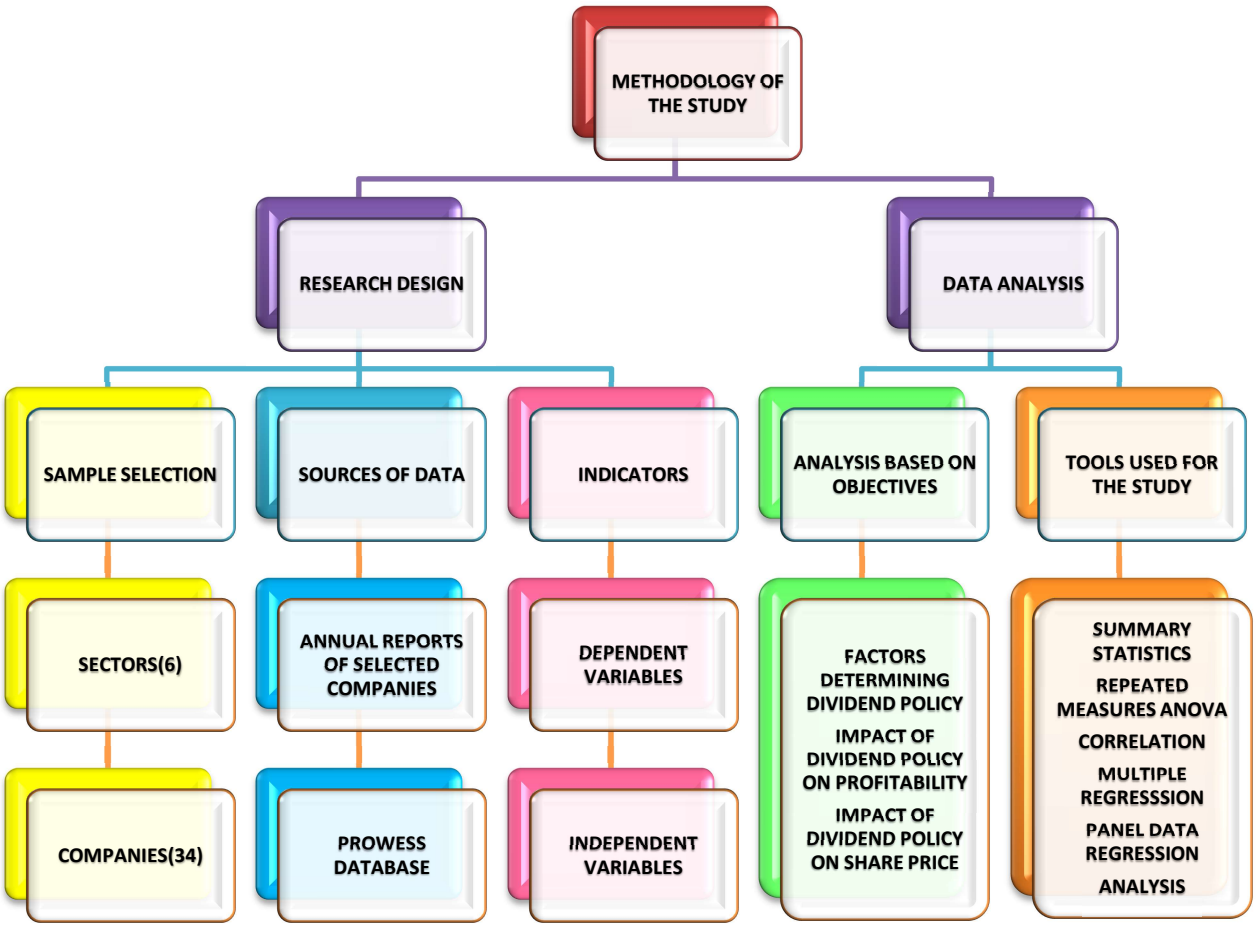
CHAPTER 3

RESEARCH METHODOLOGY

This chapter illuminates the methods that have been used to collect and evaluate the data in order to carry out the objectives of the study. The research design adopted for the current study is illustrated in the chart below.

CHART 1

RESEARCH FRAMEWORK



3.1 SOURCES OF DATA

The data for the research was collected mainly from the secondary sources. The data were collected from PROWESS database and also from the website of national stock exchange, money control, and the annual reports of the companies, books and journals.

3.2 PERIOD OF STUDY

The study covers a period of 15 financial years from 2004-2005 to 2018-2019. The financial year starts from the 1st day of April in a calendar year and ends on the 31st day of March of next year.

3.3 SAMPLING DESIGN

The following criteria was used to select the companies from NSE NIFTY 50 index. The sample selection criteria are listed below:

i) The companies were indexed in NSE NIFTY 50 as on 22nd November 2019.

ii) The companies which have been paying dividends continuously for 15 years from the financial year 2004-05 to 2018-2019.

iii) The companies with continuous availability of data from the financial year 2004-2005 to 2018-19.

Hence, a total of 34 companies (8 from Financial Sector, 5 from Automobile Sector, 8 from Energy Sector, 4 from Pharmaceutical Sector, 5 from Information Technology Sector, 4 from Metal Sector) were taken. The selected companies listed below in the table 1.

Table 1

List of Sample Companies Selected for the Study

Sector	S.No	Name of the Companies
Financial Sector	1	Axis Bank Limited
	2	Bajaj Finance Limited
	3	HDFC Bank Limited
	4	HDFC Limited
	5	ICICI Bank Limited
	6	IndusInd Bank Limited
	7	Kotak Mahindra Bank Limited
	8	State Bank of India
Automobile Sector	9	Eicher Motors Limited
	10	Hero MotoCorp Limited
	11	Mahindra and Mahindra Limited
	12	Maruti Suzuki India Limited
	13	Tata Motors Limited
Energy Sector	14	Bharat Petroleum Corporation Limited
	15	Gas Authority of India Limited
	16	Hindustan Petroleum Corporation Limited
	17	Indian Oil Corporation Limited
	18	National Thermal Power Corporation Limited
	19	Oil and Natural Gas Corporation Limited
	20	Power Grid Corporation of India Limited
	21	Reliance Industries Limited
Pharmaceutical Sector	22	Cipla Limited
	23	Dr.Reddy's Laboratories Limited
	24	Lupin Limited
	25	Sun Pharmaceutical Industries Limited
Information Technology Sector	26	HCL Technologies Limited
	27	Infosys Limited
	28	Tata Consultancy Services Limited
	29	Tech Mahindra Limited
	30	Wipro Limited
Metal Sector	31	Hindalco India Limited
	32	Tata Steel Limited
	33	Vedanta Limited
	34	Coal India Limited

3.4 INDICATORS USED FOR THE STUDY

The following are the independent and dependent variables considered for the study.

- Factors determining dividend policy of Nifty companies

  i. Independent Variables – Profitability, Liquidity, Leverage, Firm Size, Growth, Risk, Past Dividend, Earnings per share, Tangibility, Investment Opportunities and Cash flow.

  ii. Dependent Variable – Dividend Payout Ratio

- Impact of dividend policy on profitability of Nifty companies

  i. Independent Variables – Dividend Payout Ratio and Dividend Yield Ratio

  ii. Dependent Variables – Return on Asset, Return on Net Worth and Return on Capital Employed

- Impact of dividend policy on profitability of Nifty companies

  i. Independent Variables – Dividend Payout Ratio and Dividend Yield Ratio

  ii. Dependent Variable – Share Price

  Table 2 shows the description of indicators applied in the study.

Table 2

Description of Indicators

Indicators	Description
Profitability	Net profit/Net sales
Liquidity	Current asset/Current liability
Leverage	Total debt/Total Equity
Firm Size	Natural log of total assets
Growth	Current revenue-previous revenue/sales
Risk	Market price per equity share/ Earnings per share
Past dividend	Last year dividend payout ratio
Earnings per share	Net profit after tax- preference dividend / number of equity shares
Tangibility	Fixed asset/total assets
Investment opportunities	Market value of firm/total assets
Cash flow	Profit before tax/total assets
Dividend payout ratio	Dividend per equity share/ earnings per share
Dividend yield ratio	Dividend per equity share/ market value per share
Return on assets	Net profit after tax/average total assets
Return on capital employed	Earnings before interest and tax/capital employed
Return on net worth	Net profit after interest and tax/ shareholders funds
Share price	Year end price (NSE)

3.5 TOOLS USED FOR THE STUDY

Thefinancial and statistical tools were applied to process the data are explained in the following headings.

3.5.1 FINANCIAL TOOLS

Financial analysis is an effort to determine the importance of the financial data so it foresees the future earnings of the company, ability to pay interest to the investors. The financial tools used in the present study are discussed below.

1. RATIO ANALYSIS

It is used as an indicator in the financial analysis for assessing the company's performance and its financial position. The ratios were used in the study are explained below.

a. Profitability

Profitability is an indicator of overall performance and operational efficiency of the business concern. Profitability ratio estimates the firm's ability to make a profit relative to its sales revenue and it also measure the financial strength of the company. Net profit margin used as a proxy for profitability. The formula for profitability ratio is

Profitability ratio = net profit / net sales

b. Liquidity

Liquidity refers to the potential of a business enterprise to meet its short term liabilities. Liquidity ratio determines the short term financial position of the profit organisation. Liquidity ratio measures the current assets that could readily converted into cash. Current ratio used as a proxy for liquidity. The formula for liquidity ratio is

Liquidity ratio = current asset / current liabilities

c. Leverage

Leverage ratio is a financial metric to assess the company's ability to meet its long term obligations. The leverage ratio is the proportion of debts that a company has compared to its equity. The formula for leverage ratio is

Leverage ratio = total debt / total equity

d. Firm size

The firm size is measured by the natural logarithm of total assets.

Firm size = natural logarithm of total assets

e. Growth

Growth refers to the company reaches the point of expansion and look for more alternatives to make profit. Business growth consider as an important factor for the long-term survival of a business enterprise. Growth of the company leads to create investment opportunities, expansion of the business, increase stability and profit. The formula for growth ratio is

Growth ratio = Current revenue-previous revenue/sales

f. Risk

The price earnings ratio used as a proxy for risk. This ratio predicts the share price at some future date. This ratio helps the investor to decide whether to buy the particular company's share or not.

Risk ratio = Market price per equity share/ Earnings per share

g. Past dividend

Past dividend rates of the company determines the current year dividend of the existing company. A company director considers the dividend declared in the past years while deciding the current year dividend rates. Normally, companies maintain steadiness

in dividend based on the past year dividend rates.

Past dividend = last year dividend payout ratio

h. Earnings per share

Earnings per share is an important financial metric as it help to measure the financial soundness of the company. Earnings per share considered as a tool that the investors use to estimate the profitability of the company to before purchasing the share of the company. The higher earnings per share, company better in its profitability. It shows the capacity of business enterprise to pay dividend to its investors. The formula for earnings per share is

Earnings per share = Net profit after tax- preference dividend / number of equity shares

i. Tangibility

Tangible assets are in a physical form and it's with a finite value. These assets are significant to business enterprise because it represents the company's worth. Companies with high tangible assets lead to less short term assets that can be held as collateral to obtain sufficient fund. The formula for tangibility is

Tangibility ratio = Fixed asset/total asset

j. Investment opportunities

Investment opportunities are one of the important factors of market value of the company. The company with higher investment opportunities has high efficiency to pay. The formula for investment opportunities is

Investment opportunities = Market value of firm/total assets

k. Cash flow

A poor liquidity position refers to less generous dividend due to shortage of cash. Cash flows highlighted the position of firm to pay dividends. The formula for cash flow is

Cash flow = profit before tax/ total assets

l. Dividend payout ratio

Dividend payout ratio indicates the proportion of earnings which has been utilized for the payment of dividend to the equity shareholders.

Dividend payout ratio = Dividend per equity share/ earnings per share

m. Dividend Yield Ratio

Dividend yield ratio is a financial metric that measures the return in relation to the price per share. It is generally used by the shareholders who are mainly interested in dividend income.

Dividend yield ratio = Dividend per equity share/ market value per share

n. Return on assets

The profit to asset ratio indicates distribution of total assets by the management of the business enterprise used to make income.

Return on assets = Net profit after tax/average total assets

o. Return on capital employed

Return on capital employed measures the earning capacity of the total capital invested in the business enterprise.

Return on capital employed = Earnings before interest and tax/capital employed

p. Return on net worth

Return on net worth ratio helps the shareholders to estimate the earning capacity of the business enterprise relation to shareholders funds. This ratio indicates the effective utilization of shareholders funds in the company. The formula for return on net worth is

Return on net worth = Net profit after interest and tax/ shareholders funds

q. Share price

Market price per share or share price refers to the current price of the share is trading in the capital market.

Market price per share = year end price (NSE)

3.5.2 STATISTICAL TOOLS

Statistical methods involve in planning, organizing, collecting, analyzing and interpreting the data. The following statistical tools and techniques used in the present study are

a. Summary statistics

b. Repeated measures ANOVA

c. Correlation analysis

d. Multiple regression analysis

e. Panel data regression analysis

a. Summary statistics

Summary statistics describe the nature of sample data. Summary statistics consists of frequency distribution, measures of central tendency and measures of variability. Mean, standard deviation, coefficient of variation are the summary statistics were applied to analyse the sample data.

i. Mean

Mean is simply called as average. It is the common method used to describe the central tendency. It is useful in determining the trend of a data set.

$$\text{Mean} = \sum x/n$$

ii. Standard deviation

The standard deviation is a metric used to estimate the amount of variation in the data set. A low variation shows that the values close to the mean value and a high variation tend to spread out over wide range to the mean value. The formula for standard deviation is

$$\text{Standarad deviation} = \sqrt{\sum(x_i - \mu)^2/N}$$

iii. Coefficient of variation

Coefficient of variation is a standardized measure of relative variability of data points around the mean. It is the ratio of the standard deviation to the mean. The formula for coefficient of variation is

$$\text{Coefficient of variation} = \text{standard deviation}/\text{ mean}$$

b. Repeated measures ANOVA

Repeated measures ANOVA test the equality of means. However, a repeated measure ANOVA is used when all the subjects of a random sample are measured at different times. That is, the measurement of the dependent variable is repeated. Regular ANOVA in this case may not be appropriate here since it will not take into account the correlations between the values measured at different time periods. Repeated Measures ANOVA has been used often in biological experiments and survey type data. This approach is used here for several reasons. First, some research hypotheses require repeated measures. For example, Profitability ratio of a particular company is observed for several years. In this case, years would be a repeated factor. Second, in cases where there is a great deal of variation between sample companies, error variance estimates

(Error some of squares) from standard ANOVAs are large. Repeated measures of each sampled company at different time periods provide a way of accounting for this variance, thus reducing error variance. Third, when sample companies are selected based on certain criteria and is difficult to find enough companies, repeated measures designs are economical because each company's performance is measured under all years.

c. Correlation analysis

Correlation analysis is a statistical measure used to estimate the strength of relationship between two variables. There are different types of correlation coefficient, in that popular method of correlation coefficient is Karl Pearson's correlation. The results are presented in the form of correlation matrix for the analysis of factors determining dividend policy of NIFTY companies.

d. Multiple regression analysis

An outcome variable is modeled as a function of several predictor variables with constant coefficient. The multiple regression equation explained below with the following formula.

$$y = b_1x_1+b_2x+b_nx_n+c.$$

Multiple regression analysis was applied to find the factors determining dividend policy of NIFTY companies.

e. Panel data regression analysis

Panel data is a multi-dimensional data of an observation that is estimated repeatedly over the period of time. Types of panel data models are pooled OLS model, fixed effect model and random effect model. Pooled OLS model is that without assigning any importance to cross-sections or time period. Fixed effect model explore the relationship between dependent and independent variables within an individual (company). Each individual has its own unique characteristics that may or may not influence the independent variables. The assumption behind random effects model is that, unlike the fixed effects model, the variations across individuals is assumed to be random

and are uncorrelated with the independent variables included in the model. If it is believed that differences across individuals have some influence on the dependent variable then random effects model may be used. Other than this, the concepts of the regression coefficients are same. The t-tests were conducted to test for significant effect of the regression coefficients. If the probability value is less than 0.05, the independent variables have significant effect on the dependent variable and the hypothesis (Ho being no significant effect) is rejected. if the probability value is greater than 0.05 then the independent variables have significant effect on dependent variable and the corresponding hypothesis (Ho being no significant) is accepted. To choose which model is more appropriate, initially Hausman test is applied to compare between random effect model and fixed effect model. If the Hausman test value is not significant (prob>0.05) random effects model is appropriate otherwise fixed effect model is appropriate. If the Hausman test result comes fixed effect model is more appropriate then Wald test is conducted to find out which among the two, fixed effects or pooled OLS model is appropriate. If Wald test is not significant then pooled OLS is appropriate. Panel data regression analysis was applied to find out the effect of dividend policy on profitability and share price of NIFTY companies.

Summary

The impact of dividend policy on profitability and share price of nifty companies has been analyzed in the present study taking 34 companies as samples. The study period is between 2004-2005 and 2018-19. The data for the study has been gathered from the secondary sources. The factors determining dividend policy have been identified using descriptive statistics, correlation analysis and regression analysis. The effect of dividend policy on profitability and share price of nifty companies analyzed using panel data regression analysis.