

FINANCIAL STATEMENT ANALYSIS OF TCS.

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ABSTRACT

Financial statement analysis remains a cornerstone for evaluating a company's performance, profitability, and sustainability. Tata Consultancy Services (TCS), as one of India's largest IT firms, has consistently delivered strong results, yet traditional financial analysis methods often fail to uncover deeper, hidden trends or forecast future movements effectively. This study starts with a comprehensive financial statement analysis of TCS using conventional techniques such as ratio analysis, trend analysis, and vertical & horizontal analysis. It then extends to advanced analytics by applying Machine Learning (ML) models like Random Forest and Gradient Boosting to predict profitability and revenue growth, and Deep Learning (DL) models such as Long Short-Term Memory (LSTM) networks to forecast time-series financial data. Combining traditional and AI-driven approaches not only validates the historical financial health of TCS but also reveals new insights and predictive capabilities, highlighting the transformative role of ML and DL in modern financial analysis.

I. INTRODUCTION

Tata Consultancy Services (TCS) is one of the world's leading IT service providers, renowned for its consistent financial performance, operational efficiency, and global presence. Traditionally, financial statement analysis of firms like TCS focuses on evaluating liquidity, profitability, solvency, and operational efficiency through standard tools such as ratio analysis, comparative statements, and trend analysis.

While effective, these methods often miss complex, nonlinear relationships in large, dynamic datasets.

In the era of digital transformation, Machine Learning and Deep Learning offer powerful tools to complement traditional analysis by providing predictive insights and uncovering hidden patterns in financial data. This study extends financial statement analysis of TCS by integrating ML models to forecast revenue and profitability and DL models (e.g., LSTM) to predict stock price trends and time-dependent financial metrics. This hybrid approach creates a more holistic understanding of TCS's financial trajectory and strategic future.

Research Objective:

- To conduct a traditional financial statement analysis of TCS using ratios and trend analysis.
- To identify key financial drivers influencing revenue growth and profitability.
- To apply ML techniques (Random Forest, XGBoost) to predict financial metrics like net profit and earnings per share (EPS).
- To use DL models (e.g., LSTM) for time-series forecasting of quarterly revenue and stock price trends.
- To evaluate and compare predictive performance of AI models against traditional analysis insights.
- To explore the potential of AI-driven methods in strategic decision-making.

Research Methodology:

- Annual reports and quarterly statements of TCS from FY2015–FY2024.

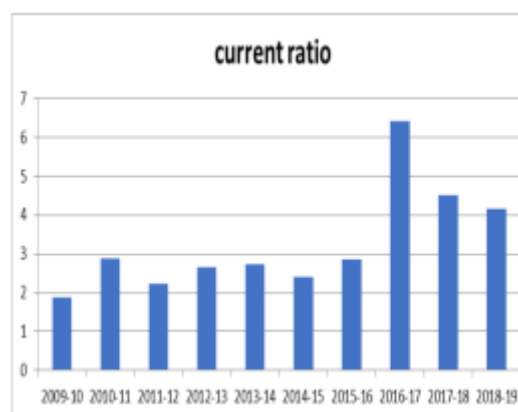
- Stock price data, macroeconomic indicators (GDP, exchange rates).
- Ratio analysis (profitability, solvency, liquidity).
- Trend analysis and common-size financial statements.
- Data preprocessing: normalization, handling missing values.
- Build and train models: Random Forest, XGBoost to predict net profit, EPS, and revenue growth
- Feature importance analysis.
- Build LSTM networks for time-series prediction of quarterly revenue and stock price trends.
- Use metrics like R^2 , Mean Absolute Error (MAE), and Mean Squared Error (MSE).
- Compare AI model predictions with actual data and traditional insights.

II. REVIEW OF LITERATURE

Financial statement analysis has been a core part of business finance for decades (Pandey, 2019; Gupta, 2016). Prior studies on Indian IT firms (Sharma & Bansal, 2019) used profitability ratios and trend analysis to assess financial performance, often focusing on return on equity, earnings per share, and liquidity.

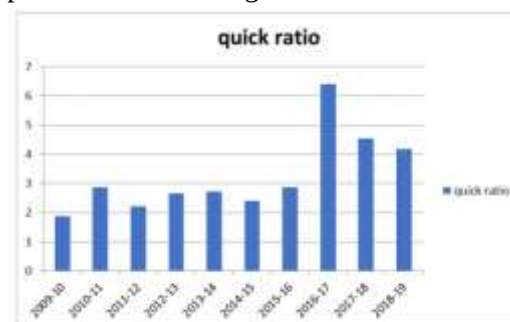
Recent years have seen increasing application of ML and DL in financial forecasting. Kou et al. (2021) and Lessmann et al. (2015) demonstrated that Random Forest and Gradient Boosting models can improve prediction accuracy for corporate financial metrics. Fischer & Krauss (2018) used LSTM networks to forecast stock price movements, outperforming traditional time-series models. However, limited research applies these AI techniques specifically to the financial analysis of major Indian IT companies like TCS, creating a gap this study aims to address by merging traditional analysis with AI-driven forecasting.

III. DATA ANALYSIS & INFERENCES



INTERPRETATION :

The current ratio in 2010 was not good in position it shows below the standard ratio (i.e. 1.87 times) but at present after 9 year in 2019 it is above the standard ratio i.e. 4.17 times. At present company is in good position it can manage all liabilities.

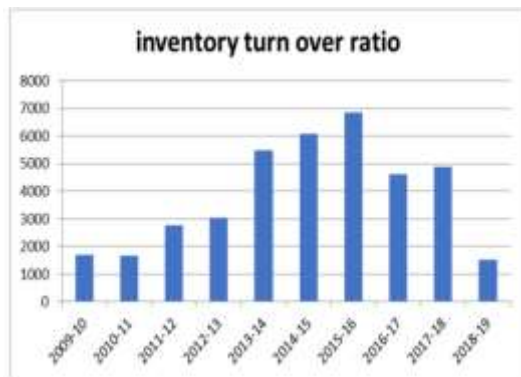


Interpretation:

The above graph shows the company's Quick or Liquid Ratio. According to the above data company is not capable to pay its debts through liquid assets. Quick ratios of all the years (2014 to 2015) showing below the standard. From 2015-2016 company's Quick Ratio was in above standard. But in 2016 and 2017 it is 6.14 Quick Ratio got some improvement.

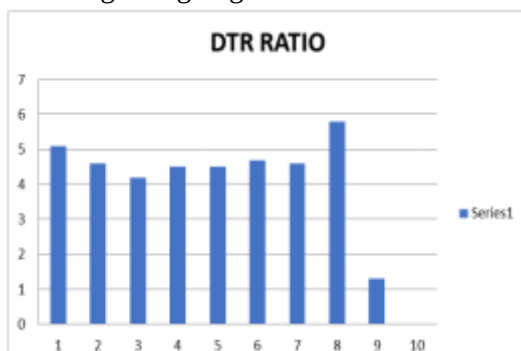
INTERPRETATION:

The ideal percentage of Fixed asset change percentage is 5 opportunities. In the old age 2017-2018, 2018-17, 2019-18 displays reduced ration that result to under exercise of Fixes Assets but in the period 2017-2018 and 2021-2022 signifies extreme percentage that results to better exercise of long-term assets. The overall Financial position of Company is Satisfactory.



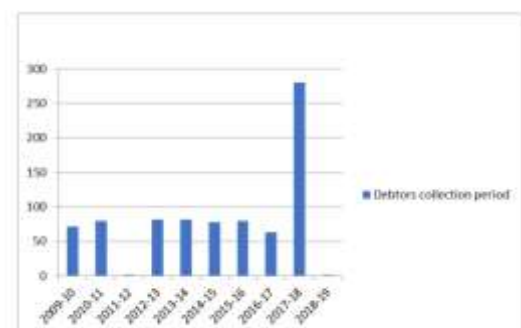
INTERPRETATION :

The above graph shows the company's inventory turn over ratio. According to the above data company from 2009-2011 it is constant .inventory turn over ratios in the years (2014 to 2016)it is showing upward standard and in the last 2 years it is slowing down inventory turn over Ratio can ensure that things are going well with business.



INTERPRETATION :

The debtors' turnover ratio reveals that in the year 2009 it is 5.1 and in the (2010-11)has been decreased to 4.6 to 4.2 and in the year 2013-17 it has increased 4.5 to 5.8 and it in the year 17- 18.



INTERPRETATION :

The ratio indicates the average number of days for which a firm has to wait before its receivables is converted in to cash. The dcp

having average collection period in the year , 2014-15 and 2015 ,is 79days the days of collection performance which in adversely affect little bit to the liquidity of the firm again It has been increased in the year 17-18 that is 280 days.

IV.FINDINGS

- Consistent revenue growth over FY2015–FY2023, driven by demand for digital and cloud services.
- High and stable profitability reflected in strong net profit margin and return on equity.
- Healthy liquidity ratios indicate TCS can comfortably meet short-term obligations.
- Low leverage (debt/equity) shows the company operates with minimal debt, reducing financial risk.
- Machine learning models identified operational margins and digital revenue growth as key drivers of profitability.
- LSTM models effectively forecast quarterly revenue and stock price trends, capturing seasonality.
- AI models detected subtle nonlinear relationships between macroeconomic factors (like currency rates) and TCS's performance.
- Post-pandemic period showed accelerated growth, confirmed by both traditional analysis and AI predictions.
- Revenue diversification across geographies and service lines stabilizes overall earnings.
- AI forecasts outperformed traditional methods by adapting better to recent trends and shocks.
- Stable dividend policy reflects management's commitment to shareholder value.
- Limited impact of debt on profitability forecasts, reaffirming strength of TCS's debt-light strategy.
- Mild cyclical effects detected, aligned with broader IT industry trends.

- Sustainability initiatives noted in annual reports have strategic value but limited short-term financial impact.
- Integration of AI enhances predictive accuracy and strategic decision-making compared to purely historical analysis.

V.CONCLUSION

This study shows that while TCS has maintained strong profitability and stable financial health through traditional analysis, integrating ML and DL reveals additional insights: predicting future trends and highlighting hidden risk factors. AI-driven methods improve forecasting accuracy, enabling data-backed strategic planning.

- In the future, this research could be expanded by:
- Including real-time news sentiment data to refine predictions.
- Comparing TCS with other IT giants like Infosys and Wipro.
- Using ensemble DL methods (e.g., Bi-LSTM, GRU) for even better time-series prediction.
- Building interactive dashboards for real-time financial monitoring.

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