al., 2001; Harabi, 2003; and Claver et al., 2006). Thus H₆ has been accepted at 10 percent level of significance for both the measures of corporate growth.

H₇: The efficiency ratio of a company as measured by assets turnover ratio has a positive impact on its growth.

The regression analysis reveals that there is positive and significant association between efficiency of a company measured by assets turnover ratio and its growth in net sales at 1 percent level. It shows that companies are efficient in the utilisation of their assets and thus, are able to produce a large volume of sales for a given amount of net assets. Thus there is optimum investment in assets of company. Hence, companies are not burdened with heavy operational, maintenance and interest charges (Kumar, 1982; Kaur, 1997; Mak and Kusnadi, 2001 and Claver, 2006). Thus H₇ has been accepted for compounded annual growth rate of net sales at 1 percent level.

H₈: The leverage of a company has a negative impact on its growth.

The multiple regression analysis indicates that leverage is not influencing the growth of the companies significantly but has negative association with both the measures of corporate growth as expected, though, it has not entered in the final model in step wise

regression analysis. It implies that lower leverage is associated with better performance of companies. Since companies with higher leverage have higher bankruptcy risk (see Chow & Wong-Boren, 1987; Wallace et al., 1994; Hossain & Adams, 1995; Raffournier, 1995; Wallace & Naser, 1995).

Hence H_8 has been accepted though it is statistically insignificant for both measures of corporate growth.

H_9 : The diversification of a company as measured by number of products has a positive impact on its growth.

The results of regression analysis reveals that there is significant and positive association between diversification of a company and its growth at 5 percent level of significance when the growth is measured in terms of net sales. Hence the result is in line with the evidences advanced by the literature (Jones et al., 1973; Kaur, 1997; Rama, 1998; Feeny and Roger, 1998; Kakani et al., 2001; Harabi, 2003; and Claver et al., 2006). Thus, it implies that diversified companies' product portfolio is helping them in their risk reduction (Paul, 1986). Diversification is also helping companies to develop new innovations through R&D, by entering into foreign markets with technologically advanced countries, through international diversification (Hitt et al., 1997). Assets are utilised to their full capacity (Pawaskar, 1999). Diversified companies are also able to create barriers to entry through predatory pricing which helps in upgrading firm growth (Rhodes, 1973; Kaur, 1997; Rama, 1998; Feeny and Roger, 1998).

Thus H_9 has been accepted at 5 percent significance level only when the growth of a firm is measured in terms of net sales.

H_{10} : The research and development intensity of a company as measured by the ratio of research and development expenditure (both current and capital) to net sales has a positive impact on its growth.

The results of regression analysis reveal that R&D intensity of a company is positively and significantly associated with its growth at 1 percent level of significance when the growth is measured in terms of market capitalisation. Thus this significant and positive association exhibits that R&D intensity is an important attribute of companies' growth. Since change is the need of the hour, thus, companies bringing new innovations are consistently outperforming their stagnant counter parts. New product improvements also help a company in charging higher prices from the customers than their competitors that helps in fetching increased revenues and therefore better profitability.

Thus H_{10} has been accepted at 1 percent level of significance when the growth is measured in terms of market capitalisation and is in conformity with the past research (Mowery, 1948; Nagarajan and Barthwal, 1990; Bharatwaj et al., 1993; Feeny and Roger, 1999; Bonn, 2000; Kalirajan and Bhide, 2003).

H_{11} : The export ratio of a company as measured by exports to net sales has a positive impact on its growth.

The results of multiple regression analysis reveal that the export ratio has positive and significant association with compounded annual growth rate of net sales at 1 percent level of significance. The positive association exhibits that exporting companies in India have access to export and import credit facilities and various tax benefits. It is also exhibiting that the companies domestic operations are efficient and are also successful in the export market. Thus the said hypothesis is evidenced by the literature (Esposito and Esposito,

1971; Feeny and Roger, 1999; Kakani et al., 2001; Kalirajan and Bhide, 2003; and Liu and Hsu, 2004).

Hence H_{11} has been accepted at 1 percent level of significance for compounded annual growth rate of net sales.

H_{13} : The market share of a company measured as proportion of firm's sale in the total sale of industry to which it belongs in the same period has a positive impact on its growth.

The results of multiple regression analysis reveal that the market share of a company does not significantly influences its growth but has positive association with it as expected, though, it did not enter in the final model in step wise regression analysis with both measures of corporate growth. Buzzel et al. (1975), Kumar (1982), Marshall (1987), Nguyen et al. (1990), Schwalbach (1991), Kaur (1997), Sarkaria and Shergill (2000), Raman (2000), Raman and Dangwal (2003), and Harabi (2003) showed a positive relationship of market share with growth of a company. It suggested that companies with larger market shares outperform their counter parts with smaller market share as they are able to satisfy customer needs better. Large markets help companies to achieve economies of operations, attain the benefit of synergetic effects and thus recover their fixed costs early.

Thus, H_{13} has been accepted though it is statistically insignificant for both the measures of corporate growth.

H_{14} : The nature of industry of a company or the industry type to which a particular company belongs has a positive impact on its growth.

The results of regression analysis indicate a significant association between nature of industry and growth of companies. Automotive industry has been picked up as a proxy industry by the step wise regression analysis. Automotive industry occupies a prominent place on the growth canvas of Indian economy. Due to its deep forward and backward linkages with several key segments of the economy, automotive industry has a strong multiplier effect and is capable of being the driver of economic growth. The automotive industry has recorded growth of 13.56% in 2006-07 (Global Alliance of SMEs, India's Automotive Industry). Vehicle production grew at 8.78% in April-May 2008 over April-May 2007. Hence the growth of other industries has been measured in relation to proxy (i.e. automotive) industry. It has been found that software, IT and ITES industry has shown a lower growth rate in relation to automotive industry at 1 percent level of significance when the corporate growth is measured in net sales. However, when corporate growth is measured in market capitalisation high – tech industries (namely, life sciences & pharmaceutical, media & entertainment and software, IT & ITES) are growing at a higher rate in relation to automotive industry at 1 percent level of significance respectively.

Hence this study shows that the nature of industry influences corporate growth in India. Thus, the results of this study are in conformity with the past research (See Camanor & Wilson, 1969; Radice, 1971; Esposito & Esposito, 1971; Jones et al., 1973; Barthwal, 1977; Nagarajan & Barthwal, 1990; Grinyer & Mc Kiernam, 1991; Shergill & Sarkaria, 1999; Kakani et al., 2001; Shergill, 2001; Davidsson et al., 2002; Reichstein & Dahl, 2004).

Thus H_{14} has been accepted at 1 percent level of significance (for the industries namely, life sciences & pharmaceutical) only when the corporate growth is measured in market capitalization and for Software, IT & ITES when the growth is measured in net sales.. Hence, the hypotheses framed have almost been satisfied. In sum, the diagnostics indicated models are valid and reliable.

9 Conclusion

The foregoing analysis shows the impact of various determinants on the growth behaviour of selected Indian companies for the period during 2004-05 to 2013-14. The following conclusions can be drawn from the analysis:

- 1.) The correlation coefficients reveal that the size of a company as measured by total assets, its age, R&D intensity, advertising intensity, diversification as measured by the number of the products, efficiency measured by assets turnover ratio are significantly and positively correlated with the growth of companies (i.e. CAGRNS and CAGRMC) at 1 percent level of significance.
- 2.) The results of multiple regression analysis reveals that approximately 77% impact on CAGRNS is explained by total assets as a measure of size (positively significant at 1 percent level), age (positively significant at 1 percent level), market value added ratio (positively significant at 10 percent level), efficiency as measured by assets turnover ratio (positively significant at 1 percent level), net profit ratio as a measure of profitability (positively significant at 5 percent level), solvency ratio (negatively significant at 10 percent level) and diversification (positively significant at 10 percent level). However, as opposite to our hypothesis, nature of industry (i.e. steel industry and life sciences and pharmaceutical industry) is negatively and significantly associated with growth at 10 percent level associated. Further, export ratio, market share, advertising intensity, R&D intensity and retention ratio are positively related with growth in net sales though, these relationships are statistically non-significant. Similarly, results suggest that approximately 68% impact on CAGRMC is explained by total assets as a measure of size (positively significant at 1 percent level), market value added ratio (positively significant at 1 percent level) and solvency ratio (negatively significant at 10 percent level). Further, age, export ratio, market share, advertising intensity, R&D intensity, efficiency ratio, diversification and retention ratio are positively related with growth in market capitalization, though, these relationships are statistically non-significant.

Table 4 provides a snap shot of significant results of this study with the direction (positive or negative relation) of the particular independent variables.

Table 4: A Snap Shot of Regression Models

Dependent Variable → Independent Variable ↓	CAGRNS	CAGRMC
Size	Positive *	Positive *
Age	Positive*	–
Advertising Expenditure	–	–
R & D Expenditure	Positive *	–
Efficiency Ratio	Positive*	–
Profitability	Positive**	–
Market Value Added Ratio	Positive***	Positive*
Solvency Ratio	Negative***	Negative***
Software, IT & ITES Industry	Negative*	–
Lifesciences & Pharmaceutical Industry	–	Positive*

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