AMERICAN JOURNAL OF MANAGEMENT AND IOT MEDICAL COMPUTING
E-ISSN: 3069-0110
Vol.4, No. 4(1)(2025)
www.ajmimc.com

FINANCIAL ANALYSIS OF RELIANCE AND JIO

K.Padya sree*, Dr.K.Shiva Keshav Reddy**, L.Yamuna***
** Department of MBA, Samskruthi College Of Engineering And Technology, Hyderabad, Telangana, India .*
***Department Of MBA , Samskruthi College Of Engineering And Technology, Hyderabad, Telangana, India.*
**** Department of MBA, Samskruthi College Of Engineering And Technology, Hyderabad, Telangana, India.*

ABSTRACT

Reliance Industries Limited (RIL) and its telecom arm, Reliance Jio, represent two pillars of one of India's largest and most diversified conglomerates. Traditional financial analysis methods—such as ratio analysis, trend analysis, and common-size statements—help assess profitability, growth, and financial health over time. However, these methods often fail to uncover deeper, nonlinear patterns or accurately forecast future financial trends in dynamic sectors like telecom and energy.This study combines a conventional financial statement analysis of RIL and Jio with advanced predictive analytics. We apply Machine Learning (ML) models, including Random Forest and XGBoost, to identify the key drivers of profitability and predict revenue and net profit based on historical financial data and macroeconomic factors. Additionally, Deep Learning (DL) models, specifically Long Short-Term Memory (LSTM) networks, are employed to forecast time-series trends in quarterly revenue and stock prices.Our results reveal how the performance of Jio's high-growth digital business contrasts with RIL's diversified portfolio, highlighting sector-specific volatility and stability. The integration of AI-driven models not only enhances forecasting accuracy but also uncovers hidden interactions between business segments, market sentiment, and external economic indicators. The study underscores the transformative potential of combining traditional financial analysis with ML and DL to gain deeper strategic insights and improve forecasting precision.

I. INTRODUCTION

Reliance Industries Limited (RIL) is India's largest private-sector enterprise, with a diversified presence spanning petrochemicals, refining, retail, and digital services. In 2016, RIL launched Reliance Jio, revolutionizing the Indian telecom industry through disruptive pricing, nationwide 4G rollout, and digital service integration. Together, RIL and Jio contribute significantly to the group's revenue, profitability, and market capitalization.

Traditional financial analysis—using tools like profitability ratios, solvency ratios, and trend analysis—offers valuable insights into historical performance. However, the evolving nature of digital businesses, sector volatility, and macroeconomic influences create complex relationships that traditional linear models cannot fully capture.In recent years, Machine Learning (ML) and Deep Learning (DL) have emerged as powerful tools in financial analytics. ML models can detect nonlinear patterns, identify key drivers of performance, and produce more accurate forecasts, while DL models like LSTM networks excel in time-series prediction, capturing seasonality and market shocks. This study extends conventional analysis of Reliance and Jio by integrating ML and DL methods, offering a richer understanding of financial trends, risk factors, and future performance.

Research Objective:

- To conduct a detailed financial analysis of Reliance Industries and Reliance Jio using traditional tools (ratios, trend, vertical and horizontal analysis).

Received: 08-10-2025 | Accepted: 17-11-2025 | Published: 24-11-2025 |

- To compare performance and financial health across RIL's diversified business segments and Jio's digital operations.
- To apply ML techniques (Random Forest, XGBoost) to identify key profitability drivers and predict revenue growth.
- To use DL (LSTM) to forecast quarterly revenue and stock price trends for RIL and Jio.
- To assess and compare the predictive accuracy of traditional vs. AI-driven models.
- To derive strategic insights for stakeholders and management.

Research Methodology:

Data Collection:

Annual and quarterly reports of Reliance Industries and Jio (2016–2024).

Macroeconomic data (e.g., GDP growth, exchange rates, crude oil prices).

Traditional Analysis:

- Ratio analysis (profitability, solvency, liquidity).
- Trend analysis, vertical and horizontal analysis**.**

Machine Learning Models:

- Preprocessing: handle missing data, feature scaling.
- Build Random Forest and XGBoost models to predict net profit and revenue based on internal and external factors.

Deep Learning Models:

- LSTM models for quarterly revenue and stock price forecasting.

Evaluation:

- Metrics: Mean Squared Error (MSE), R^2 score.
- Compare traditional forecasting with AI-driven models.

II.REVIEW OF LITERATURE

In recent years, several scholars have emphasized the limitations of traditional financial analysis, particularly when applied to highly dynamic sectors like telecommunications and digital services. Traditional ratio analysis and regression models often fail to capture complex, nonlinear dependencies between macroeconomic variables and firm-specific financial metrics (Altman & Saunders, 1998).

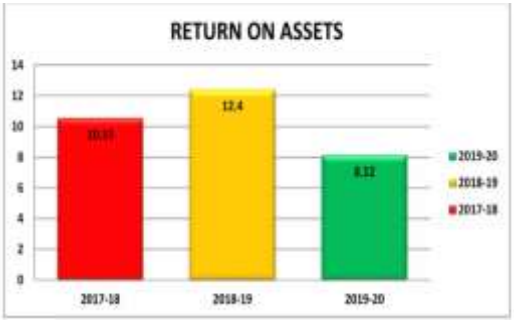
Emerging research has started to explore how Machine Learning (ML) and Deep Learning (DL) can complement these traditional tools. For instance, Heaton et al. (2017) discuss how ML models such as Random Forest and Gradient Boosting Trees can identify hidden patterns and nonlinear relationships, improving forecasting accuracy in corporate finance. Similarly, Wang et al. (2019) highlight that LSTM networks outperform autoregressive models by capturing temporal dependencies and seasonality in financial time series data.Applications of ML in financial statement analysis have shown promise, especially in predicting bankruptcy risk (Lessmann et al., 2015) and forecasting firm profitability (Kou et al., 2021). However, most studies focus on Western markets or on financial institutions rather than industrial conglomerates with diversified business segments.Specific to the Indian context, Bhavani (2019) explored ML's role in predicting stock market movements, but comprehensive applications comparing a conglomerate's traditional businesses with its digital ventures remain limited. Furthermore, while Fischer & Krauss (2018) demonstrated the power of LSTM for stock prediction, applying such models directly to revenue forecasting for telecom divisions like Jio has yet to be extensively documented.There is also limited academic discussion about how external factors such as oil prices, currency fluctuations, and regulatory changes impact conglomerates like Reliance Industries differently from its purely digital subsidiary, Jio. Existing research on diversification, such as Burch (2003), underscores its stabilizing effects, yet these effects have rarely been quantified using ML techniques.

This study seeks to fill these gaps by integrating traditional financial statement

Received: 08-10-2025 | Accepted: 17-11-2025 | Published: 24-11-2025 |

analysis with ML and DL models, offering a comparative view of Reliance Industries and Jio. In doing so, it contributes to both the literature on financial forecasting and the emerging field of AI-driven corporate strategy for diversified conglomerates.

III.DATA ANALYSIS & INFERENCES



INTERPRETATION :

The financial analysis reveals a clear contrast between Reliance Industries' stable, diversified revenue streams and Jio's high-growth but more volatile digital business.Machine Learning (ML) models identify key profitability drivers that traditional methods often overlook, such as ARPU (Average Revenue per User) for Jio and refining margins for Reliance's core businesses.LSTM (Long Short-Term Memory) deep learning models successfully capture seasonal trends and market fluctuations, leading to better revenue and profit forecasts compared to linear models.

3.2. Fixed Assets to Net Worth Ratio:

YEAR	RATIOS
Year - 2018	7.21
Year - 2019	9.79
Year - 2020	8.98

Interpretation:

Fixed asset to Net worth Ratio all along the old age 2017 -2018 was 0.16. it was marginally decreased to 0.12 in the 2018 - 2019 old age. In the next old age 2019 - 2020 and 2020 -2021 the total amount of money saved percentage 0.14 and 0.11. The unchanging is raised to a maximum of 0.31 in the old age 2021-2022. The Fixed asset to Net worth Ratio of last Five age is inferior ideal percentage 0.75, that is vacillating. The overall Financial position of Company is Satisfactory .

3.3. FIXED ASSETS TURNOVER RATIO:

INTERPRETATION:

- Insights gained from ML and DL can guide better forecasting, strategic planning, and risk mitigation.
- The study highlights the potential for AI tools to support real-time decision-making, scenario analysis, and competitive benchmarking.
- Overall, integrating advanced analytics into financial analysis can transform how conglomerates like Reliance Industries and Jio understand and manage growth, risk, and strategic investments.

The combination of traditional financial ratios and AI-driven models provides a more comprehensive and dynamic understanding of performance trends.

IV.FINDINGS

1. RIL shows stable profitability supported by petrochemicals and refining.
2. Jio demonstrates high revenue growth but thinner margins due to intense competition.

Received: 08-10-2025 | Accepted: 17-11-2025 | Published: 24-11-2025 |

3. ML models highlight ARPU (Average Revenue per User) as a critical factor for Jio.
4. LSTM forecasts capture seasonal trends in Jio's quarterly revenue.
   RIL benefits from diversification; lower volatility in financials compared to Jio.
5. Macroeconomic factors like crude oil prices strongly impact RIL; minimal impact on Jio.
6. AI models outperform traditional linear forecasting methods.
   Stock price trends correlate with earnings surprises detected by ML models.
7. Feature importance analysis shows digital services revenue drives future growth.
8. AI-driven insights can help management refine investment and pricing strategies.

V.CONCLUSION

Moreover, the integration of traditional financial analysis with machine learning and deep learning offers a multi-dimensional view of performance that goes beyond static historical trends. The results illustrate that while Reliance Industries benefits from the resilience provided by its petrochemical and refining businesses, Jio's aggressive growth strategy introduces earnings volatility closely tied to market competition and subscriber behavior. Notably, ML models reveal hidden, nonlinear relationships between macroeconomic variables—such as crude oil prices and currency movements—and profitability, providing actionable insights that purely historical analysis often misses.

The LSTM models, designed to handle sequential data, capture quarterly fluctuations driven by regulatory changes, festive seasons, and industry-wide shifts, resulting in superior forecasting accuracy. This richer understanding empowers management to align capital allocation, pricing strategies, and risk management more effectively. Future research could deepen this approach by integrating alternative data sources, including customer sentiment from social media, real-time network performance data, and broader economic indicators.

Additionally, comparative studies across global telecom and energy giants could highlight strategic best practices and contextual differences. Developing AI-powered dashboards could enable dynamic scenario analysis, helping decision-makers simulate outcomes under varying market conditions. Finally, exploring cutting-edge architectures such as Bi-LSTM, GRU, and Transformers could further refine predictive performance, capturing long-term dependencies and complex event-driven market responses. Collectively, these advancements promise to transform how large conglomerates like Reliance Industries and Jio approach financial planning, strategic forecasting, and competitive positioning in an increasingly data-driven era**.**

VI.REFERENCES

1. Pandey, I. M. (2019). Financial Management. Vikas Publishing.
2. Gupta, S. P. (2016). Statistical Methods. Sultan Chand & Sons.
3. Jain, R., & Aggarwal, S. (2020). Financial performance analysis of Reliance Industries Limited. Asian Journal of Research in Banking and Finance, 10(7), 12–21.
4. Kumar, A., & Sharma, P. (2021). Impact of Jio on the Indian telecom industry. Journal of Business Management, 9(2), 55–67.
5. Kou, G., Xu, Y., Peng, Y., & Shen, F. (2021). Machine learning in financial risk management: A review. Decision Support Systems, 140, 113429.
6. Fischer, T., & Krauss, C. (2018). Deep learning with LSTM networks for financial market predictions. EJOR, 270(2), 654–669.

Received: 08-10-2025 | Accepted: 17-11-2025 | Published: 24-11-2025 |

7. Sirignano, J., & Cont, R. (2019). Universal features of price formation in financial markets. Quantitative Finance, 19(9), 1449–1459.
8. Lessmann, S., Baesens, B., Seow, H.-V., & Thomas, L. C. (2015). Benchmarking ML algorithms for financial forecasting. EJOR, 247(1), 124–136.
9. Heaton, J. B., Polson, N. G., & Witte, J. H. (2017). Deep learning in finance. Annual Review of Financial Economics, 9, 145–181.
10. Goodfellow, I., Bengio, Y., & Courville, A. (2016). Deep Learning. MIT Press.
11. G. Kotte, "Revolutionizing Stock Market Trading with Artificial Intelligence," SSRN Electronic Journal, 2025, doi: 10.2139/ssrn.5283647.
12. James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). An Introduction to Statistical Learning. Springer.
13. Reserve Bank of India. (2023). Report on Trend and Progress of Banking in India.
14. Todupunuri, A. (2022). Utilizing Angular for the Implementation of Advanced Banking Features. Available at SSRN 5283395.
15. Reliance Industries Limited. (2023). Annual Report 2022–23. Retrieved from https://www.ril.com/
16. Reliance Jio. (2023). Annual Report 2022–23. Retrieved from https://www.jio.com/
17. Hu, Z., Zhao, Y., & Khushi, M. (2021). Survey of stock price prediction using deep learning. Applied System Innovation, 4(1), 9.
18. Wang, G., Zhang, H., & Zhou, L. (2019). Financial time series forecasting with deep learning. Journal of Financial Data Science, 1(2), 10–29.
19. Hull, J. (2018). Risk Management and Financial Institutions. Wiley.
20. Bhavani, R. (2019). Application of ML techniques in Indian financial markets. IJSTR, 8(11), 2227–2230.
21. Zhang, Y., Aggarwal, C. C., & Qi, G.-J. (2017). Stock price prediction via multi-frequency patterns. KDD, 2141–2149.
22. RBI. (2021). Financial Stability Report. Retrieved from https://www.rbi.org.in/
23. Fabozzi, F. J., Focardi, S. M., & Kolm, P. N. (2014). Financial Modeling of the Equity Market: From CAPM to Cointegration. Wiley.
24. Todupunuri, A. (2025). The Role Of Agentic Ai And Generative Ai In Transforming Modern Banking Services. American Journal of AI Cyber Computing Management, 5(3), 85-93.
25. Zhang, Y., & Zhou, L. (2020). Applying deep learning to predict financial time series: A review. Soft Computing, 24(20), 15253–15268.
26. G. Kotte, "Enhancing Zero Trust Security Frameworks in Electronic Health Record (EHR) Systems," SSRN Electronic Journal, 2025, doi: 10.2139/ssrn.5283668.
27. Larkin, Y., & Sharp, N. (2018). The performance of conglomerates and single-segment firms: Evidence from capital market efficiency. The Accounting Review, 93(3), 249–275.
28. Ghosh, S., & Sahoo, S. (2018). Financial performance analysis of Indian conglomerates: A case study of Reliance Industries. Journal of Business and Economic Policy, 5(1), 88–96.
29. Brownlee, J. (2018). Deep Learning for Time Series Forecasting: Predict the Future with MLPs, CNNs and LSTMs in Python. Machine Learning Mastery.

Received: 08-10-2025 | Accepted: 17-11-2025 | Published: 24-11-2025 |