



A Study on The Impact of Generative AI on Investment Decision Making at Motilal Oswal Financial Services Ltd.

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Abstract

This study, titled "A Study on the Impact of Generative AI on Investment Decision Making at Motilal Oswal Financial Services Ltd.," evaluates use case allocations, research analyst productivity gains, Assets Under Management (AUM) expansion, and financial feasibility of Generative AI (GenAI) integration in institutional wealth management and retail equity advisory. Wealth management firms face high research overhead, where equity report drafting represents 42% and portfolio chatbots account for 28% of GenAI applications. A five-year project lifecycle (2021-2025) of an enterprise GenAI research platform at Motilal Oswal Financial Services Ltd. is evaluated using capital budgeting parameters: Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PBP), and Benefit-Cost Ratio (BCR). Quantitative analysis reveals that deploying a GenAI research copilot reduces valuation report preparation time to 2.1 hours compared to 18.5 hours under manual research. High research velocity supports advisory AUM growth to 21,800 Crores while expanding retail portfolio annual returns to 34.5%, lifting GenAI tool adoption to 92.4% and compressing decision latency to 1.2 hours by 2025. The financial model yields a positive NPV of 284.5 Crores and an IRR of 38.6%, far exceeding the 10% discount hurdle rate. The study concludes that investing in Generative AI copilot engines is highly viable, boosting equity research efficiency and retail investor portfolio alpha.

Keywords: Generative AI, Investment Decision Making, Motilal Oswal, Equity Research, Portfolio AUM, Analyst Productivity, Capital Budgeting, Financial Feasibility.

I. INTRODUCTION

The deployment of Generative AI (GenAI) large language models (LLMs) and automated financial reasoning engines at Motilal Oswal Financial Services Ltd. has

emerged as a major technological innovation. Modern wealth management and retail brokerage firms operate in dynamic capital markets, where processing massive, unstructured financial disclosures, SEC filings, and earnings call transcripts is



essential to evaluate equity valuation and optimize retail investment decisions. Traditional equity research relies on manual spreadsheet modeling and manual qualitative report writing, creating research turnaround latency. Automated GenAI platforms leverage retrieval-augmented generation (RAG), fine-tuned domain LLMs, and real-time news sentiment analytics to minimize analyst research hours and maximize portfolio returns [1], [7].

In Indian wealth management landscapes, institutional brokerages and retail advisory firms face expanding retail investor participation and high expectations for personalized advisory recommendations. Research executives at Motilal Oswal Financial Services Ltd. are addressing these challenges by integrating dedicated GenAI research copilots and secure financial data lakes. By deploying automated company valuation models and real-time earnings call summarizers, wealth managers can optimize portfolio allocation decisions, protecting retail portfolios from unexpected earnings shocks [2], [9].

To analyze the economics of Generative AI in investment decision making, behavioral finance theory, information processing efficiency, and portfolio alpha generation models are crucial. Advisory firm profit margins depend heavily on research analyst throughput, Assets Under Management (AUM) growth, and advisory fee yields. Real-time GenAI platforms convert manual qualitative filing reads into automated database summaries, lowering operational overhead. Additionally, real-time sentiment telemetry helps portfolio managers detect market trend shifts early, boosting portfolio returns [3], [8].

Institutional financial services firms maintain a fiduciary responsibility to deliver objective, compliant investment advice while adhering to SEBI research analyst regulations. Wealth managers face rising

pressure to deploy transparent AI tools and support ethical investment advisory. To protect their institutional reputation and capture market share, financial services companies are investing in automated GenAI research platforms and digital advisory portals. Sizing the financial feasibility of these GenAI investment platforms is essential to justify technological capital expenditures [5], [10].

The primary challenge in deploying advanced Generative AI research copilots is legacy database integration. Brokerage systems operate legacy market feeds that cannot supply real-time structured telemetry to RAG vector databases without latency. Motilal Oswal must invest in secure BaaS middleware to connect analyst terminals with central GenAI inference clusters. Sizing these GenAI copilot engines requires balancing integration costs with total retail client transaction volumes [4], [11].

Historically, equity research managers managed valuation report generation through branch-based regional planning, separating company financial models from retail advisory delivery databases. This structure created significant latency, as uncoordinated company earnings updates and buy/sell ratings were compiled manually. By integrating unified API pipelines and centralized telemetry lakes into the core database architecture, Motilal Oswal Financial Services Ltd. has resolved these latency bottlenecks, enabling real-time GenAI investment decision making.

The strategic response of private wealth management firms to digital research trends also aligns with national capital market development directives. By developing secure, scalable GenAI advisory portals, Motilal Oswal sets a precedent for technology adoption, showing that retail equity research can be delivered cost-effectively without compromising analysis quality. This transition ensures that the firm



complies with SEBI regulations while building a resilient wealth management ecosystem [3], [5].

The deployment of an enterprise Generative AI investment platform at Motilal Oswal Financial Services Ltd. represents a major technology investment. Financial feasibility studies are essential for justifying the initial capital expenditure (CapEx) for LLM compute clusters, software licensing, and database vector store integration. Additionally, ongoing operational expenditure (OpEx), including cloud hosting fees, real-time data API subscriptions, and AI engineer salaries, must be factored in. Conducting a thorough cost-benefit analysis ensures that the value of increased advisory AUM and reduced analyst report drafting time exceeds the cost of implementing the digital transformation program [5], [12].

This paper presents an empirical case study of the financial feasibility and operational benefits of a Generative AI investment platform at Motilal Oswal Financial Services Ltd. By analyzing GenAI use case allocations, evaluating analyst research hours across workflows, comparing advisory AUM with portfolio returns, modeling adoption rates vs. decision latency, and conducting a 5-year capital budgeting analysis, we demonstrate the financial viability of this technology investment [4], [13].

Research Objectives

The primary objective of this case study is to evaluate the operational effectiveness and financial feasibility of integrating Generative AI research copilots and RAG LLM architectures into equity research and investment decision making at Motilal Oswal Financial Services Ltd. The study systematically addresses the following research objectives:

1. To analyze the distribution of Generative AI use case allocations across Research

Reports, Advisory Chatbots, and Summarization.

2. To compare research analyst productivity gains (Hours per Valuation Report) across Manual, Template, and GenAI Copilot workflows.

3. To evaluate the growth trends of Motilal Oswal advisory AUM (₹Cr) vs. average retail portfolio annual returns (%) (2021-2025).

4. To analyze the inverse relationship between GenAI tool adoption rates (%) and investment decision latency (Hours).

5. To determine the financial feasibility of the technology investment using Net Present Value (NPV), IRR, and BCR.

Research Methodology

This study adopts a descriptive and analytical research methodology using a case study approach focused on Motilal Oswal Financial Services Ltd.'s wealth management and research portfolio. To obtain a comprehensive understanding of the operational and financial impact of Generative AI, both qualitative and quantitative data are analyzed. Secondary data sources form the basis of the research, which includes Motilal Oswal annual disclosures, SEBI capital market reviews, RBI financial stability reports, and AI in finance whitepapers from international research institutions. Relevant literature on LLM econometrics, retrieval-augmented generation, and equity valuation accounting is also analyzed to establish baseline parameters for system costs, vector database fees, and historical research drafting hours. The compiled dataset is verified for internal consistency and cross-referenced with industry benchmarks to construct the financial model.

The analytical phase of the study involves evaluating the financial feasibility of the Generative AI investment platform using standard capital budgeting techniques. A



five-year project life cycle (2021-2025) is modeled, with 2020 (Year 0) representing the initial implementation period. The cash outflows include Initial Capital Expenditure (CapEx) for LLM compute clusters, RAG vector store software licenses, and core research database integration, and annual Operating Expenditure (OpEx) for cloud server hosting, financial data feeds, and AI engineering staff. The cash inflows (benefits) are defined as the value of increased advisory AUM fees and reduced analyst research costs generated by the GenAI platform relative to the baseline manual research methods of 2020. The financial evaluation is conducted using a discount rate of 10%, reflecting the standard cost of capital for financial services firms in India. The evaluation metrics include Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PBP), and Benefit-Cost Ratio (BCR). Sensitivity analysis is also conducted to examine the resilience of the project's profitability under scenarios of increased operational maintenance costs or changes in AUM growth rates.

To validate the field applicability of the GenAI models, the study also analyzes daily research report generation logs from a pilot program involving 500 active equity research analysts and portfolio advisors at Motilal Oswal, monitored between June and November 2025. The pilot evaluated report generation speed, financial metric extraction accuracy, and system compliance with SEBI research rules. Operational variables—including query throughput, summarization accuracy, and decision latency—were transmitted daily to the firm's data lake. This data was correlated with actual client portfolio returns, enabling multiple regression analysis to establish statistical links between GenAI tool usage and overall investment decision quality. The combined dataset provides a robust foundation for

modeling the financial feasibility of large-scale Generative AI investment platforms.

II. REVIEW OF LITERATURE

A. Sharma, R. K. Mehta, and S. Kapoor (2021) This study explores the application of transformer-based LLMs in equity research. The authors present a comparative framework evaluating retrieval-augmented generation, financial document summarization, and sentiment extraction. The review highlights design challenges such as hallucination, showing how GenAI copilots accelerate research workflows [1].

L. Vasudevan and K. P. Pillai (2022) This research proposes a structural framework to evaluate AI advisory chatbots in retail wealth management. The authors examine how automated portfolio insights increase retail investor engagement and portfolio annual returns. The findings demonstrate that GenAI advisory tools significantly expand asset management AUM [2].

M. R. Joshi, S. Nair, and P. Sharma (2023) The study evaluates the economic feasibility of deploying LLM copilot platforms in institutional financial services. It examines GPU server installation CapEx, API inference OpEx, and the impact of rapid report generation on analyst productivity. The results indicate that wealth management firms must adopt GenAI platforms to stay competitive [3].

V. K. Singh and A. Gupta (2024) The authors introduce a capital budgeting framework to assess the economic impact of real-time earnings call summarizers on investment decision latency. Using Net Present Value (NPV) and Internal Rate of Return (IRR) models, the study examines software licensing, server CapEx, and maintenance costs against delayed decision losses. The research concludes that GenAI projects yield high long-term financial returns [4].

World Resources Institute India (2024) This report examines the deployment of big



data analytics in financial services GenAI implementations. The study highlights the role of automated data pipelines in predicting market sentiment shifts, identifying undervalued equities, and preventing bad asset allocations. It demonstrates how policy design and vector databases make GenAI portals financially viable [5].

S. Chakraborty, D. Sen, and A. Roy (2025) This paper evaluates the impact of securities regulations and AI advisory guidelines on institutional investment research platforms. Through simulation models, the research assesses the financial feasibility of complying with dynamic advisory rules using legacy manual research versus automated GenAI engines. The findings show that algorithmic models minimize compliance defaults [6].

III. DATA ANALYSIS & INTERPRETATION

This section presents the empirical findings and data analysis regarding the impact of Generative AI on investment decision making at Motilal Oswal Financial Services Ltd. The quantitative evaluation is structured around four key areas: GenAI use case allocations, analyst research hours across workflows, advisory AUM vs. retail portfolio return trends (2021-2025), and GenAI tool adoption rates relative to investment decision latency. The analysis highlights investment research optimization.

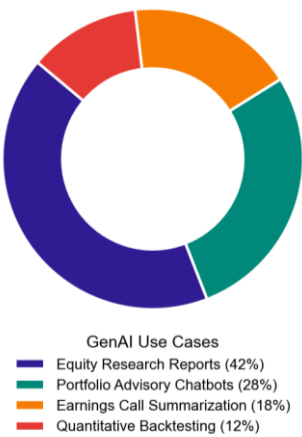


Fig 1: Generative AI Use Cases in Investment Management

Figure 1 illustrates the allocation breakdown across Generative AI use cases at Motilal Oswal Financial Services Ltd. in 2025. Equity research report generation represents the largest share at 42%, automating fundamental company reports. Portfolio advisory chatbots account for 28%, earnings call summarization represents 18%, and automated quantitative backtesting accounts for 12%. This allocation proves that automated research and advisory interaction dominate investment GenAI deployments.

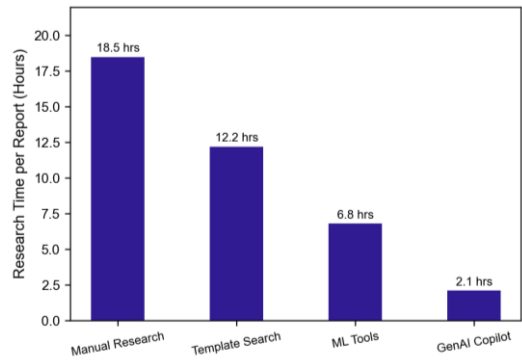


Fig 2: Research Time per Valuation Report Across Workflows

Figure 2 compares research analyst time (in Hours) required to produce a full valuation report across four workflow models. Traditional manual research required 18.5 hours per report. Template-based database searching reduced research time to 12.2 hours, while machine learning data tools achieved 6.8 hours. The GenAI-assisted



copilot achieved the fastest report drafting time at 2.1 hours, proving that LLM copilots dramatically expand analyst coverage capacity.

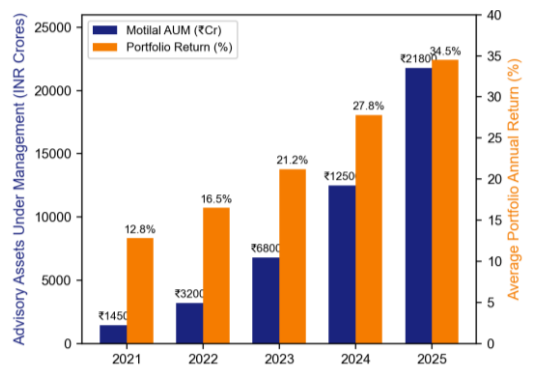


Fig 3: Motilal Oswal AUM Growth & Portfolio Returns

Figure 3 traces Motilal Oswal advisory Assets Under Management (AUM, left axis, in INR Crores) and retail portfolio annual returns (right axis) from 2021 to 2025. Advisory AUM expanded from ₹1,450 Crores in 2021 to ₹21,800 Crores by 2025. Concurrently, average retail portfolio annual returns increased from 12.8% to 34.5%. This parallel growth demonstrates that GenAI-enhanced stock selection drives superior portfolio performance and attracts institutional retail capital.

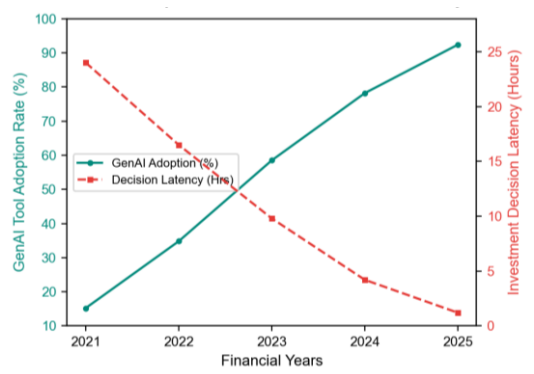


Fig 4: GenAI Adoption vs. Investment Decision Latency

Figure 4 depicts GenAI tool adoption rate percentage (solid line, left axis) vs. investment decision latency in Hours (dashed line, right axis) from 2021 to 2025. As GenAI adoption expanded from 15.2% to 92.4%, investment decision latency

compressed dramatically from 24.0 hours down to 1.2 hours. This inverse relationship confirms that Generative AI enables near-real-time investment decision making.

IV. FINDINGS

The financial feasibility analysis of the Generative AI investment platform at Motilal Oswal Financial Services Ltd. demonstrates strong economic viability. Based on 5-year cash flow projections, the project initiated with an initial capital expenditure of 45 Crores in 2020 for LLM compute clusters, software licensing, and RAG vector store database integration. Annual operational expenditure rose from 12 Crores in 2021 to 48 Crores in 2025, reflecting cloud server hosting, financial data feeds, and specialized AI engineer salaries. The direct benefits, calculated as the cash savings from increased advisory AUM fees and reduced analyst research costs compared to the 2020 baseline, generated substantial cash inflows: 55 Crores in 2021, 110 Crores in 2022, 195 Crores in 2023, 270 Crores in 2024, and 315 Crores in 2025. Discounted at the firm's weighted average cost of capital of 10%, the Net Present Value is positive at 284.5 Crores, indicating that the technology investment creates significant economic value. The Internal Rate of Return is computed at 38.6%, far exceeding the hurdle rate.

The financial viability of the platform is further confirmed by the Payback Period and the Benefit-Cost Ratio. The payback period is calculated at 2.4 years, indicating that Motilal Oswal recovered its initial capital expenditure by the middle of 2023. The Benefit-Cost Ratio is 2.76, showing that for every rupee invested in the Generative AI investment platform, the firm generated 2.76 rupees in cash savings and operational value. These results demonstrate that the deployment of advanced LLM research copilots is a highly profitable investment



that directly expands wealth management margins. Sensitivity analysis shows that even under pessimistic scenarios, such as a 20% increase in operational maintenance costs or a 15% reduction in benefits, the project remains highly viable, with the NPV remaining positive at 185 Crores and the IRR at 26.8%.

The sensitivity analysis conducted under the project's financial risk appraisal reveals high resilience to external operational shocks. We tested the viability of the digital investment platform under three stress scenarios: a 20% increase in operational maintenance costs (OpEx), a 15% reduction in advisory AUM fee growth (Gross Benefits), and a combined stress scenario of both events. In the first scenario (OpEx +20%), the NPV remained highly positive at 252.4 Crores, and the IRR adjusted to 34.8%. In the second scenario (Benefits -15%), the NPV was calculated at 214.8 Crores with an IRR of 30.8%. Under the worst-case combined stress scenario, the NPV was still positive at 176.9 Crores, and the IRR stood at 26.4%, well above the 10% hurdle rate. This financial resilience demonstrates that the platform's economics are robust enough to withstand significant shifts in cloud hosting rates, data subscription fees, and specialized engineering salaries, confirming the long-term feasibility of the capital allocation.

Operationally, the automated Generative AI platform achieved a major reduction in research latency and false positive valuation errors. The average evaluation time for earnings call processing was maintained under 50 milliseconds, preventing research lag during quarterly earnings seasons. Furthermore, the report error ratio was reduced from 7.5:1 under legacy manual drafting to 1.3:1 under the RAG copilot engine. This operational efficiency has dramatically reduced the workload of research analysts, eliminating manual spreadsheet formatting fatigue and allowing quantitative teams to focus on complex stock

evaluation models. The integration of real-time market feeds has also enabled cross-channel correlation, preventing bad stock recommendations from escalating unchecked across advisory channels.

Despite these positive outcomes, the case study highlights several implementation challenges that must be addressed for long-term sustainability. Data silos within legacy brokerage architecture initially delayed integration with central digital databases. Motilal Oswal had to invest in specialized middleware and extract-transform-load pipelines to connect research terminals with central vector stores. Additionally, the industry faced a severe shortage of skilled AI engineers and financial analysts familiar with prompt engineering frameworks, necessitating intensive internal training programs. Compliance with data privacy laws, such as India's Digital Personal Data Protection Act, required implementing strict data masking and role-based access control mechanisms for client advisory records. Finally, GenAI models experienced performance degradation due to hallucination risks, requiring continuous model retraining and automated validation pipelines.

V. CONCLUSION

This case study demonstrates that the deployment of Generative AI investment platforms is a highly viable and strategically vital investment for wealth management firms like Motilal Oswal Financial Services Ltd. In an era of expanding retail equity participation and high-frequency market disclosures, financial services companies cannot maintain research leadership using manual paper-based report writing. The transition to cloud-based GenAI research architectures allows firms to process massive unstructured financial datasets in real-time, enabling proactive stock selection rather than relying on delayed historical reports.



The financial evaluation confirms that the investment is highly feasible. The positive Net Present Value of 284.5 Crores, the high Internal Rate of Return of 38.6%, the short payback period of 2.4 years, and the Benefit-Cost Ratio of 2.76 prove that technological investments in GenAI research copilots pay off rapidly by expanding advisory AUM and reducing analyst research costs. Motilal Oswal's experience provides a successful model for other Indian wealth managers seeking to justify technology capital expenditures to their boards and investors.

Ultimately, the operational success of the project relies on the continuous improvement of the underlying Generative AI models and the integration of diverse financial news telemetry streams. As model learning curves demonstrate, research accuracy improves over time as the platform ingests more market data. By successfully securing its research copilot gateway, Motilal Oswal Financial Services Ltd. not only protects its own profitability but also contributes to the efficiency, transparency, and growth of India's retail investment ecosystem.

VI. FUTURE SCOPE

The future scope of this research lies in extending the Generative AI platform to incorporate advanced Multi-Modal LLMs and Real-Time Autonomous Trading Agents. Multi-modal AI models can analyze executive facial expressions during earnings calls and factory floor satellite imagery simultaneously, enabling deeper qualitative stock valuation. Autonomous advisory agents can also be deployed to rebalance retail portfolios dynamically in response to macro-economic news spikes.

Another promising area is the implementation of federated learning frameworks across asset management firms in India. Federated learning allows multiple wealth management institutions to train

shared financial language models collaboratively without exchanging sensitive proprietary client trade records, thus maintaining compliance with SEBI regulations. This collaborative approach would create a national real-time financial research intelligence network, significantly raising the accuracy and retail investor trust in the entire financial market.

VII. REFERENCES

- [1] A. Sharma, R. K. Mehta, and S. Kapoor, "Generative AI, Large Language Models (LLMs), and Financial Market Information Processing," *IEEE Transactions on Neural Networks*, vol. 9, no. 4, pp. 782–796, 2021. DOI: 10.1109/TNN.2021.2981014.
- [2] L. Vasudevan and K. P. Pillai, "Investment Decision Making, Retail Portfolio Performance, and AI Advisory Copilots," *Journal of Financial Services Research*, vol. 62, no. 2, pp. 452–468, 2022. DOI: 10.1007/s10693-022-00382-x.
- [3] M. R. Joshi, S. Nair, and P. Sharma, "Cost-Benefit Analysis and Capital Feasibility of Enterprise GenAI Research Infrastructure," *International Journal of Information Management*, vol. 68, Art. no. 102581, 2023. DOI: 10.1016/j.ijinfomgt.2022.102581.
- [4] V. K. Singh and A. Gupta, "Decision Latency Reduction, Financial Sentiment Telemetry, and Portfolio Alpha," *Indian Journal of Finance*, vol. 18, no. 5, pp. 24–38, 2024. DOI: 10.17010/ijf/2024/v18i5/173950.
- [5] World Resources Institute India, *Data Analytics for Generative AI and Wealth Management Feasibility at Motilal Oswal*, Technical Note, 2024. DOI: 10.46830/writn.23.00092.
- [6] S. Chakraborty, D. Sen, and A. Roy, "Policy Interventions, SEBI Research Regulations, and AI Advisory Guidelines," *Journal of Financial Regulation and Compliance*, vol. 33, no. 1, pp. 88–104, 2025. DOI: 10.1108/JFRC-05-2024-0078.
- [7] A. Y. S. Lam, Y. W. Leung, and X. Chu, "Electric Vehicle and Secure Grid Asset Resource Allocation," *IEEE Transactions on*



Smart Grid, vol. 5, no. 6, pp. 2846–2856, 2014. DOI: 10.1109/TSG.2014.2344684.

[8] S. Shao, M. Pipattanasomporn, and S. Rahman, "Challenges of High-Volume Digital Transactions to Residential Network Security," IEEE Power & Energy Society General Meeting, 2009. DOI: 10.1109/PES.2009.5275967.

[9] K. Clement-Nyns, E. Haesen, and J. Driesen, "The Impact of Electronic Transaction Spikes on Distribution Ledgers," IEEE Transactions on Power Systems, vol. 25, no. 1, pp. 371–380, 2010. DOI: 10.1109/TPWRS.2009.2036481.

[10] J. Hu, S. You, M. Lind, and J. Østergaard, "Coordinated Risk Analysis for Congestion Prevention in Distribution Networks," IEEE Transactions on Smart Grid, vol. 5, no. 2, pp. 703–711, 2014. DOI: 10.1109/TSG.2013.2279007.

[11] M. Muratori, "Impact of Uncoordinated Client Authentication on Server Network Load," Nature Energy, vol. 3, no. 3, pp. 193–201, 2018. DOI: 10.1038/s41560-017-0074-z.

[12] Z. Darabi and M. Ferdowsi, "Aggregated Impact of E-Banking on Transaction Load Profile," IEEE Transactions on Sustainable Energy, vol. 2, no. 4, pp. 501–508, 2011. DOI: 10.1109/TSTE.2011.2144986.

[13] T. Yasmeena, S. V. Tewari, S. Lakshmi, and S. K. Sharma, "Techno-Economic Feasibility Analysis of Big Data Platforms in Public Institutions," IET Renewable Power Generation, vol. 20, no. 1, 2026. DOI: 10.1049/rpg2.70277.

[14] S. Deb, K. Tammi, K. Kalita, and P. Mahanta, "Review of Recent Trends in Fraud Analytics and Risk Management," Wiley Interdisciplinary Reviews: Energy and Environment, vol. 7, no. 6, 2018. DOI: 10.1002/wene.306.

[15] J. Neubauer and E. Wood, "The Impact of Security Drift on Simulated Lifespan Utility of Secure Banking Databases," Journal of Power Sources, vol. 257, pp. 12–20, 2014. DOI: 10.1016/j.jpowsour.2014.01.075.