International Journal of Engineering Technology & Advanced Learning
ISSN: 3107-4227, Vol. 01 (01), March 2025, pp. 58-72

Analysis of Financial Performance of National Thermal Power Corporation, it's Futuristic Growth, and Contribution to Indian Economy

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Abstract

National Thermal Power Corporation of India is a Maharatna enterprise of Indian union. Power is one of the most important elements of a country's infrastructural development, without the use of power, the all round growth of economy cannot be possible. It contributes to its economic growth and welfare. Macro Economic Indices of any country depends on sumptuous production of power. India's power sector has always been focusing on accessibility to power, it's easy affordably and sustainable development for being aware about future needs for the younger generation during the time of ever increasing population. During the present time horizon , the country's main sources of power are conventional and non conventional sources, non renewable resources are , coal, natural gas, and nuclear power. However, of late, the country has also started giving emphasis and clear focus on the use of non-conventional sources of power like solar and wind amongst others. The most recent areas for captivating power are nuclear energy, tidal energy, wave energy, geothermal energy etc.

Because of the ever increasing population and ever increasing demand of electricity, its demand in the country has been increasing exponentially. The conventional sources like coal, gas and oil are decreasing at rapid rate; the companies with the top five power stocks in India are working to meet the growing power demand of Indian Subcontinent. Under the Ministry of Power, India has changed itself as a nation with a power surplus. Now India is witnessing as a country with surplus power production than the demand. With the ministry establishing a single national grid and securing the power distribution network, it has achieved universal household electrification.

Now, India is the world's third-largest producer and user of electrical energy. In 2021, the country was ranked fourth in wind power, solar power, and renewable power installed capacities. By 2026, the government plans to replace coal with renewable energy generation with the help of the eighty one recognized thermal units. In this research paper we will focus on the financial performance of the major producer of power, National Thermal Power Corporation of India. This research paper is devoted to analyze the financial data of the NTPC and calculate important profitability, liquidity and solvency ratios and ascertain the financial viability of the major contributor in the area in power generation.

Keywords:NTPC, Financial Performance, Prediction, Economy, Liquidity, Solvency, Profitability.

1. Introduction

1.1. History of Power Generation in India

The foremost manifestation of electric light in India was conducted in Kolkata (the then Calcutta) in mid-1879 during British colonization of the Indian sub-continent. A few decades afterwards, the triumph of that demo was extended to Mumbai (the then known as Bombay) to set up a power producing location, it started to supply of power to a tramway in 1905. The first demonstration of electric light in Calcutta (now known as Kolkata) was conducted on 24 July 1879 by P.W. Fleury & Co. On 7 January 1897, Kilburn & Co secured the Calcutta electric lighting license as agents of the Indian Electric Co, which was registered in London on 15 January 1897 during British statute in the country. India's electricity requirement is mounting at an alarming rate of 6% to 8% per year. In terms of consumption it is 100 to 140 terawatt- hours per year. Electricity consumption in India has grown steadily over the past decades. But 75% of India's power still comes from coal, which has itself grown at a five percent compounded annual growth rate, by above nine percent per year during 2023. Wind and solar power need to grow four times in 2025 for power generation to combat the growing demand. Electricity consumption in India has grown steadily over the past decades and during 2023 amounted to 1407 terawatt hours. The core components, such as the boiler, turbine, generator, condenser, cooling tower, feed-water pump, coal handling plant (for coal-

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fired plants), ash handling system (for coal-fired plants), electrical switchyard, and control room, each play a vital role in this energy conversion process. Thermal equipment, allow the stored energy to be utilized later for heating, cooling, power generation, or electricity storage in various applications. A thermal power plant generates electricity by burning fossil fuels such as coal, oil, or gas. The heat produced by the burning of fuel is used to create steam, which then drives a turbine to generate electricity. The steam is cooled and condensed back into water, which is reused in the process. We know in a power plant electrical power is obtained from the fuel being used. A Thermal Power Plant makes use of Coal to boil water and produce steam. This steam is made to hit on the blades of the Steam turbine. From there further, the mechanical energy is converted to electricity using generators. We refer to them as thermal power plants because we make use of heat energy released by the burning of fuel to produce electricity. Thermal power plants work on the Rankine vapor cycle.

1.2. Major Power Generation Units in India

Presently some of the most important power generation units in Indian subcontinent are delineated as below:These are Public Sector Undertakings:

- National Thermal Power Corporation Limited.
- National Hydroelectric Power Corporation.
- Rural Electrification Corporation.
- North Eastern Electric Power Corporation .
- Power Finance Corporation .
- Power Grid Corporation of India.
- SJVN – A Mini Ratna Company.
- THDC India Limited.

1.3. Brief Note about NTPC and it's operations

Here is a Brief note about NTPC its operations and about its strategic Business Units and its business dimensions :- NTPC takes in to several Strategic Business Units viz: Hydro stations, Gas Stations, Coal Stations, Renewable Energy Production Units, Coal Mines for captive consumption of coal in production of electric power . NTPC is taking various steps to make its energy portfolio greener by accumulating considerable capacities of Renewable Energy resources. By 2032, the company campaigns to have 60GW capacity through renewable energy sources constituting nearly 45% of its overall power generation competence. With twenty seven coal-based power stations, NTPC is the largest thermal power generating business in the country. The company has a coal-based installed capacity of 62,197 MW.NTPC is India's largest energy conglomerate with roots planted in 1975 to speed up power generation capability in India. Since then, it has established itself as the dominant power generator present in the whole value chain activities in strategic business units of power generation with an installed capacity of about 68 GW. From green fossil fuels it has entered in to domain of generating electricity via hydro, nuclear and renewable energy sources as well. To fortify its major business and a stair towards dependable fuel security, NTPC entered in the areas of Coal mining as well in yesteryears . NTPC is growing six coal blocks allocated unswervingly to it and one coal block of PVUNL, a JV of NTPC with Govt. of Jharkhand, for captive utilization of the coal. The total peak rated annual production capacity of these coal blocks estimated to be seventy one Million Metric Tonnes to fuel approximately Fifteen Gigawatt of National Thermal Power Corporation.

NTPC has started coal production from its three coal blocks i.ePakriBarwadih in Jharkhand, Dulanga in Odisha and Talaipalli in Chhattisgarh. NTPC has declared commercial operation of its two mines i.e. PakriBarwadih and Dulanga Coal Block. During FY 2021-22, NTPC achieved impressive approximately fourteen MMT coal production from its three working mines. The Mining activities inChattiBariatu mine started during April'22 after covid pandemic era . Other mines are under developmental and incubation stages and anticipated to begin coal production in near prospect. NTPC integrated a wholly-owned subsidiary company named as "NTPC Mining Limited" (NML) on 29th Aug'19 for hauling out its mining business by creating a enthusiastic workforce with focused approach.NTPC has increased its plunge on hydro development for a balanced portfolio for long term sustainability. The first step in this direction was taken by initiating investment in Koldam Hydro Electric Power Project located on Satluj river in Bilaspur district of Himachal Pradesh. Other hydro project under construction areTapovanVishnugad, Lata Tapovan, Rammam III, THDC-VishnugadPipalkoti, THDC-Tehri PSP etc.

This research paper will be valuable to policymakers, planners, NTPC management, competing companies, employees, the government, and various stakeholders of the enterprise. It will explore the future prospects of the company, including the adoption of non-conventional energy sources, energy substitution, energy efficiency, and key micro- and macroeconomic indicators that can guide the development of forward-thinking strategies in green

initiatives and energy management.Additionally, the paper will emphasize the efficient use of fuel for power generation and the implementation of energy-efficient technologies to meet the growing population's demands. It will also examine competing power-producing companies and explore energy substitution methods, fundamental analysis, and industry analysis to help the enterprise diversify and enhance its revenue maximization model.The study will primarily focus on evaluating the financial viability of the enterprise by analyzing its strengths, weaknesses, opportunities, and threats in a dynamic environment. This will be achieved through the calculation of key financial ratios, including profitability, solvency, liquidity, and activity ratios.Furthermore, this research will provide valuable insights for students, academicians, researchers, and scholars interested in pursuing similar studies. It will also aid policymakers and planners in promoting energy substitution and facilitating the export of surplus energy to energy-deficient regions, contributing to increased foreign exchange earnings.

2. Research Methodology

In this Research paper, mainly secondary data has been selected and researched besides the use of primary data also at few places to analyze and interpret the financial performance of National Thermal Power Corporation from Financial Years 2019-20 to 2023-24. The powerful technique of ratio analysis has been used to evaluate overall financial viability of NTPC and some commonly known ratios viz. liquidity, solvency and profitability ratios to show financial viability of the enterprise. Besides the collection of primary data secondary data has been researched for finding financial viability. The different annual reports of NTPC and other competing companies has been consulted for calculating ratios e,g, liquidity, profitability and solvency ratios and for judging comparative spectrum.

Test of Hypothesis: The powerful technique of ratio analysis has been utilized to evaluate liquidity, solvency and profitability ratios of NTPC which is a Maharatnam company of Indian Sub-continent , this will help Investors and Policy Makers and Government to articulate futuristic plans for its better financial viability. Ratios are expressed in percentages and figures to give a meaningful interpretation.

2 Data Analysis and Interpretation

2.1 Analysis of Book Value per Share for NTPC for different time horizons

When compared to the current market value per share, the book value per share can provide information on how a company's stock is valued. Book value per share is a micro economic indicator which throws light on financial strength of the enterprise. The Investors repose more confidence on the enterprise which has better Book value per share. Scientific management of assets and liabilities per share can improve book value per share and also shareholders and investors perception about any enterprise. Certain scientific tools of management in this regard can be like aging schedule of receivable and payable management which can guide the management about working capital management perspectives of the enterprise. For most of the specified shares the shareholders repose more confidence on the intrinsic value of company by price of shares. The shareholders gauge the intrinsic value of the enterprise by market capitalization. It is an indicator of firm’s soundness in terms of its intrinsic value in shape of its share price at any point of time in the stock market. Book Value per Share indicates a firm's net asset value (NAV) or total assets minus total liabilities per share. When a stock is undervalued, it will have a higher Book Value per Share than its stock price in the market. This means that the company is trading below its assets and would be a good investment opportunity. In the analysis it is seen that book value per share has been steadily rising from financial year 2019-20 to 2023-24, for investors it may be good investment avenue if company’s financial viability moves with same rhythm in future as well.

Table 1. Book Value per Share [Source: Calculated from Annual Reports of NTPC for different Time Horizons]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Book Value per Share	114.78	112.71	132.69	143.23	154.57

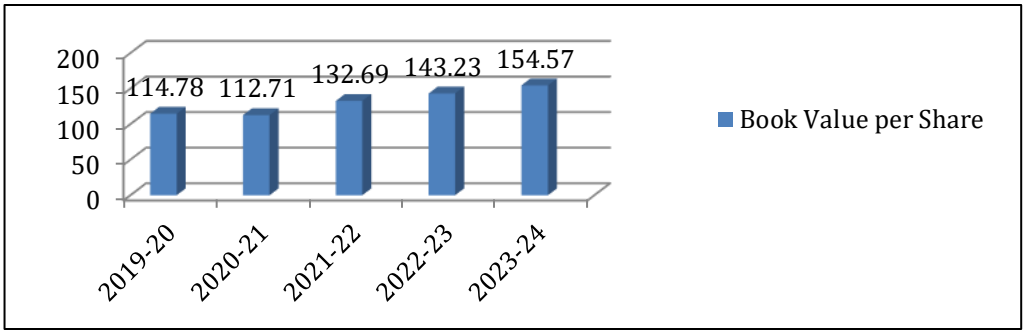

Figure 1. Book Value per Share NTPC[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

2.2 ***Analysis of Earnings per Share of NTPC for different time horizons***

It is a key measure of corporate profitability, focusing on the interests of the company's owners (shareholders), and is commonly used to price stocks. When comparing companies, it's helpful to look closely at how EPS is trending and how it matches up to competitor earnings. It can be seen that a higher EPS can suggest growth and stock price increases. A higher EPS means more profitability, which suggests that the company may increase dividend payout over time. EPS not only helps measure a company's current financial standing but also helps track its past performance. EPS is an important indicator which throws light on overall profitability. The shareholders of the enterprise see the EPS and after that they do SWOT analysis of the enterprise by the dividend policy, and overall liquidity and profitability as well as robustness of EPS during present times as compared with the past time horizon . Specifically Arbitrageurs who purchase and sell shares on day to day basis try to gauge about the financial viability of enterprise through EPS and Dividend payout ratio as well. It is an indices which throws light on profitability of enterprise, At the common parlance , It is a key measure of corporate profitability, focusing on the interests of the company's owners (shareholders), and is commonly used to price stocks. This can be deducted by Net profit of the enterprise divided by number of outstanding shares. It is witnessed that Earning per share has been steadily rising for the stock of National Thermal Power Corporation of India. This may indicate the shareholders and the management of the company that the profitability is improving gradually after the era of the covid pandemic and thus the shareholders can repose confidence in this stock. Earnings per share keeps shareholders contented and investors satisfaction is most important to earn better goodwill from the investors.

Table 2. Earnings Per share for NTPC for different Time Horizon [Source: Calculated from Annual Reports of NTPC for different Time Horizons]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Earnings Per Share	10.22	13.99	16.79	17.73	18.64

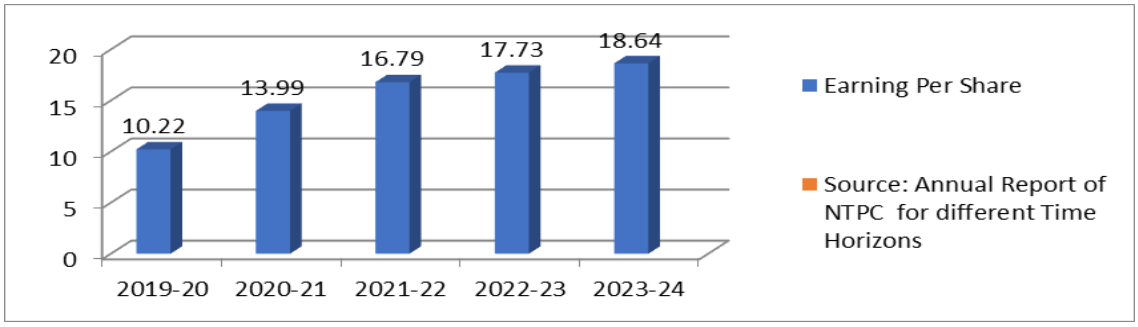

Figure 2. Earnings Per Share for NTPC[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

2.3 Analysis and Interpretation of Current ratio:

The current ratio is the ratio between Current Assets and Current Liabilities, it is seen that from financial year 2019-20 to 2023-24 the level of current ratio is less than 1.00 for all time horizons thus, current liabilities are more than current assets. If company improves current assets it can further improve its liquidity position. For improving current ratio, company can focus on better receivable and payable management and inventory policy. It can improve cash position ratio also to improve its liquidity. For generating cash revenue it can further expand its ancillary business viz. production of energy through non conventional sources also to augment its liquid cash reserves. This ratio is a liquidity ratio which throws light on the firm's ability to meet short term obligation or liabilities which arise within a span of one year. Since last many decades current ratio has been considered a powerful tool of ratio analysis which prominently throws light on over all liquidity of the enterprise, however the modern econometric scientists also try to rely on the techniques such as cash position ratio of the enterprise. The econometric scientists rely on investing in the self liquidating securities and practice stone model of cash management. They maintain buffer of cash only in the immediate need of cash otherwise they invest the excess or surplus cash in the call money market so that their objective of prudent working capital management can be accomplished with ease.

The cash , receivable, payables if maintained prudently can be important to meet short range objectives of the enterprise. The firms which have better and scientific platforms of working capital management can control of deficient and surplus cash easily. According to Stone model Surplus cash should be immediately invested in call money market and self liquidating securities which can be used to enhance liquidity in the need. The working capital needs in the time of inflationary pressures in the economic system is more, thus a scientific technique of aging schedule can also be utilized by the corporate house and enterprise which shows how much payables are to be discharged. And how many receivables are to be procured from the loan seekers. Keen vigil on all the above aspect is essential where the material is sold and purchased in supply chain management. The vision of each and every Strategic Business unit of the enterprise can be important and thus prudent working capital management can lead to good cash inflow and liquidity. During modern times the system is undergoing change and computer software are utilized for managing component of working capital. Full time float should be utilized in payable management with the quantity discounts for increasing liquidity and profitability. While recuperating debts use of factoring agency must be taken so that the asset quality can be improved. If some assets are of substandard quality the process of securitization can help at places. Asset reconstruction companies can be instrumental to recover the substandard loans. This will not only improve liquidity, but profitability as well as solvency also. Shareholders repose more confidence which have better management accounting standards, better ratios, better and transparent accounting standards, the Generally Accepted Accounting Principles can be helpful to strengthen deeper bond with the shareholders and extract goodwill by them. Sometimes shareholders repose more confidence with growth stocks and need long term capital gains while sometimes people like arbitrageurs buy and sell the securities on intra- day basis for immediate returns. In the capital intensive industries there should be more of the current assets than the current liabilities. This aspect throws light on working capital management of the enterprise also. The current ratio at the time of pandemic and economic slowdown dipped to 0.8 But after that it has substantially

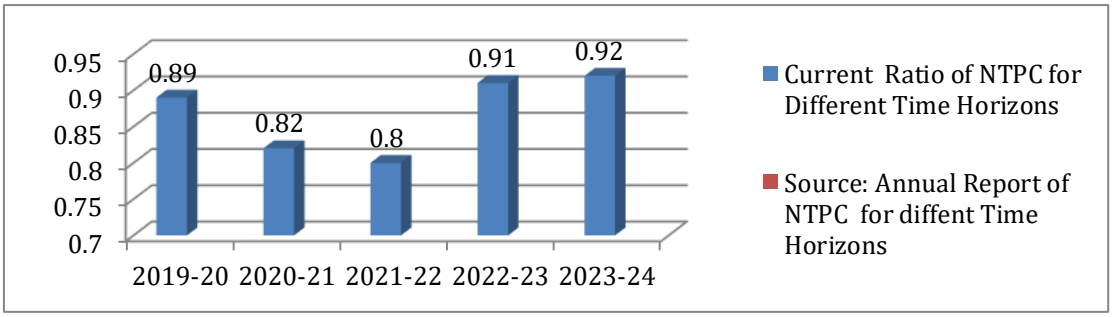

Figure3. Current Ratio of NTPC for Different Time Horizons[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

Improved, this shows that the company has been focusing on the managing components of working capital better way after covid pandemic.

Table 3. Current Ratio of NTPC for Different Time Horizons[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Current Ratio of NTPC for Different Time Horizons	0.89	0.82	0.8	0.91	0.92

2.4 Analysis of Debt Equity Ratio of NTPC:

Debt Equity ratio is the solvency ratio as per the econometric experts, it is the ratio which measures long term debt repayment capacity of an enterprise , In the chart below the Debt- Equity Ratio of NTPC for different time horizon are shown, which throws light on its solvency. It throws light on the leverage also as to how well debt funds are utilized by the entity for fulfilling profit maximization objectives of the entity. The long term solvency of any enterprise throws light of financial viability, many a time, share holders and the investing companies see this for safety and security of funds being invested in the enterprise.

Table 4. Debt Equity Ratio of NTPC for different Time Horizons [Source: calculated from Annual Reports of NTPC for different Time Horizons.]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Debt Equity Ratio	1.46	1.46	1.5	1.34	1.24

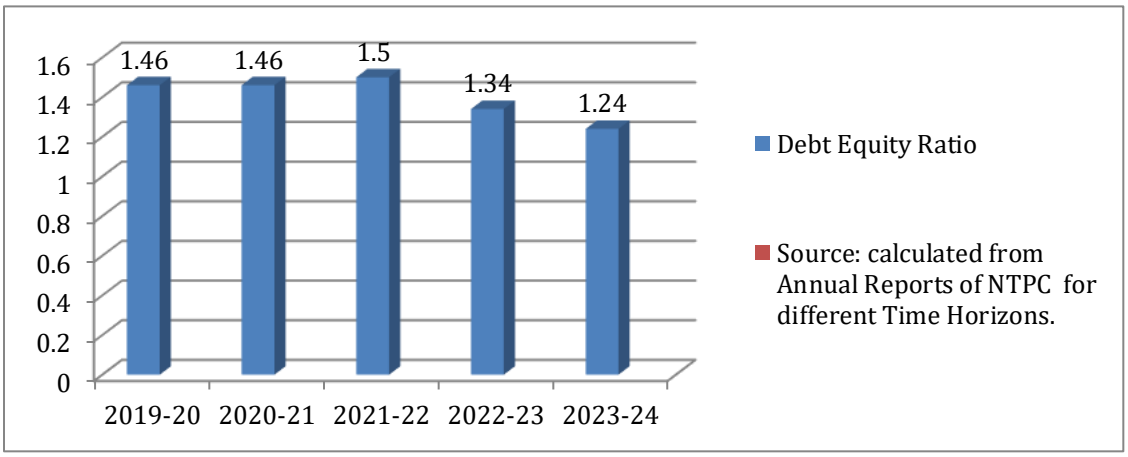

Figure4. Debt- Equity Ratio of NTPC for different Time horizons[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

2.5 *Analysis of Value added per Employee of NTPC* :

It is gross value added by the enterprise divided by total number of employees. This shows whether the employees of the enterprise are productive enough or there is a need for change of dynamics related to absorption of skilled, semi skilled and other employees in the enterprise. It is gross value added divided by total number of employees, it shows the additional effort done by an employee than required to uplift the financial viability of the enterprise. In case of NTPC, it is seen that value added per employee has improved in the past five years, this shows that the workers are becoming more cross-functional and the effect of experience curve mechanism can easily be witnessed from analysis and interpretation of data pertaining to Value Added per employee. It is seen that Value added per employee depends on working condition, fringe benefits, attrition rates of others, intrinsic motivation, experience curve effect etc. The value added per employee may be impressive if the experience curve effect has come to be handy in the corporate house and scientific tools such as artificial Intelligence etc. have been utilized in the business venture in a cogent manner.

Table 5. Value added per Employee for NTPC for different Time Horizons[Source: calculated from Annual Reports of NTPC for different Time Horizons.]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Value added per Employee for NTPC	2.16	2.56	3.07	3.91	4.05

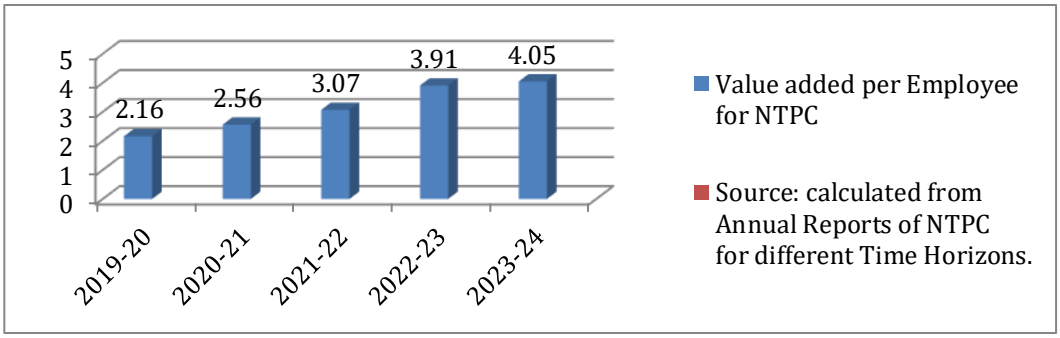

Figure5. Value Added per Employee for NTPC[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

2.6 . Analysis of Fixed Assets to Net Worth of NTPC:

Fixed assets to Net worth is the solvency ratio at the common parlance it is an indicator of solvency of any enterprise. Solvency is the capacity to off-set long term dedt obligation of an enterprise. In the chart below the solvency in measured in terms of Fixed Assets to Net Worth for NTPC. This ratio throws light on over all status of solvency of an enterprise, it can be long term debt repayment capacity of an enterprise, it shows that there are huge amount of fixed assets with NTPC, any power plant needs resources and fixed assets. The major components, such as the fire tube and water tube boilers, steam turbine, electric generator, electro mechanical condensers , cooling towers to supply water to the boilers for energy efficiency , feed-water pump to supplying water to boilers economizers, air pre- heaters, coal handling plant (for coal-fired plants), ash handling system for disposal of fly ash (for coal-fired plants), electrical switchyard, and master control room, everything plays a vital role in this energy conversion process. Thermal equipment, permit the accumulated energy to be utilized later for heating, cooling, power generation, or electricity storage in various applications. A thermal power plant generates electricity by igniting fossil fuels such as coal, oil, or gas, these are depleting at rapid rate thus company is also involved in the renewable energy dimension to produce power. Now a days, the energy efficiency and energy management can be done by non conventional sources called as Renewable energy sources is energy that comes from a source that will not finish and shall always be available and cannot deplete in future. They are natural sources of energy and self-replenishing, and usually have a low- or zero-carbon production, thus they are environment friendly. Examples of renewable energy sources comprise, wind electric generation, solar power utilizing semiconductors for power generation, biogas energy (organic matter incineration as a fuel) and hydroelectric power generation using hydro power in dams, others are tidal energy, wave energy etc. Besides geothermal energy, which can be seen in Yellow stone park of United states of America. After analysis and interpretation of this ratio it can be seen that the fixed assets of NTPC are huge in terms of monetary value that is why, this mega enterprise is rated as “Maharatnam Enterprise” by union of India. This ratio is solvency ratio it can be improved by judicious use of fixed assets. The company can use such material handling and other vital equipments which are cost effective and are cross functional so that the investment in fixed assets can be judicious and can prove to be beneficial from investment point of view. Company can do capital budgeting and material usage variance for ever increasing solvency position and improving financial viability.

Table 6. Fixed Assets to Net Worth of NTPC for different Time Horizons[Source: calculated from Annual Reports of NTPC for different Time Horizons.]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Fixed Assets to Net Worth	202%	201%	209%	186%	173%

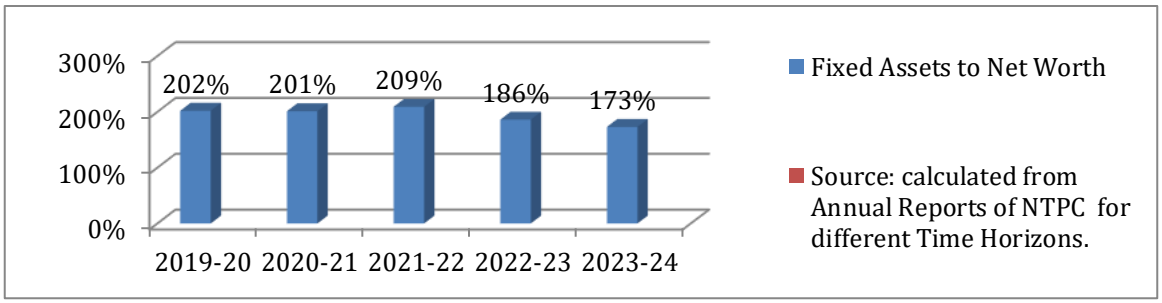

Figure6. Fixed Assets to Net Worth for NTPC for different time horizon[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

The core components, such as the boiler, turbine, generator, condenser, cooling tower, feed-water pump, coal handling plant (for coal-fired plants), ash handling system (for coal-fired plants), electrical switchyard, and control room, each play a vital role in this energy conversion process. Thermal equipment, allow the stored energy to be utilized later for heating, cooling, power generation, or electricity storage in various applications. A thermal power plant generates electricity by burning fossil fuels such as coal, oil, or gas. The heat produced by the burning fuel is used to create steam, which then drives a turbine to generate electricity.

2.7 Analysis of Return on to Net Worth of NTPC:

This ratio is prominently a profitability ratio, it is delineated in the chart below: The return on net worth which is commonly known as return on equity plus different reserves of the enterprise throws light on profitability as also on the overall activity, which have improved continuously during past five years and this is impressive for NTPC. In 2019, it was 9.15 and during 2023-24 it is 12.52, this shows that even after the pandemic the ratio has improved. The return can be further improved by improving profits it can be judiciously done on keeping vigil on expenses and by improving revenues. The revenues can be improved by developing the energy efficiency and energy management process by sumptuous production of energy by non conventional sources. It can be better if surplus energy is exported to other countries, which have huge demand of energy this will fetch more revenue from operations. This will be better from the profitability point of view also. Return on Net worth is very important ratio which is useful to management, employees and shareholders and other investors. It throws light on overall profitability of an enterprise. Better net-worth is sign of good financial viability, the risk taking ability of the enterprise improves if the net-worth is good. The return on net-worth can be improved by ever increasing revenues and cash-flows from operating as well as investing activity. A good net-worth provides a cushion to the company during volatile market situation economic turmoil and under the situation of economic inflation and stagflation and if the profits are again pooled to the business venture may help an enterprise to grow even during tough phase. That is why this entity has good return on net-worth even during pandemic slow down conditions.

Table 7. Return on to Net Worth of NTPC for different Time Horizons[Source: calculated from Annual Reports of NTPC for different Time Horizons.]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Return on Net Worth	9.15	11.84	13.15	12.85	12.52

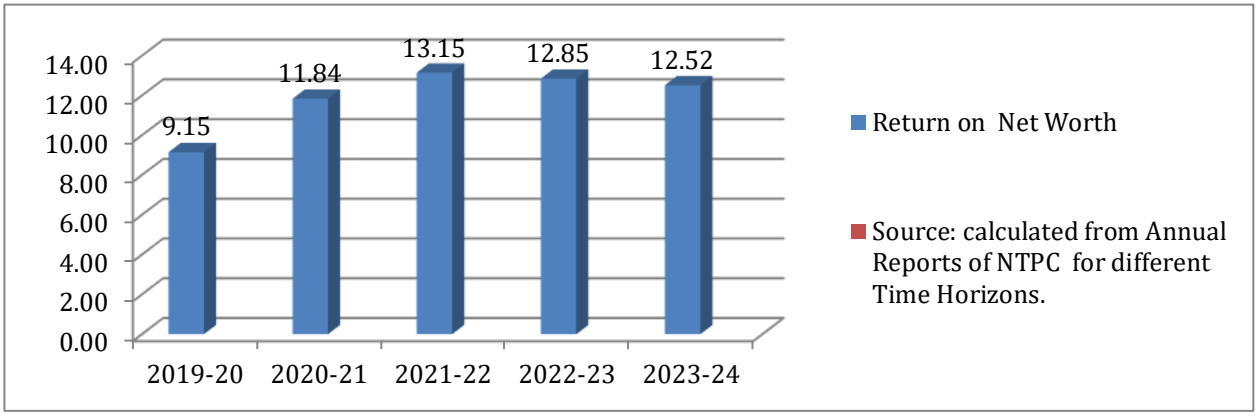

Figure7. Return on Net Worth for NTPC for different time horizon[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

2.8 Analysis of Employee Benefit Expense Ratio for NTPC:

This ratio is a profitability ratio the expenditure on employees is indicated in this ratio, it is shown in the chart below:- This is the ratio between the Employee Expenses and Revenue from operations, it has been witnessed that NTPC channelizes a good payout to employees of 4.9% to 3.42 % of its revenue from operations on employee benefits and benevolence purpose. Despite rising inflation, during present times the enterprise has maintained this ratio satisfactorily, besides this fact, the value added per employee has also improved, this shows that employees of NTPC are intrinsically motivated and cross-functional employees ready to achieve goals and objectives of this Maharatnam enterprise.

The enterprise has been achieving long term and short term goals and objectives. The experience curve effect in employees has also been responsible to generate sumptuous revenue from operations. The employee cost can be further reduced if the new employees are given exhaustive training in energy management, energy efficiency perspectives besides use of non conventional sources of energy etc. It has been seen that the conduction of seminars, symposiums and workshops, brain storming, knowledge management areas has created a niche for many blue-chip companies globally, therefore it will further open dormant ideas of employees and promote and improve financial viability of the enterprise.

Benevolent funds of employees help in motivation of employees, now the paradigms of employee motivation are radically changing, the employees focus on safety, security needs, besides the self actualization and other needs. With the rising inflation it's is mandatory to keep employees extrinsically motivated through benevolence. It has been witnessed that the main cause of attrition rates in few business houses is primarily attributed to working conditions, non availability of benevolence to employees, all round growth and development objectives. An extrinsically motivated employee can be developed as intrinsically motivated employee if the business houses provide all types of needs to the work force. Human capital is the most important resource of an enterprise. NTPC has provided the most important needs to keep employees contented.

Table 7. Employee Benefit Expense Ratio for NTPC for different Time Horizons[Source: calculated from Annual Reports of NTPC for different Time Horizons.]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Employee benefit expense Ratio	4.90%	4.77%	4.33%	3.31%	3.42%

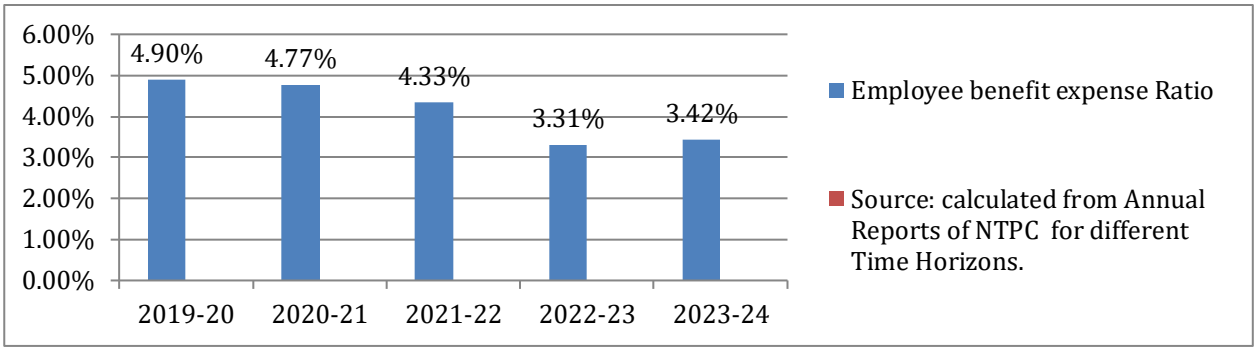

Figure8. Employees Benefit Expense Ratio for NTPC for different time horizon.[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

2.9 Analysis of Finance Cost Ratio for NTPC:

Finance cost ratio is the ratio to ascertain financial cost and it is a profitability ratio; in the chart below its value for different time horizons are shown in percentage ideologically it is a profitability ratio. This is the ratio between cost of developing a capital structure to run the business and revenue from operation, It is seen that during 2019-20 it was 6.74% and with little variance over years it was 6.18% for 2023-24 financial year it is evident that revenue has also improved in the post pandemic era. Normally, the companies with impressive market capitalization and growth and value stocks as well as good profitability decide capital structure judiciously. The choice of debt as a capital structure can reduce tax burden but can pose a problem for solvency and a company with more share holding has to provide benefits of dividends, NTPC has been giving impressive dividend payout to the shareholders. Finance cost also poses threat if debts are not repaid in time and at the time of non compliance by the debt seeker. If the company augments finance from debentures then the interest on certificate of deposits is also slightly more than conventional methods of borrowing. If the enterprise augments financial resources from debts then amortization schedule of different financial institutions must be compared with sacrosanct without fail so that perpetual burden and penal charges during non compliance may be avoided. Although, researchers comment that debt capital can be resorted for growth, diversification and modernization only if the company is capital intensive with good cash-flow from operating activity. It has been witnessed that for ever increasing profits and revenue from operations should be increased and any type of expense ratio should be decreased so that profit margin can be increased. Expense centers which have liability of managing expenses should focus on deriving adequate usufruct from the expenses. All the expenses should be done after analysis of all the available strengths, weaknesses, opportunities as well as threats of micro economic consideration besides analysis of macroeconomic indices also. Finance is life blood of any business thus; expenses in acquiring finance should also be done after careful study of long term solvency position of the enterprise. Shareholders and investors normally prefer organizations with good solvency position.

Table 9. Finance Cost Ratio for NTPC for different Time Horizons[Source: calculated from Annual Reports of NTPC for different Time Horizons.]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Finance Cost Ratio	6.74%	7.20%	6.58%	5.94%	6.18%

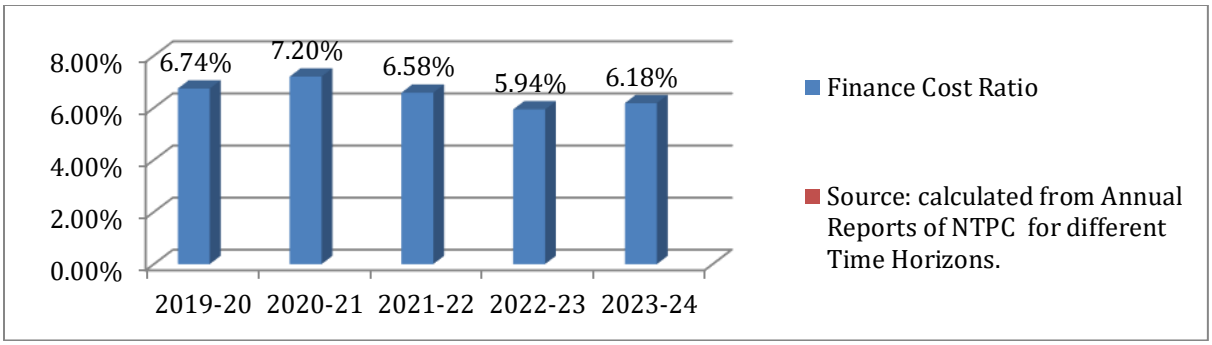

Figure9. Finance Cost Ratio of NTPC.[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

2.10 Analysis of Dividend Payout Ratio of NTPC:

It is the ratio between Dividends per share to Earnings Per Share: It is a Profitability Ratio. Sometimes traditional shareholders see the dividend distribution and the dividend payout of the enterprise

The dividend payout ratio is the ratio between Dividend per Share to Earnings per Share, this ratio can give an insight to the shareholders about dividend disbursement practices and policy of an enterprise, it is evident that dividend payout of 41.57% was given to the share holders in 2023-24 by NTPC which is a very good dividend payout. If the company has planned to diversify some businesses such as energy efficient plants and diversification in the areas of non conventional sources etc, then it can plan about dividend payout in such a way that it can save more funds in its exchequer to meet the ever increasing demands cash at the time of future expansion, modernization and diversification. At the time of increasing inflation it mandatory to keep shareholders contented and happy this will improve goodwill of the enterprise. The organization can plan dividend payout to shareholders after meeting long rage strategic plan of different strategic Business units.

Table 10. Dividend Payout Ratio for NTPC for different Time Horizons[Source: calculated from Annual Reports of NTPC for different Time Horizons.]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Dividend Payout Ratio	30.82%	43.31%	42.13%	40.88%	41.57%

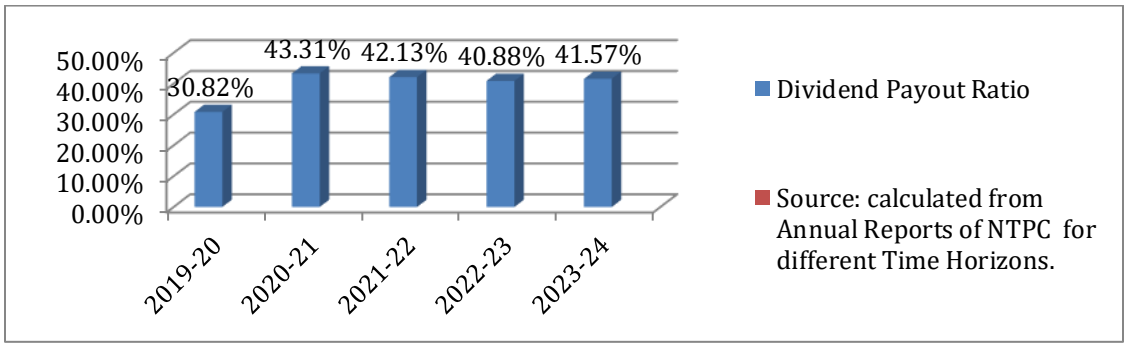

Figure10. Dividend Payout Ratio.[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

2.11Analysis of Fuel Cost Ratio for NTPC:

It is the ratio between fuel cost and Revenue from operations it is a profitability ratio: Since fuel cost is huge it should be better if economy of scope is developed through alternative sources. Fuel is the most important material used in power plant. The majority of fuels used are coal, oil etc. The majorities of sources of fuel is depleting at rapid rate thus, are not cost effective during today's time horizon. So far as concept of sustainable development for

future generation is concerned, it is important to conserve fuel and do energy management by alternative sources. The analysis and Interpretation of Fuel Cost Ratio is delineated as below;--

Table 11. Fuel Cost Ratio for NTPC for different Time Horizons[Source: calculated from Annual Reports of NTPC for different Time Horizons.]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Fuel Cost Ratio	53.40%	51.00%	53.30%	57.70%	56.71%

The fuel cost are increasing and fuel is the most essential input of a power plant, in the coal fired boiler sub-bituminous, bituminous and anthracite coal is utilized as fuel. India has been fourth largest producer of coal, for energy efficiency of boilers good quality of coal with good percentage of carbon is suitable. The boilers may be equipped with economizers, air pre-heaters water pre-heaters, fly ash disposal systems, recuperates, regenerators, automatic tube cleansing technology, soft water plant to prevent scaling of tubes etc. This will further improve efficiency of boilers. Similarly, the preventive and predictive maintenance of Steam turbines and boilers can be responsible to reduce fuel expenses. Efficiency of turbines can be improved by wear debris analyzers, vibration monitors and lubrication of perpetual moving parts known as tribology at a common parlance which is lubrication and maintenance of bearings and other modern preventive and predictive maintenance practices during present times. Inventory of the spare parts required for maintenance must be maintained according to VED basis (Vital, Essential and Desirable Inventory) so that the down time can be minimized. Controlled fuel expenses can improve profitability. During 2023-24 fuel cost ratio was 56.74% if this expenditure is controlled can improve financial viability to a great extent. Cost control is a scientific tool which can help in improvement of overall profitability of an enterprise. There are many blue-chip organization which have improved their market capitalization, consumer goodwill and over all profiteering capacity by sheer control of costs and making the enterprise more cost effective. The perpetual motion industries need to equip themselves with preventive and predictive maintenance systems so that the bottlenecks in the production and operation systems can be controlled, the better production of several other inputs such as alternative sources of energy through captive sources can also be developed so that overall efficacy can be further enhanced by enterprise.

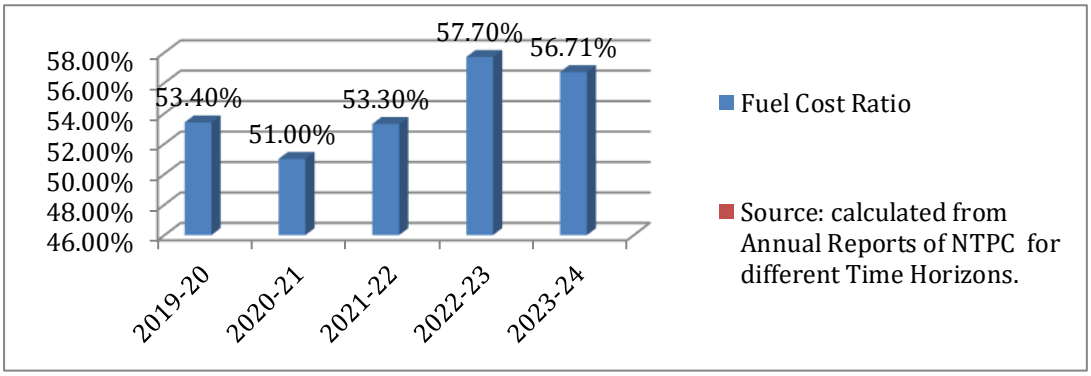

Figure11. Fuel Cost Ratio of NTPC for different Time Horizon[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

2.12Analysis of Return on Revenue from operations for NTPC:

It is prominently a profitability ratio which can be derived after calculating the ratio between Net profit and Revenue from operations. The revenue from operations can come from use of alternative sources of energy and by the concept of energy substitution and energy management. With the time the population of our country has increased, thus indigenous demand of energy has increased. It is imperative to develop renewable sources of energy just like the western economies of the world, if India wants to become global economic power than it has to switch to other sources of energy, this will improve profitability in power generating units of the subcontinent. The

revenue maximization model can be developed by developing economy of scope and trying to develop and grow resources through all the areas which ever may be possible by related as well as unrelated diversification and export of surplus energy in the trans - boundary areas. Relying on import substitution may improve profitability and make the organization self-reliant. This ratio can be calculated by Net profit divided by Revenue from operations, this was 10.06% in 2019-20 and later on it improved to 13.05% in 2021 – 22 further reduced in 2023-24 to 9.46% this drop is because of rise in revenue from operation. The profits should also rise accordingly to maintain this ratio. It has been seen that because of inflation and rise in the price of inputs like fuel and certain inventory required in the smooth operation of power plant, this ratio has shown declining trend which should be matter of concern for management. Profitability can improve if revenue is maximized and expenses are substantially reduced. Energy efficient strategy, installation of modern green initiative units can solve this issue. The enterprise can develop its subsidiary units in other countries also; surplus energy can be exported to other countries with high energy demand. Our country can develop captive sources of power and develop a climate of import substitution in the areas of consumption of energy and power. Revenue minus expenses are profits thus, an effort to increase revenue and decrease expenses will improve overall profitability of the enterprise.

Table 12 Return on Revenue from Operations- NTPC for different Time Horizons[Source: calculated from Annual Reports of NTPC for different Time Horizons.]

Time Horizon	2019-20	2020-21	2021-22	2022-23	2023-24
Return on Revenue from Operations	10.60%	13.29%	13.05%	10.25%	9.46%

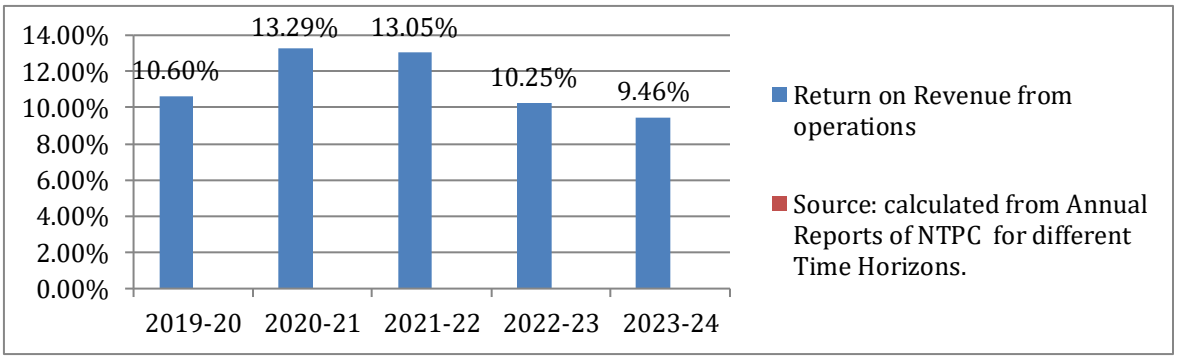

Figure12. Return on Revenue from operations[Source: Calculated from Annual Reports of NTPC for different Time Horizons]

3 Suggestions on Improvement in the financial viability of Enterprise

1. It is advised that fuel expenses are huge in power sector, thus company should think of other avenues of energy e.g. non- conventional sources.
2. Better non conventional source may be wind electric generation systems during present times.
3. The financial cost can be reduced if amortization schedule of different debt extending financial institutions are compared with keen vigil before availing debts. Debts from costlier sources should be avoided.
4. The cash management, receivable management, and payable management should be done scientifically by aging schedule and computer software so that the position of liquidity is improved with better short term debt repayment capacity.
5. It is better to export quantifiable power produced to other countries and focus on import substitution in power sector so that more foreign exchange can be earned. The indigenous demand of power should be made available by magnanimous expansion in the areas of renewable sources of energy.
6. The cash flows can be improved by exporting surplus energy to other parts of world which are devoid of production of energy and which depend on other countries to meet their indigenous demand.

7. The old fixed assets which are obsolete and are depreciated over time must be sold or auctioned so that the financial viability can be improved.
8. The solvency and liquidity can be improved if inventory of items are maintained scientifically in VED (vital, essential and desirable inventory classification) this will generate more revenue and profits and reduce down times if any.
9. The most vital and costly items of the plant which wear out early because of perpetual motion machines, must be insured from reliable sources keeping the insurance premium under consideration.
10. While investing in machines which are costly, capital budgeting must be done and bank guarantee must be taken from the supplier to be on the safer side.

4 Suggestions for share holders for choice of Power sector as an Investment Avenue:

1. The notion of fundamental analysis explains the examination of the fundamentals of a company to help and judge or determine its intrinsic value. As a part of fundamental analysis, factors such as economic, financial, non-financial, and industrial values are taken into consideration before choosing an investment avenue.
2. The important process of Fundamental Analysis helps in making long-term predictions. This concept, together with technical analysis helps financial analysts arrive at better investment and financial decisions
3. So far as power sector is concerned, Fundamental analysis can help investors steer clear in any hasty investment decisions that might only lead to long-term investment risk . Another benefit of conducting a thorough fundamental analysis is that it helps identify new companies that have good growth potential.
4. Qualitative fundamental analysis is focused on analyzing the unquantifiable aspects of a company to determine its stock value. These factors could include aspects like brand value, management experience and efficiency, employee satisfaction, customer feedback etc.
5. Before investing in a power stock, investors should consider and analyze the company's energy mix and how soon it plans on transitioning to cleaner and more renewable power sources.
6. Investors also need to stay on top of any regulatory policies that are in effect in the power sector. This needs to be taken into consideration, particularly with renewable energy sources.
7. Quantitative analysis studies the numerical factors to gauge the value of a stock. Mostly based on statistics and mathematical calculations, it helps analyze all kinds of quantitative data, statistics, or figures to make behavioral predictions.
8. Another issue to judge before investing in a power stock is to analyze the company's market standing considering profitability, liquidity and solvency. If one is planning to invest in power sector, Impact on the surroundings should be evaluated. Since long term sustainability has become a vital issue, it is important that investors also consider the environmental impact and the rate of carbon emission. Power companies paving the technique towards sustainable practices can generate investor's goodwill by better investments.
9. Considering hi-tech progression, corporation that are ready to invest in technology that helps them become more competent and condense their environmental impact factors and by lesser carbon emission and green marketing they can prove to be are superior companies to invest in.
10. Investors can think of other important parameters viz. Market-share dynamics, growth prospects and the competitive benefit it has over other competing rival corporate houses.
11. Industry analysis, Company analysis and Fundamental Analysis in Power sector plays a vital role. It can lead to gains in the long run. It helps analysts to recognize any potential benefits from business as well as risks in the near future, it also gives them time to think of the solutions that can help evade such risks under certainty as well as uncertainty.
12. Most of the time, these factors cannot be measured numerically thus qualitative approach gives insight to the inherent problems and prospects. However, they are great indicators of the overall position and its business potential. Investors and analysts should remember that using qualitative analysis alone may not give the most accurate prediction. This is why it is important to combine it with quantitative analysis. The ratio analysis in research paper will open dormant vision of associated stakeholders viz. employees,

management, government bodies, central and state government of Indian Sub continent , Ministry of Finance, Investors, Stock exchanges, Regulatory Authorities etc.

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