Performance and Age of Companies Listed on the Bombay Stock Exchange

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Abstract

Is there any relation between age and financial performance of the organizations? One school of thought believes that with age, the organizations' learning capability matures, and the processes improve to deliver the best financial performance. The other school argues that with advancing age and rigidity of processes, the decision making ability and response to the market reduces. Thus, these two schools of thought present diametrically opposite ideas related to performance of firms with age. This research took panel data for 5 years (2012 - 16) on various performance parameters such as income, asset, compounded annual growth, earnings before interest, tax, depreciation and amortization (EBITDA), net profit margin, return on net worth, and return on capital employed for 3719 companies listed on the Bombay Stock Exchange. The companies were categorized into 12 sectors. Each financial parameter was compared with age of the companies across sectors to find any significant correlation. The study found that the (a) age and performance parameters were not normally distributed, (b) most of the companies showed negative financial performance on chosen parameters across sectors, (c) asset, income, and compound annual growth rate had weak, negative, but significant correlation with age, (d) earnings before interest, tax, depreciation and amortization margin had a weak but positive correlation with age. Thus, the older companies indicated better operational efficiencies compared to the market competitiveness. The study covered a period where the Sensex was consistently rising. A fine grained and detailed understanding may be obtained with similar studies for specific sectors and other time periods.

Keywords : **Bombay Stock Exchange, asset, EBIDTA margin, NPM, RONW, ROCE**

JEL Classification : C22, D53, L25

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The Bombay Stock Exchange (BSE) is the first stock exchange of Asia established in 1875. It is the world's 12th largest, with an overall market capitalization of more than 2 trillion USD as of July 2017 (www.bseindia.com). It provides an efficient capital-raising platform for the companies and BSE Sensex is India's most important market benchmark index consisting of 31 companies based on market capital and size, which covers all major industries of India. It also has been found to be a significant predictor of gross domestic product (GDP) (Divya & Devi, 2014). However, another study (Ramraika, 2015) contradicted the findings by taking GDP growth into consideration. Nevertheless, Sensex is considered as a significant indicator of the Indian economy.

It is important to contextualize the research and this section briefly discusses different aspects impacting the

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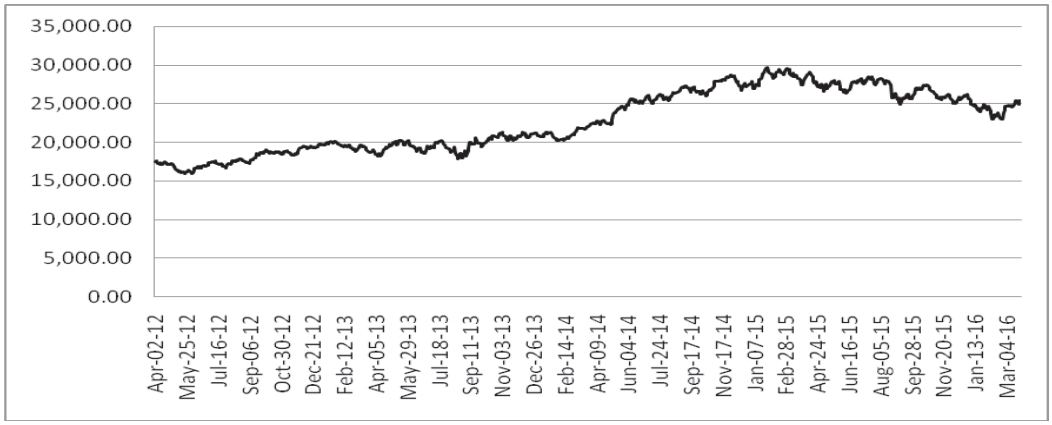
economy at a broad level during the study period. Reserve Bank of India's data (2017) on capital formation, savings, etc. showed consistent improvement during the period from 2012 - 2016. The Figure 1 indicates consistent positive returns from the Sensex during the period. India's real GDP growth during the period from 2012 - 2016 (Figure 2) indicates a similar pattern compared to the Sensex.

Crude oil prices have an important bearing on the Indian economy. During the period from 2012 - 2016, international crude prices continually decreased from a peak of $111 to $30 in June 2016 (Macrotrends.net, n.d), which had a beneficial impact on the Indian economy. Low commodity prices, structural reforms, and a move towards rule - based policy framework helped India achieve economic growth of around 7.5% during the period from 2014 - 2016.

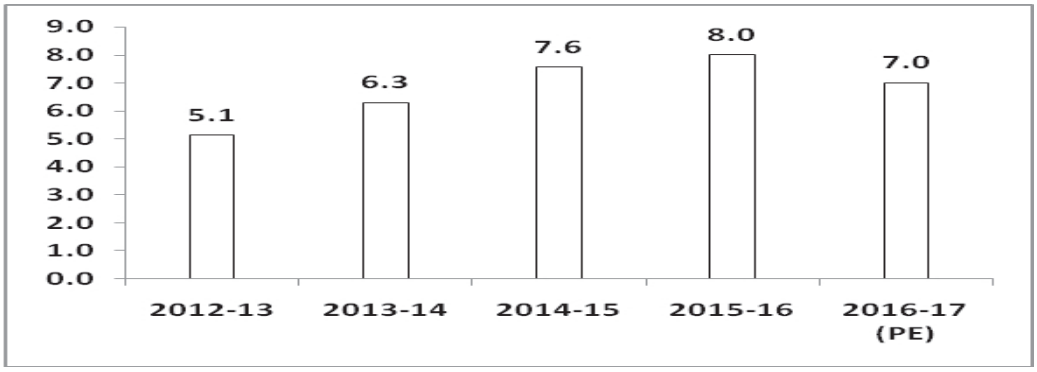
Thus, in general, an overall positive financial performance was expected from the listed companies during the period. A detailed purposive literature review was taken up for firm age and performance indicators and is presented in the next section.

Figure 1. Performance of BSE Over 2012 - 2016



Source: Compiled from BSE India website data.

Figure 2. India's Real GDP Growth During 2012-16



Source : Compiled from MoF. (2013). *Economic survey 2012 - 13: Statistical appendix.* New Delhi : Ministry of Finance, Government of India.

Literature Review

Firm age is associated with firm size (Cirillo, 2010 ; Fort et al., 2013), efficiency (Lundvall & Battese, 2000), and

performance (Coad et al., 2013 ; Loderer & Waelchli, 2010), but the relationship between age, growth, and size is complex ; to an extent contradictory (Coad et al., 2013 ; Evans, 1987 ; Haltiwanger et al., 2013). Baumol (1967) was the first to hypothesize increased rate of return with firm size and incorporated it to the firm - growth model, and explicitly incorporated into his model of growth of the firms. However, Marcus (1969) found that size of the firm influenced profitability in some, but not in all industries. In another research, Doğan (2013) studied 200 companies active in the Istanbul Stock Exchange (ISE) between 2008 and 2011 and considered return on asset (ROA) as the firm profitability indicator ; and total assets, total sales, and number of employees as the size indicator for the firms. The results indicated a positive relation between size indicators and profitability of the firms. Further, the control variables such as age and leverage rate of the firm were found to be in negative relation with ROA. It was indicated that relationship between debt financing and firm age was not monotonic (Ezeoha & Botha, 2012). Firm performance for different industry sectors is likely to be different and may not correlate with other sectors. Few researchers also argued that firm performance cannot increase indefinitely with size and reduces after some level of firm size (Parmar et al., 2015).

In the Indian context, the relationship among firm age, size, and growth has been studied (Shanmugam & Bhaduri, 2002). Literature suggested that in India, older firms were found to be more productive and less profitable ; whereas, the larger firms were found to be more profitable and less productive (Majumdar, 1997). Salim and Yadav (2012) examined the capital structure and performance of 237 Malaysian listed companies and considered return on asset, return on equity, and earnings per share as performance measures ; their study indicated a positive relationship between the growth and performance of the companies. While age is considered as an independent parameter to performance, some argued that particularly for small businesses, the age of the organization is a performance measure itself (Kar & Jena, 2017; Kar, 2018). Apart from size, different research studies found many causative factors for financial performance and some of them are promoter ownership (Satish & Satyanarayana, 2018), external finance (Shafi, Garg, & Muchie, 2016), cash flow management (Kumar, Sivashanmugam, & Vennela, 2018), and global influence (Saji, Harikumar, & Kasim, 2013). However, age and performance specific research in case of Indian companies is inadequate. This is the first attempt to investigate the relationship between financial performance and age for the companies listed on the BSE.

Research Gap and Objectives of the Study

Literature regarding comprehensive age distribution and financial performance parameters for BSE listed companies is lacking. Secondly, different performance indicators used should measure different aspects of the business operations, yet, together, the parameters measure the overall financial performance. The evidence of the divergent validity of the financial parameters needs to be established. Thus, this research aims to (a) find the performance parameters across sectors for the study period, (b) establish the relationship among factors, and (c) find their correlations with age of the companies. This research includes all the companies listed on the BSE, and thus, the parameters studied can be used as a benchmark for population parameters.

Methodology

The performance parameters used in this study include earnings before interest, taxes, depreciation and amortization (EBITDA) margin, net profit margin (NPM), return on net worth (RONW), return on capital employed (ROCE), asset size and growth, growth in income of the companies during the period from 2012-16. These parameters are based on the review of literature and appropriateness for the study. EBIDTA margin indicates operating profitability ; NPM indicates the overall success in terms of ability to price the product and

control the cost. RONW/ ROE measures net income per unit of shareholders' equity. ROCE indicates profitability and efficiency with regard to total capital used by the company considering debt and other liabilities.

The research includes financial data of companies listed under the Bombay Stock Exchange (BSE). Centre for Monitoring Indian Economy database (CMIE) was used to collect the financial data. By June 2017, the database query indicated 5332 companies listed under BSE. There were 143 industry groups as indicated in the database, and it was reclassified into 12 industry categories (Agri - products, Automobiles, Banks & Financial Services, Chemicals, ITES, Machinery, Metals & Mining, Pharma, Real Estate & Infra, Textile, Trading, and Diversified). The scheme of classification is given in Appendix A. The financial data were collected from CMIE Prowess database for 5 years from 2012 to 2016, which indicated 5182 companies (10 June 2017) out of which, 1056 did not have complete and consistent financial information for each period and were dropped from analysis. The remaining 4126 companies were considered for analysis. It was also observed that 39 companies had total income of less than ₹ 1 million or ₹ 0 during each of the years from 2012 to 2016. Listed companies with such a level of income would not be feasible, and thus, were dropped. Forty three companies were further dropped since the companies had EBIDTA margin negative for all the years from 2012 - 2016. These companies' operational costs were higher than the income. Similarly, the companies having negative return on net worth or equity (RONW) and return on capital (ROCE) during the entire period were removed from final analysis. The data set consisted of 3731 companies for the entire study period of 2012 - 2016. Out of the considered data, further analysis was carried out and extreme negative values for EBIDTA were identified through scatter plot and were removed as outliers, even if it had occurred for one year. The final sample consisted of 3719 companies. Few companies had undergone a name change, and such companies were identified, and financials were appropriately incorporated (see Appendix B).

It was considered possible that a specific ratio chosen may be bad for a particular year, so average of 5 years was taken for each of the ratios chosen for analysis. Averaging of ratios over different years has also been used in many prior research studies (Edmister, 1972).

Data Analysis and Results

Industry Type Distribution

The Table 1 indicates that banking and financial services (BFSI) constitute the highest percentage (19%) of the total sample with 714 companies ; whereas, the automobiles sector has 104 companies constituting 2.8% of the sample. Diversified business groups and trading companies constitute 18.7% and 11.5% of the sample, respectively. The distribution of companies of all other groups varies around 5% of the total sample.

(1) Incorporation and Listing Year : The Figure 3 indicates that the modal incorporation year is found to be 1994 ; the mean year is between 1982 and 1983. The skewness of -2.1 indicates a skewed distribution of incorporation year. The Table 2 indicates that 272 companies were incorporated up to the year 1950.

Table 1. Sector Wise Distribution of Listed Companies

Sector →	1	2	3	4	5	6	7	8	9	10	11	12	Total
Frequency	176	104	714	262	696	211	202	348	130	216	231	429	3719
%	4.7	2.8	19.2	7	18.7	5.7	5.4	9.4	3.5	5.8	6.2	11.5	100

Note. 1 - Agro, 2 - Automobiles, 3 - BFSI, 4 - Chemicals, 5 - Diversified, 6 - ITES, 7-Machinery, 8 - Metal, 9 - Pharma, 10 - Real estate, 11 - Textiles, 12 - Trading

Figure 3. Incorporation Year and Percentage of Listed Companies

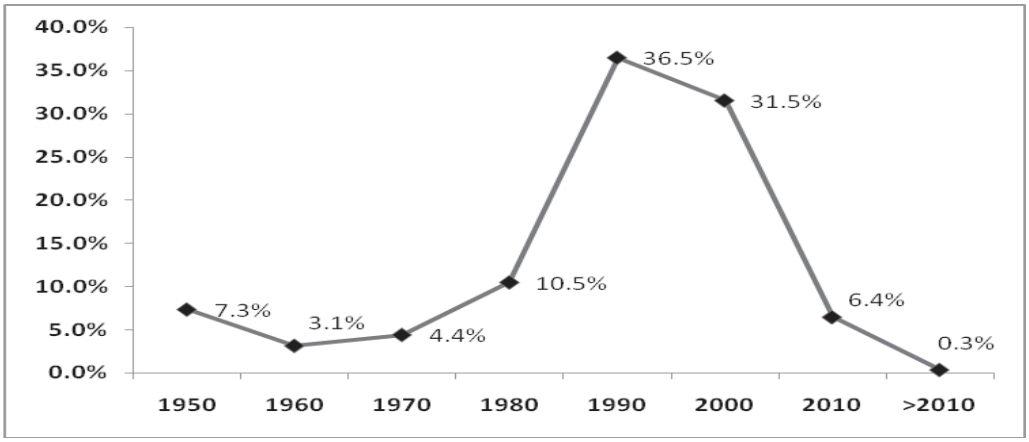
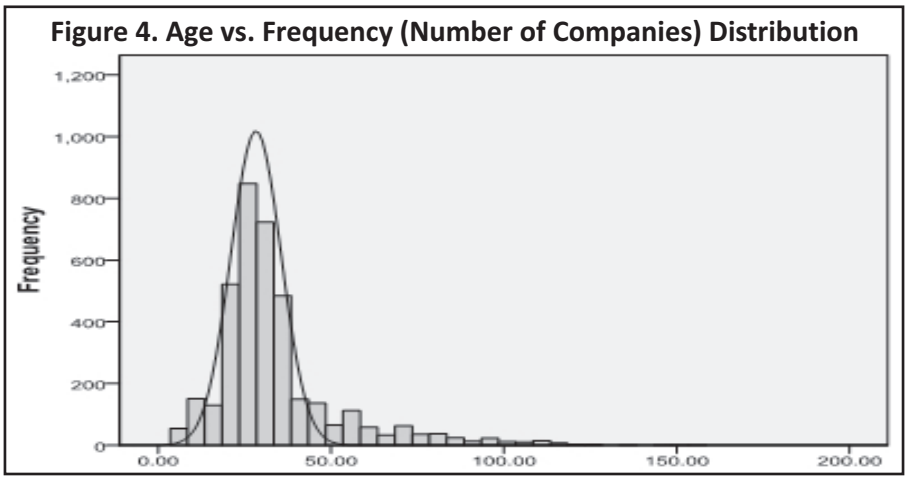


Table 2. Listing Year Distribution of Companies

Year of Listing	Up to 1990	1990-94	1995-99	2000-04	2005-09	2010-14	2015-17
% of Total	24.3	20.7	23.8	4.5	9.8	9.7	7.2

Figure 4. Age vs. Frequency (Number of Companies) Distribution



(i) Incorporation Year Wise Distribution of Listed Companies : The sample also indicates that maximum percentage (36.5%) of the listed companies were incorporated between the years 1980 - 1990, followed by companies incorporated during 1990 - 2000.

(ii) Distribution of Listing Year : The Table 2 indicates the distribution of listing year of the companies in BSE. The Table 2 indicates that the cumulative percentage of companies listed up to year 1990 is almost equal to the listing during the period from 1995 - 1999. In fact, the post liberalization decade accounted for 44.5% of the total number of companies listed. It is generally anticipated that the companies access capital market in a favourable year, and the capital is expected to be used for better financial performance of the companies. The age distribution of the listed companies indicates the mean, median, and mode to be 34.2, 30.0, and 23.0 years, respectively ; the standard deviation and skewness are found to be 18.35 and 2.1 (*S.E* of Skewness $= 0.04$), respectively.

Table 3. Age Distribution of Listed Companies

Age by 2017	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	>70
Number	113	283	1534	1043	249	176	93	228
%	3.0%	7.6%	41.2%	28.0%	6.7%	4.7%	2.5%	6.1%

(2) Distribution of Age of the Listed Companies : The Figure 4 and Table 3 indicate the age and their distribution for the companies listed on the BSE.

The data indicates that mean age of the companies is 34.16 years with a standard deviation of 18.34 (N = 3719). In a skewed distribution, the mode is a better estimate of central tendency and it is 30 for the listed companies.

The following section analyzes the performance parameters of the companies. Since the income and asset for a particular year or each year during the period may not be representative enough, compound annual growth rate for the period is considered for the income and assets.

Performance Analysis

(1) Distribution of Average and CAGR of Income & Assets During the Year 2012 - 16 : Over the study period, the mean of compounded annual growth rate of assets is found to be 9% (Std dev = 0.29) and income is 12% (Std dev = 0.54) ; modal CAGR for assets is 1% and for income, it is 4% ; and median CAGR is 4% and 5%, respectively. However, the CAGR data is positively skewed, for assets, the skewness is 6.64 (*SE* =.04) and for income, the skewness is 5.19 (*SE* = 0.04). The CAGR range for assets is with minimum value of -0.81 and maximum of 5.64 ; for income, the range has minimum of -0.92 and maximum of 8.64. The CAGR distribution of income and assets is indicated in the Table 4.

(2) CAGR of Income and Assets for Different Sectors : The CAGR of income and assets by the industry group is shown in the Figure 5.

Table 4. CAGR of Assets and Income

Range	≤ 0	0-2	2-4	4-6	>6
Asset CAGR	1156 (32%)	2548 (69%)	13 (1%)	2 (1%)	0 (0)
Income CAGR	1369 (37%)	2294 (62%)	45 (2%)	8 (1%)	3 (1%)

Figure 5. CAGR of Income and Assets Across Industry Groups

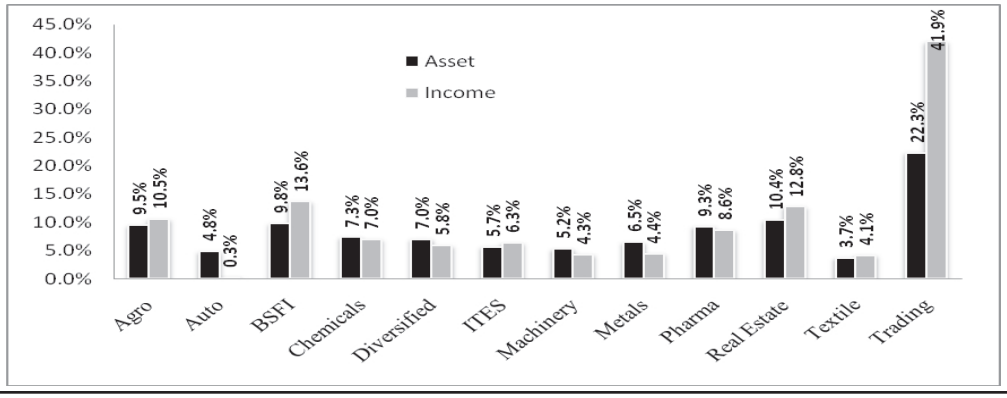


Table 5. Assets, EBIDTA Margin, NPM, RONW, and ROCE During 2012-16

	Asset	EBIDTA Margin	NPM	RONW	ROCE
Mean	44941.8	10.5	-150.0	-3.6	-0.2
Median	1006.8	12.5	1.7	2.2	1.5
Mode	19.9	0.0	0.0	0.0	0.0
Std. Deviation	419186	76.7	2092.7	80.5	32.4
Skewness	26.1	-8.0	-30.4	-16.3	-16.0
(*S.E*)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Range	18030893	1666.8	93561.1	3673.5	1244.1

Table 6. Distribution of Financial Parameters (Average Over Period 2012 - 16)

	≤ 0	0-5	5-10	10-15	15-20	20-25	25-30	>30
EBIDTA Margin	438 (12)	444 (12)	658 (18)	568 (15)	348 (9)	231 (6)	181 (5)	851 (23)
NPM	1362 (37)	1165 (31)	479 (13)	231 (6)	138 (4)	97 (3)	58 (2)	189 (5)
RONW	1285 (35)	995 (27)	507 (14)	374 (10)	246 (7)	135 (4)	64 (2)	113 (3)
ROCE	1253 (34)	1385 (37)	562 (15)	246 (7)	113 (3)	75 (2)	25 (1)	60 (2)

Note. * The number in the bracket indicates percentage of the sample total (*n* = 3719).

(i) CAGR Income : The trading sector has highest CAGR of 42% for income during the period ; BFSI and real estate sectors have 13.6% and 12.8% CAGR for income. The lowest CAGR of income is recorded for the auto industry.

(ii) CAGR Assets : Similar to income growth, the assets growth also shows that trading, real estate, and BFSI sectors have grown faster. The lowest asset growth of 4% CAGR has been recorded for the textile sector.

(3) Overall Performance Measure for the Study Period : The value of assets, EBIDTA margin, NPM, RONW, and ROCE for the study period (2012-16) is presented in this section (Table 5). The distribution parameters indicate that the values have very high degree of skewness and standard deviation compared to the mean values. It suggests high variability and low central tendency of the performance parameters among the listed companies during the period 2016 - 2017.

Further analysis of each of the parameters were undertaken to bring clarity about the distributions specifically because the average of the periods with respect to NPM, RONW, and ROCE parameters is found to be negative. The detailed distribution of each parameter is indicated in the Table 6.

Twelve percent of the companies reported average EBIDTA margin equal to or less than zero ; whereas, more than 23% of the companies reported it to be more than 30%. Thirty seven percent of the companies had less than or equal to zero average net profit margin over the period. Similarly, 35% and 34% of the companies have reported average RONW and ROCE as less than or equal to zero over the study period from 2012 to 2016.

Age and Sector Analysis

(1) Average Age by 2017 : It is observed that by 2017, the average age of companies across sectors varies from 26 to 49 years. Machinery is the oldest industry sector listed with the average age of 41 years; ITES sector has the

average age of 26 years. The average age of other sectors (chemicals, auto, pharma, textile, agro, and metals) varies from 36 to 39 years. The Figure 6 shows the detailed distribution.

(2) Average Level of Assets : Average level of assets for the period 2012-16 is presented in the Figure 7. The asset level of BSFI sector (150995) is hugely different compared to all other sectors because of its assets accounting practice. Machinery, chemicals, metals, and real estate sector show average level of assets as ₹ 43888 million, ₹ 40898 million, ₹ 38832 million, and ₹ 22964 million rupees for the period.

(3) Average ROCE : Sector wise average value for return on capital employed was calculated for each of the sectors for the period from 2012-2016. The data is presented in the Figure 8. Chemicals, pharma, and automobiles sectors have the average value as 6.1%, 5.7%, and 4.7%, respectively for the whole of the period. Diversified group, trading, textiles, and BSFI have negative return on capital employed for the period.

(4) Average EBIDTA Margin : The averages of EBIDTA during the period 2012-16 for different sectors are

Figure 6. Age of Different Industry Categories

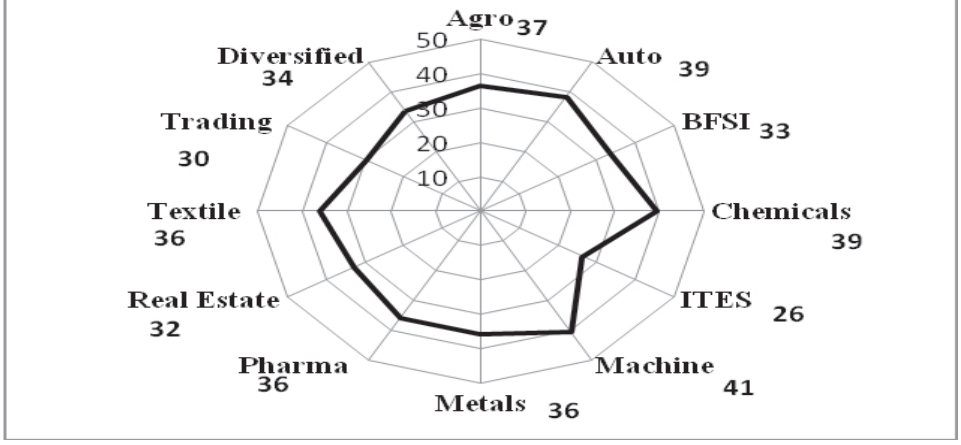


Figure 7. Average Level of Assets

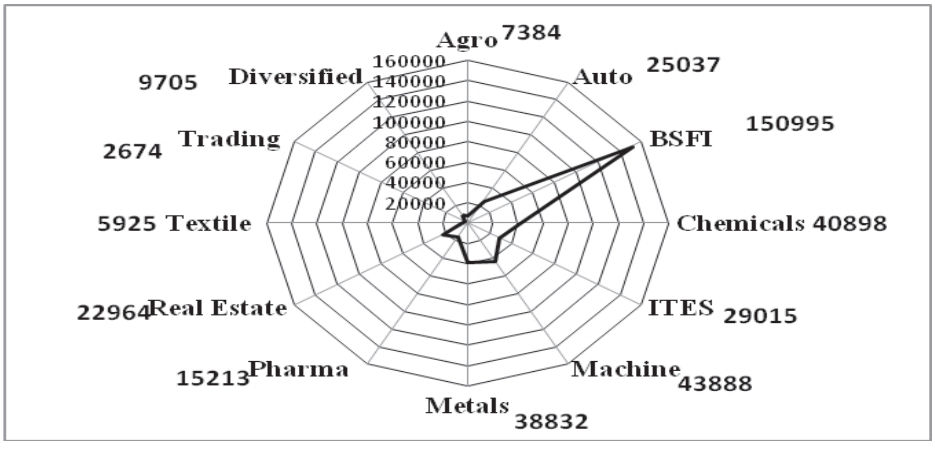


Figure 8. Average ROCE Value Across Different Industry Groups

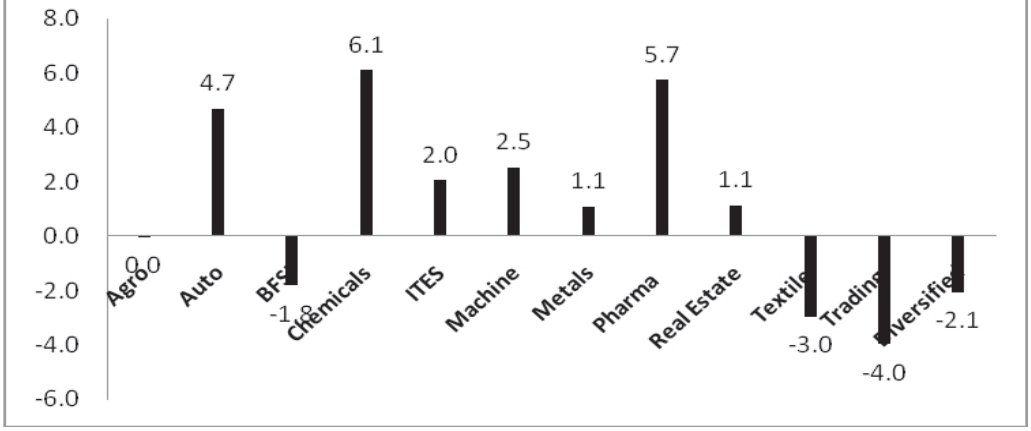
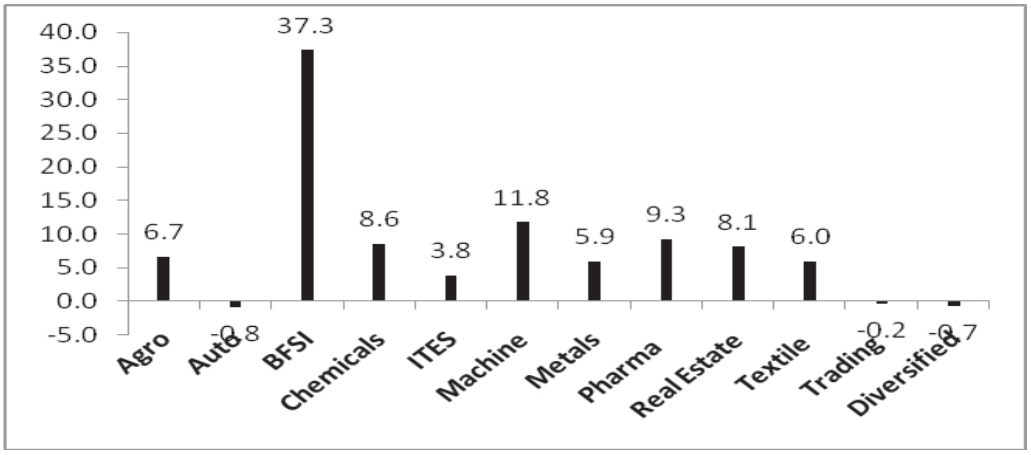


Figure 9. Average Level of EBIDTA Margin of Different Industry Groups



presented in the Figure 9. The data indicates that the BSFI sector has the highest average EBIDTA margin (37.3%) during the period considered. Machinery, pharmaceuticals, and chemical sectors have EBIDTA margin of 11.8%, 9.3%, and 8.6%, respectively. Automobiles, trading, and diversified business sectors have negative average EBIDTA margin during the period.

(5) RONW : Sector wise average return on net-worth for the period is presented in the Figure 10. Only few sectors such as pharmaceuticals, chemicals, and automobiles show positive returns of 6.8%, 2.6%, and 0.6%, respectively. The ITES sector shows a huge negative return of -20.5% return on net worth for the period.

(6) Average NPM : Average net profit margin during the period indicates that all the sectors had negative net profit margin. Machinery, chemicals, textiles, and agro industries sectors have average net profit margins of -8.7%, -10.8%, -17.2%, and -18.4%, respectively. The diversified industry sector has the least average NPM of -359% during the period. The Figure 11 shows average NPM distribution across the different industry groups.

Figure 10. Average Level of RONW of Different Industry Groups

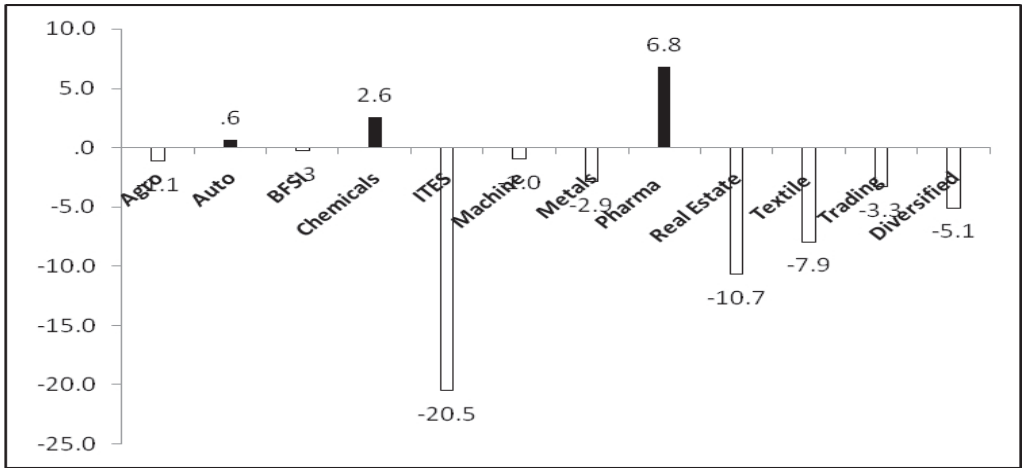
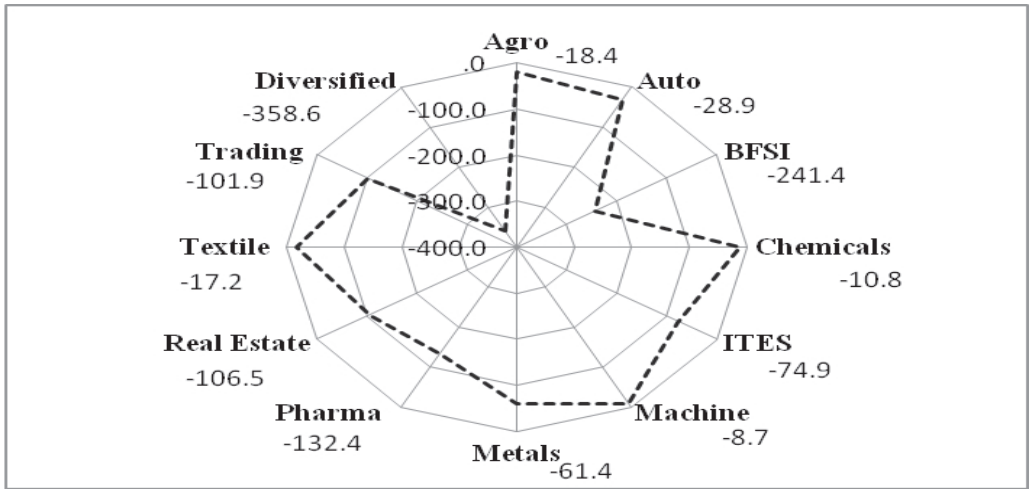


Figure 11. Average NPM Distribution Map of Different Industry Groups



Hypothesis Testing

One of the objectives of the study is to find if the company performance indicators are related to each other. All the parameters chosen should not have very high correlation to suggest more or less same measure and also the correlations should not be less to indicate a very different construct than the performance parameter. To test these aspects, the Pearson coefficient of correlation was carried out for two sets of data. At the first level, correlation between EBIDTA margin, NPM, RONW, and ROCE for the year 2016 is tested (H_0= No correlation). The results are tabulated in the Table 7.

It indicates a weak but a positive significant correlation and thus rejecting the null hypothesis. It also indicates that the parameters chosen relate to the performance and different aspects of it. Though the data is not normally distributed, Pearson's correlation is applicable for non-normal data as well.

At the second level, the period average (2012-16) was taken and tested for correlation. The analysis is presented in the Table 8. Since the asset values are disproportionately large, log values were taken for correlation analysis.

Table 7. Correlations Between Performance Parameters for the Year 2016

Correlations	For the Year Ending March 2016			
	EBIDTA	NPM	RONW	ROCE
EBIDTA	1	0.093**	0.064**	0.136**
NPM	0.093**	1	0.182**	0.197**
RONW	0.064**	0.182**	1	0.240**
ROCE	0.136**	0.197**	0.240**	1

Table 8. Correlation Among Performance Parameters and Age (*N* = 3719)

	CAGR Income	CAGR Asset	Average ROCE	Average RONW	Average NPM	Average EBIDTA Margin	Age by 2017	Log Average Asset
CAGR Income	1	.609**	.068**	.054**	.048**	.036*	-.059**	-.109**
CAGR Asset	.609**	1	.082**	.092**	.060**	.083**	-.074**	-.025
Average ROCE	.068**	.082**	1	.186**	.157**	.133**	.018	.094**
Average RONW	.054**	.092**	.186**	1	.117**	.093**	.004	.012
Average NPM	.048**	.060**	.157**	.117**	1	.258**	.017	.027
Average EBIDTA Margin	.036*	.083**	.133**	.093**	.258**	1	.039*	.095**
Age by 2017	-.059**	-.074**	.018	.004	.017	.039*	1	.240**
Average Asset (Log)	-.109**	-.025	.094**	.012	.027	.095**	.240**	1

Note. * indicates significance at < 0.05 and ** indicates significance at < 0.01 level.

It can be seen that the performance factors, taken on average for the period, have higher correlation among themselves than the correlation for the year 2016. Most of the performance parameters are significantly correlated among themselves except few combinations. There is negative, low, but significant correlation existing between age and income growth (CAGR) (Pearson's correlation $r = -0.059$, $p < 0.01$) and between age and asset growth (CAGR) (Pearson's correlation $r = -0.074$, $p < 0.01$). However, age and average EBIDTA margin is positive, low, and significant (Pearson's correlation $r = 0.039$, $p < 0.05$). The correlation between age and log of average asset value is positive, medium, and significant (Pearson's correlation $r = 0.24$, $p < 0.01$).

The null hypothesis that there is no correlation between CAGR of income and assets is rejected, as it is found that both are significantly correlated (Pearson's coefficient of correlation $r = 0.609$, $p < 0.01$).

Discussion

The mean, median, and mode of the age of the listed companies are 34.2, 30.0, and 23.0 years respectively; the standard deviation and skewness are found to be 18.35 and 2.1 for age. Sector analysis of age indicates that ITES is the youngest sector with average age of 26 years (2017 reference) and the machinery sector is the oldest with 41 years of average. Maximum percentage of the listed companies belong to the BFSI segment and then to the diversified category. Maximum percentage (36.5%) of the listed companies were incorporated between the years 1980 - 1990 followed by the companies incorporated during 1990 - 2000.

Except EBIDTA margin (average 10.5%), all other performance parameters selected (ROCE = -0.2, RONW = -3.6, NPM = -150.0) are found to be negative. The mean and standard deviation of each of the parameters chosen indicate extreme variability in each of the parameters. Thirty two percent of the companies

show negative compounded growth in their assets and 37% show negative compounded growth of income during the period. There are variations across industry segments on income and asset growth as well.

The financial parameters chosen have high standard deviation and skewness for the total sample and at the sector level. Financial performance parameters (EBIDTA margin, NPM, RONW, and ROCE) show weak, positive, and significant correlations among them. There is a strong correlation between income growth and asset growth over the period. Assets and income CAGR has a weak, negative, but significant correlation with age. EBITA margin has a weak correlation with age, indicating the pricing and operational advantages of older companies over their younger counterparts.

The significant correlation between asset size and age found in this research corroborates the findings of earlier research (Fort et. al., 2013), however, the performance parameter of EBIDTA is found to have significant correlation with age, thus it cannot be generalized to other performance measures as was done by Coad et al. (2013). The findings of negative correlation of age with income and asset growth does not fully explain Baumol's (1967) proposition. Similarly, this study corroborates Doğan's (2013) finding of relationship of profitability with size.

Research Implications

This research ascertains the general understanding of risk in stock market investments due to very high level of variability in performance parameters. A stock investment model incorporating the age of the firm may be beneficial for common investors who look for profitability of the business rather than income or asset growth of the firm. The chosen performance ratios such as return on capital employed, return on net-worth, net profit margin, earnings before interest, depreciation and amortization margin need to be evaluated individually since they have very low but significant correlation among themselves.

Limitations of the Study and Scope for Further Research

The research contributes to the knowledge base in three important ways. Firstly, the data set is for all the listed companies of BSE, thus it indicates the whole population. Secondly, the research tries to fill the gap existing in the study of age and financial performance indicators in the Indian scenario. Thirdly, it identifies the relationships between various parameters, which can serve future research on this area.

One of the major limitations as well as strength of this study is data. Large data set should have indicated robust tests and outcomes, but heteroscedastic data presents its challenges for meaningful conclusion. The scatteredness of the data has to be logically segregated for its outliers rather than based on its value. Secondly, the BFSI segment asset level suggests that this segment has to be separated during asset analysis because of different asset recognition norms it follows. Thirdly, a predictive model may be developed by taking performance such as EBIDTA margin or PAT margin as an independent variable, and age, asset, and net-worth as dependent variables. This may add knowledge to the growth model of the firm. Lastly, performance measures are influenced by other factors such as ownership structure, corporate governance, broad economic scenario, etc. A comprehensive model would indicate different factors and their contribution to the overall performance.

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Appendix

Appendix A

↳ **Agro - Products :** Other agricultural products, tobacco products, floriculture, processed foods, tea, dairy products, poultry & meat products, marine foods, vegetable oils & products, sugar, cocoa products & confectionery, coffee, wood.

↳ **Metal & Mining :** Coal & lignite, crude oil & natural gas, minerals, granite, industrial construction, glass & glassware, refractories, ceramic products, miscellaneous electrical machinery, other construction materials, cement, abrasives, pig iron, sponge iron, steel, metal products, ferro alloys, steel pipes & tubes, copper & copper products, aluminium & aluminium products, gems & jewellery, other non-ferrous metals, castings & forgings, boilers & turbines, generators, transformers & switchgears, other domestic appliances.

↳ **Machinery :** Milling products, storage batteries, dry cells, wires & cables, industrial cooling equipment, air-conditioners & refrigerators, engines, general purpose machinery, mining & construction equipment, industrial machinery, diversified machinery, other industrial machinery, agricultural machinery, machine tools, electricity generation, electricity distribution.

↳ **Chemicals :** Starches, beer & alcohol, organic chemicals, lubricants, etc., refinery, other chemicals, inorganic chemicals, caustic soda, soda ash, dyes & pigments, fertilizers, polymers, synthetic rubber, pesticides, paints & varnishes, cosmetics, toiletries, soaps & detergents, tyres & tubes, rubber products.

↳ **Textile :** Cotton & blended yarn, other textiles, cloth, diversified cotton textile, textile processing, man-made filaments & fibres, readymade garments.

↳ **ITES :** Other electronics, communication equipment, consumer electronics, computer software, business consultancy, ITES.

↳ **Automobiles :** Passenger vehicles, commercial vehicles, other automobile ancillaries, other transport equipment, two & three wheelers.

↳ **Real Estate & Infrastructure :** Other construction & allied activities, housing construction, infrastructural construction, commercial complexes.

↳ **Trading :** Trading, retail trading

↳ **Banks & Financial Services :** Other fee based financial services, other fund based financial services, banking services, housing finance services, other financial services, other asset financing services, auto finance services, infrastructure finance services, securities broking.

↳ **Pharma :** Pharma sector in our group consists of one sector from CMIE ; Drugs & pharmaceuticals.

↳ **Diversified :** Diversified, bakery products, plastic furniture, floorings & miscellaneous items.

Other leather products, footwear, paper & newsprint, paper products, miscellaneous manufactured articles, books & cards, plastic films & flexible packaging, plastic tubes, pipes, fittings & sheets, plastic packaging goods, computers, peripherals & storage devices. Other miscellaneous services, railway transport services, road transport services, transport logistics services.

Natural gas trading & distribution, shipping transport services, shipping transport infrastructure services, air transport services, storage & distribution, road transport infrastructure services, courier services, hotels & restaurants, media - print, production & distribution of films, media - broadcasting, other recreational services, exhibition of films, telecommunication services, tourism, education, health services, media-content, animation content provider.

Appendix B

The names of the following companies have changed during the past two years. To verify the financial information for the below companies, the updated name is matched with the CMIE database.

Old Name	Present Name
Aditya Birla Nuvo Ltd.	Aditya Birla Nuvo Ltd. [merged]
Aroni Commercials Ltd.	Aroni Commercials Ltd. [Merged]
Cairn India Ltd.	Cairn India Ltd. [Merged]
ChemfabAlakali Ltd.	Chemfab Alkalis Ltd. [Merged]
Dishman Pharmaceuticals & Chemicals Ltd.	Dishman Pharmaceuticals & Chemicals Ltd. [Merged]
Gujarat Poly Electronics Ltd.	Gujarat Poly-Avx Electronics Ltd.
Parrys Sugar Inds. Ltd.	Parrys Sugar Inds. Ltd. [Merged]
Trinetra Cement Ltd.	Trinetra Cement Ltd. [Merged]
FAG Bearings Ltd.	Schaeffler India Ltd.
Credit Analysis and Research Ltd.	CARE Ratings Ltd.

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