ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 6| June 2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

RISK AND RETURN ANALYSIS OF A COOPERATIVE TOWN BANK: EVIDENCE FROM MADANAPALLE CO-OPERATIVE TOWN BANK LTD.

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ABSTRACT

This paper examines the financial risk and return dynamics of Madanapalle Co-operative Town Bank Ltd. over the five-year window from 2020–21 to 2024–25. Drawing on the bank's audited annual reports, the study applies a comprehensive suite of instruments — including Return on Assets (ROA), Return on Equity (ROE), Return on Investment (ROI), Net Profit Margin, Capital Adequacy Ratio (CAR), Rate of Return, Standard Deviation, Beta coefficient, Sharpe Ratio, Treynor Ratio, Pearson Correlation, and Regression Analysis — to construct a rigorous picture of institutional performance. Findings confirm a robust capital position and continuous ROE improvement, indicative of sound stewardship of member funds. However, declining ROA and ROI in the later years point to profitability compression. A standard deviation of 0.2235 and a beta of 0.0731 confirm low return volatility and minimal systematic risk. Negative Sharpe and Treynor ratios reveal that the average return of 6.356% falls short of the 7.0% risk-free benchmark, flagging room for meaningful improvement in risk-adjusted performance. A perfect Pearson correlation (r = +1.000) and regression fit (R^2 = 1.000) validate the classical risk–return trade-off. The study concludes that the bank is financially sound but requires deliberate strategic effort to strengthen profitability, investment efficiency, and risk-adjusted returns.

KEYWORDS: *Cooperative bank, risk and return, ROA, ROE, capital adequacy ratio, Sharpe ratio, beta coefficient, regression analysis*

1. INTRODUCTION

Risk and return are the twin pillars of financial decision-making. Every rupee deployed by a bank — whether extended as a loan, channelled into a government security, or retained as operational liquidity — carries both an opportunity cost and a probability of loss. The foundational axiom of finance holds that rational stakeholders demand higher compensation as uncertainty rises; risk and expected reward are therefore inextricably linked.

This relationship carries particular weight in banking, where institutions act as custodians of public savings while channelling capital toward productive economic activity. Miscalibrating the risk-return balance — by pursuing yield through imprudent lending or by playing so safe that earnings stagnate — can destabilise an institution, erode depositor confidence, and undermine the community mission that distinguishes cooperative banks from their commercial counterparts.

Cooperative banks occupy a distinctive niche in the Indian financial ecosystem. Governed by the principle of 'one member, one vote,' they are owned and directed by the communities they serve. Their primary mandate is financial inclusion and member welfare, not shareholder profit maximisation. They reach farmers, small traders, artisans, and households that mainstream banks frequently overlook — making sound risk management not merely an operational discipline but a governance obligation.

Madanapalle Co-operative Town Bank Ltd., established on 23 June 1924 in what is now Annamayya District, Andhra Pradesh, is one of the oldest cooperative banking institutions in the state. For over a century it has mobilised savings from and extended credit to the local community. Assessing its financial performance across the post-pandemic recovery window of 2020–21 to 2024–25 offers a timely lens through which to gauge both its institutional resilience and the broader viability of the cooperative model under contemporary economic conditions.

2. REVIEW OF LITERATURE

A growing body of scholarship interrogates risk and return dynamics in cooperative banking contexts. Clark, Mare, and Radic (2018) mapped the competition-stability nexus across European cooperative banks from 2006 to 2014, identifying a hump-shaped relationship: moderate competition improves bank stability, whereas excessive competitive pressure magnifies risk. Asset and liability diversification emerged as a significant stabilising force.

McKillop et al. (2020) reviewed cooperative financial institutions globally and found that the relationship-banking model — built on long-term member engagement and localised knowledge — reduces information asymmetry, improves credit allocation, and buffers performance during economic downturns. Muffee (2020) applied OLS regression to fifteen years of data from a cooperative credit union in Cameroon, demonstrating that customer deposits, savings, and cash balances positively drive financial performance while high leverage exerts a dampening effect on net profit.

Kumar and Meena (2022) studied credit risk and financial performance among NIFTY50-listed Indian banks, finding that non-performing assets and high cost-to-income ratios significantly erode ROA and ROE. Ramadan and Abdelaziz (2025) applied System GMM to Egyptian and Saudi bank panels and concluded that bank-specific variables — especially capital adequacy and operational efficiency — are

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the primary return drivers. Rosario and Mavuri (2026) employed Structural Equation Modelling on Indian commercial banks and found that non-performing asset quality negatively impacts ROE and market valuation, while Net Interest Margin supports stock performance.

3. RESEARCH METHODOLOGY

3.1 Objectives

The study pursues three interrelated objectives: (i) to evaluate the risk and return performance of Madanapalle Co-operative Town Bank Ltd. over the period 2020–21 to 2024–25; (ii) to investigate the nature and strength of the risk-return relationship within the institution; and (iii) to appraise overall financial performance through key financial ratios and statistical measures.

3.2 Data and Scope

The analysis draws exclusively on secondary data — audited annual reports, balance sheets, profit and loss accounts, and allied financial records of the bank spanning five financial years. The study is institution-specific and does not purport to generalise findings to the cooperative banking sector as a whole.

3.3 Analytical Tools

Tool	Purpose
ROA	Profitability relative to total assets
ROE	Profitability relative to shareholders' equity
ROI	Return earned per rupee of investment
Net Profit Margin	Share of income converted into net profit
Capital Adequacy Ratio	Capital buffer relative to risk-weighted assets
Rate of Return	Year-on-year percentage change in capital fund value
Standard Deviation	Variability / volatility of annual returns
Beta (β)	Systematic risk relative to broader market movements
Sharpe Ratio	Risk-adjusted return relative to total variability
Treynor Ratio	Risk-adjusted return relative to systematic risk
Pearson Correlation	Strength and direction of the risk–return relationship
Regression Analysis	Predictive model: return as a function of risk

4. DATA ANALYSIS AND INTERPRETATION

4.1 Return on Assets (ROA)

ROA measures how efficiently the bank converts its asset base into profit. A higher ratio indicates superior managerial effectiveness in deploying resources.

Year	Net Profit (Rs.)	Total Assets (Rs.)	ROA (%)
2020–21	92,91,307	90,35,70,475	1.028
2021–22	1,60,44,336	97,62,67,440	1.643
2022–23	1,55,97,549	1,04,08,39,572	1.498
2023–24	1,40,90,811	1,06,32,35,759	1.325
2024–25	1,18,63,978	1,11,31,78,286	1.065
5-Year Average	—	—	1.312

Interpretation: ROA climbed from 1.028% in 2020–21 to a peak of 1.643% in 2021–22, reflecting efficiency gains during post-pandemic recovery. It subsequently retreated to 1.065% in 2024–25, likely reflecting rising operational costs as the asset base expanded. The five-year average of 1.312% is broadly satisfactory for a cooperative bank, though the downward trend signals a need for renewed focus on asset productivity.

4.2 Return on Equity (ROE)

Year	Net Income (Rs.)	Shareholders' Equity (Rs.)	ROE (%)
2020–21	9,80,20,650	2,99,01,200	327.81
2021–22	10,81,59,815	2,81,93,500	383.63
2022–23	10,48,23,072	2,63,25,010	398.19
2023–24	10,28,03,766	2,46,96,770	416.26
2024–25	10,81,80,126	2,33,80,680	462.69
5-Year Average	—	—	397.71

Interpretation: ROE rose without interruption from 327.81% in 2020–21 to 462.69% in 2024–25, signalling strong earnings per rupee of equity. However, this upward trend is partly a function of a contracting equity base as members redeemed shares. Management should monitor equity adequacy alongside ROE to ensure the bank is not inadvertently becoming under-capitalised on a per-member basis.

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4.3 Return on Investment (ROI)

Year	Net Profit (Rs.)	Investment Cost (Rs.)	ROI (%)
2020–21	92,91,307	14,41,59,160	6.445
2021–22	1,60,44,336	18,59,00,220	8.630
2022–23	1,59,97,849	18,32,99,880	8.727
2023–24	1,40,90,811	20,47,20,000	6.882
2024–25	1,18,63,978	19,97,20,000	5.940
5-Year Average	—	—	7.324

Interpretation: ROI peaked at 8.727% in 2022–23 before declining to 5.940% in 2024–25. The fall in the latter two years reflects increased investment outlay without a commensurate rise in net profit, underscoring the need for a more selective and performance-oriented approach to capital deployment.

4.4 Net Profit Margin

Year	Net Profit (Rs.)	Total Income (Rs.)	Net Profit Margin (%)
2020–21	1,60,44,336	10,81,59,815	14.83
2021–22	92,91,307	10,48,23,072	8.86
2022–23	1,40,90,811	10,28,03,126	13.71
2023–24	1,53,82,573	10,81,80,126	14.22
2024–25	1,18,63,978	11,12,63,542	10.66
5-Year Average	—	—	12.45

Interpretation: Net profit margin ranged from 8.86% (2021–22) to 14.83% (2020–21), averaging 12.45%. The sharp dip in 2021–22 likely reflects elevated credit provisioning in the immediate post-COVID period. The recovery in subsequent years demonstrates operational resilience, though the renewed decline to 10.66% in 2024–25 calls for tighter cost management and income diversification.

4.5 Capital Adequacy Ratio (CAR)

Year	Capital Fund (Rs.)	Risk-Weighted Assets (Rs.)	CAR (%)
2020–21	15,56,77,200	82,00,76,516	18.983
2021–22	16,12,16,239	85,76,86,488	18.796
2022–23	17,35,95,963	81,91,82,094	21.191
2023–24	18,29,02,192	85,83,62,141	21.308
2024–25	18,78,54,596	91,40,13,420	20.552
5-Year Average	—	—	20.166

Interpretation: The bank maintained an average CAR of 20.17% — more than double the RBI's 9% regulatory floor — across all five years. This robust capitalisation demonstrates the institution's capacity to absorb unexpected credit losses and reflects prudent reserve management throughout the study period.

4.6 Rate of Return, Standard Deviation, and Beta

Year	Opening Value (Rs.)	Closing Value (Rs.)	Return (%)	(X - X-bar)^2
2020–21	15,23,97,578	14,15,66,157	7.114	0.574
2021–22	16,12,16,239	15,23,97,578	6.725	0.136
2022–23	17,35,95,963	16,12,16,239	6.245	0.012
2023–24	18,29,02,192	17,35,95,963	5.927	0.184
2024–25	18,78,54,596	18,29,02,192	5.771	0.342
Average / Total	—	—	6.356	1.249

Standard Deviation (σ) = 0.2235 | Beta (β) = 0.0731

Interpretation: The annual rate of return declined steadily from 7.114% to 5.771%, averaging 6.356% over the period. A standard deviation of 0.2235 confirms highly consistent returns with minimal year-to-year volatility. The beta coefficient of 0.0731 — far below the market benchmark of 1.0 — indicates that the bank's performance is largely insulated from broad market fluctuations, an attribute characteristic of community-anchored cooperative institutions.

4.7 Sharpe Ratio and Treynor Ratio

Using a risk-free rate (Rf) of 7.0% — proxied by prevailing government security yields:

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Measure	Formula Components	Calculated Value
Sharpe Ratio	(Rm – Rf) / Standard Deviation = (6.356 – 7.0) / 0.2235	–2.88
Treynor Ratio	(Rp – Rf) / Beta = (6.356 – 7.0) / 0.0731	–8.81

Interpretation: Both risk-adjusted return measures are negative, reflecting the fact that the bank's average return (6.356%) falls marginally below the risk-free benchmark (7.0%). Although the absolute shortfall is modest in basis-point terms, negative ratios signal that stakeholders are not fully compensated for the risk they bear. Improving fee-based income, expanding into higher-yielding productive loan segments, and tightening operational efficiency are the most actionable levers for reversing this position.

4.8 Correlation and Regression Analysis

Statistical Measure	Result	Significance
Pearson Correlation (r)	+1.000	Significant at 0.01 level (2-tailed)
R Square (R^2)	1.000	100% of return variation explained by risk
Regression Coefficient (B)	1.000	One-to-one relationship: 1 unit risk = 1 unit return
Residual Sum of Squares	0.000	Perfect model fit; zero prediction error

Interpretation: A perfect Pearson correlation (r = +1.000) confirms that risk and return move in complete synchrony within this institution. The regression model's R^2 of 1.000 indicates that the risk variable fully accounts for the observed variation in returns, leaving no residual unexplained — a textbook illustration of the classical risk–return trade-off. The regression coefficient B = 1.000 implies that each unit increase in risk is matched by an equal unit increase in return, while the constant of 6.356 represents the baseline return level when risk is zero.

5. SUMMARY OF FINDINGS

1. ROA rose to a peak of 1.643% in 2021–22 before declining to 1.065% by 2024–25 (average: 1.312%), signalling a gradual erosion of asset utilisation efficiency in the later years.
2. ROE improved continuously from 327.81% to 462.69%, partly driven by a contracting equity base, indicating strong but potentially fragile per-unit profitability for member capital.
3. ROI peaked at 8.727% in 2022–23 and retreated to 5.940% in 2024–25, reflecting diminishing investment efficiency as the portfolio expanded without proportional income growth.
4. CAR averaged 20.17% across all five years, consistently exceeding the RBI's 9% regulatory minimum and confirming a robust risk-absorption buffer.
5. The overall rate of return declined steadily from 7.114% to 5.771%, reflecting a gradual weakening of profitability across the study window.
6. A standard deviation of 0.2235 and a beta of 0.0731 confirm low return variability and minimal sensitivity to broader market movements — hallmarks of a stable, community-focused institution.
7. Negative Sharpe (–2.88) and Treynor (–8.81) ratios indicate that risk-adjusted returns fall below the risk-free rate, highlighting scope for improvement in compensating stakeholders for the risks undertaken.
8. A perfect Pearson correlation (r = +1.000) and regression fit (R^2 = 1.000) validate the foundational risk–return trade-off principle within this cooperative banking setting.

6. SUGGESTIONS

9. Reverse the declining ROA trend through strategic expansion of the loan portfolio into creditworthy, productive segments combined with disciplined management of operating expenditure.
10. Launch proactive member enrolment campaigns and consider fresh share issuances to rebuild the equity base and prevent ROE from being inflated solely by capital erosion.
11. Conduct periodic investment strategy reviews to redirect resources toward higher-yielding avenues and arrest the slide in ROI.
12. Leverage the strong CAR to extend credit responsibly to underserved local segments — particularly small traders and agricultural workers — fulfilling the cooperative mandate while improving income.
13. Develop non-interest and fee-based income streams (remittances, insurance referrals, advisory services) to push average returns above the risk-free benchmark and improve Sharpe and Treynor ratios.
14. Institutionalise operational cost controls, tracking the ratio of interest-expended growth to interest-earned growth as a key management dashboard metric.
15. Accelerate digital adoption — mobile banking, UPI integration, NEFT/RTGS — to reduce per-transaction costs, attract younger members, and improve overall operational efficiency.

7. CONCLUSION

This study delivers a multi-dimensional financial assessment of Madanapalle Co-operative Town Bank Ltd. across the five-year period from 2020–21 to 2024–25. The evidence portrays an institution that is financially stable but facing meaningful headwinds on the profitability frontier.

The bank's consistently strong Capital Adequacy Ratio and its uninterrupted improvement in ROE confirm sound capitalisation and effective stewardship of member funds. These are meaningful achievements for a century-old community institution navigating post-pandemic economic complexity. At the same time, declining trajectories in ROA, ROI, and Net Profit Margin — combined with negative risk-adjusted return measures — reveal that the institution's profitability engine requires deliberate recalibration.

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The low standard deviation and beta affirm the bank's characteristic stability and limited market exposure, qualities that reflect its community-anchored governance model. The perfect positive correlation and regression fit between risk and return are theoretically consistent with established financial theory and validate the analytical framework employed in this study.

The path forward lies in translating structural financial strength into superior income generation. With targeted improvements in loan portfolio management, investment selection, cost discipline, and digital service delivery, Madanapalle Co-operative Town Bank Ltd. is well-positioned to elevate its profitability to levels that appropriately reward stakeholders for the risks they assume and sustain its vital role in the economic life of the Madanapalle community for the next century.

REFERENCES

1. *Clark, E., Mare, D. S., & Radic, N. (2018). Cooperative banks: What do we know about competition and risk preferences? Journal of International Financial Markets, Institutions and Money, 52, 90–101.*
2. *Kumar, S., & Meena, R. K. (2022). Credit risk and financial performance of NIFTY50-listed banks in India. Journal of Banking and Finance Studies, 14(2), 45–62.*
3. *McKillop, D., French, D., Quinn, B., Sobiech, A. L., & Wilson, J. O. S. (2020). Cooperative financial institutions: A review of the literature. International Review of Financial Analysis, 71, 101520.*
4. *Muffee, V. W. (2020). Liquidity risk management and financial performance: Evidence from Bamenda Police Cooperative Credit Union. African Journal of Finance and Accounting, 8(1), 33–52.*
5. *Ramadan, A., & Abdelaziz, M. (2025). Bank-specific and macroeconomic determinants of risk and return: Evidence from Egypt and Saudi Arabia. Emerging Markets Finance and Trade, 61(3), 112–130.*
6. *Reserve Bank of India. (2024). Guidelines on capital adequacy for urban cooperative banks. Department of Regulation, RBI, Mumbai.*
7. *Rosario, F., & Mavuri, S. (2026). Asset quality, financial ratios and market valuation in Indian commercial banks: A structural equation modelling approach. Indian Journal of Finance, 20(1), 18–37.*
8. *Madanapalle Co-operative Town Bank Ltd. (2021–2025). Annual reports and financial statements (FY 2020–21 to 2024–25). Madanapalle, Andhra Pradesh.*