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AI-Enabled Automation of Bank Reconciliation: Identifying Opportunities, Challenges and Use Cases in Gold Loan BRS at M&R Finance (Mehta & Rao Finance)

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Abstract : *Bank Reconciliation Statement (BRS) is an important financial control process used to compare transactions recorded in an organisation's internal systems with transactions appearing in bank statements. As financial institutions process increasing transaction volumes across multiple products, branches and banking relationships, technology and automation can play an important role in improving operational efficiency, consistency and control.*

This research paper examines the potential role of Artificial Intelligence (AI) in enhancing bank reconciliation, with specific focus on Gold Loan BRS at M&R Finance (Mehta & Rao Finance). The study is based on practical observations and learning gained during a 45-day finance internship at M&R Finance (Mehta & Rao Finance), supplemented by secondary research on AI, banking automation and intelligent financial operations.

The study examines the existing reconciliation workflow, including transaction downloading, data preparation, automated matching, Open Transaction Report (OTR) investigation, manual matching, remarks and follow-up activities. Particular attention is given to the Gold Loan BRS process, where both automated and manual reconciliation activities were observed.

Potential AI applications identified include AI-assisted transaction matching, AI-generated remarks, OTR prioritisation, anomaly identification and intelligent document processing. The study also identifies implementation challenges including data quality, system integration, human oversight and the difficulty of processing certain unstructured documents such as handwritten deposit slips.

The findings indicate that AI could be most useful as an intelligence layer over existing automation, particularly for unresolved and complex transactions. The study therefore recommends a phased, human-in-the-loop implementation in which high-confidence routine recommendations may be automated while uncertain or high-risk cases remain subject to employee review.

Keywords: Artificial Intelligence, Bank Reconciliation, BRS, Gold Loan, Automation, OTR, Financial Technology, AI-assisted Matching, M&R Finance (Mehta & Rao Finance).

I. INTRODUCTION

1.1 Background of the Study

Financial operations have undergone substantial technological change with the increasing adoption of automation, data analytics and Artificial Intelligence. Activities that historically depended heavily on manual data entry and spreadsheet-based checking are increasingly supported by digital workflows and automated systems.

Bank reconciliation is one such activity. It involves comparing bank transactions with an organisation's internal records, identifying differences, matching transactions and resolving outstanding items. The objective is to ensure that the records used by the organisation appropriately reflect the underlying banking activity.

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As transaction volumes increase, manual investigation of every exception can consume significant employee time. AI offers a potential extension to conventional rule-based automation because it can analyse multiple attributes and identify patterns rather than relying only on fixed rules.

This is particularly relevant to M&R Finance (Mehta & Rao Finance). Its FY2025–26 Integrated Annual Report describes enterprise-wide adoption of AI, including the rollout of Gemini AI, function-specific AI use cases and an internal platform for evaluating AI solutions that can improve business processes and operational efficiency. The report also describes AI-enabled ways of working and productivity through automation. [Source: M&R Finance (Mehta & Rao Finance) Integrated Annual Report FY2025–26.]

1.2 Problem Statement

Existing reconciliation automation can process transactions that meet established matching conditions, but a subset of transactions continues to require investigation. These may involve incomplete references, complex relationships, branch-related information, missing or inconsistent remarks and transactions that require human judgement.

The problem addressed in this study is: How can Artificial Intelligence further enhance the efficiency, accuracy and prioritisation of Bank Reconciliation while retaining appropriate human control and financial accountability?

1.3 Objectives of the Study

- To understand the concept and importance of Bank Reconciliation.
- To understand the BRS process observed during the internship at M&R Finance (Mehta & Rao Finance).
- To examine the role of automation in reconciliation.
- To study the Gold Loan BRS process and identify areas involving manual intervention.
- To identify practical applications of Artificial Intelligence in BRS.
- To examine the potential benefits and limitations of AI-assisted reconciliation.
- To recommend a practical approach for phased AI adoption.

1.4 Significance of the Study

The study is significant because reconciliation is a control-oriented activity in which efficiency must be balanced with accuracy and accountability. The purpose of the proposed AI approach is not simply to increase the percentage of automation, but to reduce repetitive manual effort while directing employee attention towards transactions that genuinely require judgement.

II. LITERATURE REVIEW

2.1 Artificial Intelligence in Financial Services

AI is increasingly used in financial services for activities such as risk assessment, fraud detection, customer service, document processing and operational decision support. The relevance of AI to back-office processes is particularly strong where large volumes of structured and semi-structured data are processed repeatedly.

2.2 Automation versus AI-enabled Automation

Traditional automation generally follows predefined instructions. AI-enabled automation can potentially use a wider set of attributes and historical patterns to recommend a match even when information is not identical. This distinction is important for BRS because difficult transactions often cannot be resolved through one fixed rule.

2.3 AI and Bank Reconciliation

Recent research has specifically explored AI-supported bank reconciliation. Research on graph representation learning for bank reconciliation indicates that relational and textual information can support transaction-matching decisions, especially in complex matching situations. This supports the conceptual use of AI for exception-oriented reconciliation.

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2.4 Intelligent Document Processing

Intelligent document processing combines technologies such as optical character recognition, natural language processing and machine learning to extract information from documents. In financial operations, this can potentially reduce manual data extraction. However, document quality, layout variation and handwriting can significantly affect extraction reliability.

2.5 Human-in-the-Loop AI

Financial processes require accountability. A human-in-the-loop model allows AI to perform repetitive analysis while employees retain responsibility for uncertain or high-impact decisions. For BRS, this approach can be implemented through confidence scores and escalation thresholds.

2.6 Evolution of Reconciliation

Stage	Characteristics
Manual Reconciliation	Employees perform matching, checking and investigation manually.
Rule-Based Automation	Predefined conditions automate predictable transactions.
Automated Matching	Systems match transactions using multiple configured fields.
AI-Assisted Matching	AI recommends matches for complex or unresolved transactions.
Intelligent Decision Support	AI prioritises exceptions, recommends actions and supports employees across the workflow.

III. RESEARCH METHODOLOGY

3.1 Type of Research

The study follows a qualitative, exploratory and conceptual case-study approach. It combines practical internship observations with secondary research relating to AI, banking automation and financial reconciliation.

3.2 Research Setting

The practical component was conducted during a 45-day finance internship at M&R Finance (Mehta & Rao Finance) Limited, Mahape, Mumbai. The internship involved exposure to Bank Reconciliation Statement activities, initially in Two Wheeler BRS and subsequently in Gold Loan BRS. Exposure was also obtained to Micro Loan BRS for understanding deposit-slip processing.

3.3 Data Sources

Source	Nature of Information
Internship observations	BRS workflow, OTR, matching, remarks and reconciliation activities.
Process learning	Understanding of system-based and manual reconciliation procedures.
Team discussions	Feedback and practical perspectives on potential AI use cases.
Secondary research	Academic literature on AI, automation and financial operations.
Company information	M&R Finance (Mehta & Rao Finance) annual reports and corporate information.

3.4 Tools and Techniques

- Process observation
- Process mapping
- Qualitative analysis
- Literature review
- Comparative analysis
- AI use-case identification
- Conceptual workflow design

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4.5 Scope

The study focuses on the potential application of AI to BRS, particularly Gold Loan BRS. It does not claim that the proposed AI use cases have been implemented. The study therefore evaluates opportunities and practical considerations rather than measuring the performance of an operational AI system.

V. DATA ANALYSIS & INTERPRETATION

5.1 Existing BRS Workflow

The observed BRS workflow combines system-generated information with employee investigation. A simplified representation is shown below.

Step	Activity
1	Download bank statement and relevant transaction report.
2	Prepare and format transaction data.
3	Run existing automated reconciliation.
4	Identify successfully matched and unmatched transactions.
5	Review OTR and investigate outstanding transactions.
6	Check references, amount, narration and available remarks.
7	Perform manual matching or follow-up where required.
8	Update remarks and complete reconciliation/upload activities.

5.2 OTR and Manual Reconciliation

The Open Transaction Report represents transactions requiring additional attention after the regular reconciliation process. During the internship, OTR work involved checking transaction information, references, amounts, narration and remarks and resolving items through appropriate matching or follow-up.

The process demonstrated that reconciliation is not only a matching exercise. It also involves investigation, interpretation and decisions regarding the reason a transaction remains unresolved.

5.3 Gold Loan BRS Observations

Gold Loan BRS provided a useful setting for examining AI opportunities because the process involved both automated and manual reconciliation. In one account observed during the internship, 1,939 transactions were present, of which 1,640 were auto-reconciled and 299 required manual reconciliation.

This observation indicates that existing automation can handle a substantial portion of transaction volume while a smaller but operationally important population remains for manual investigation. This remaining population is a logical starting point for AI-assisted exception management.

5.4 AI Use Case 1 – Assisted Transaction Matching

AI could analyse transaction attributes such as amount, date, reference information, narration and historical patterns to identify probable matches. Rather than making every transaction an automatic decision, the system could generate a confidence score.

Confidence	Suggested Treatment
High	Potential straight-through processing subject to defined controls.
Medium	Employee review before acceptance.
Low	Manual investigation or escalation.

5.5 AI Use Case 2 – AI-Generated Remarks

Reconciliation requires appropriate remarks to explain the status or nature of transactions. AI could analyse transaction information and recommend a suitable remark. The employee could approve, edit or reject the recommendation. This would reduce repetitive typing while preserving control.

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5.6 AI Use Case 3 – OTR Prioritisation

AI could rank outstanding OTR items according to factors such as ageing, amount, complexity, branch, available information and previous patterns. This would help employees focus first on transactions where delayed resolution may have greater operational impact.

5.7 AI Use Case 4 – Anomaly Identification

AI could identify transaction combinations that differ from established patterns and flag them for review. An anomaly would not automatically mean fraud or error; it would indicate that additional attention may be appropriate.

5.8 AI Use Case 5 – Intelligent Document Processing

Exposure to Micro Loan BRS provided an additional perspective through handwritten and autogenerated deposit slips. Digital or standardised documents are generally more suitable for automated extraction, while handwriting introduces variability. Therefore, document processing should be introduced cautiously and validated against actual business documents.

5.9 Management and Team Feedback

The AI use-case work developed during the internship was discussed with members of the BRS and product teams. The work was reviewed and refined based on practical feedback. The use cases that emerged as particularly relevant included AI-assisted manual matching, AI-generated remarks and OTR prioritisation.

The feedback also reinforced the importance of practical implementation. An AI proposal is useful only when it reduces manual effort and integrates with the actual reconciliation workflow. If employees must independently verify every AI output, the technology may create an additional layer of work rather than reducing it.

VI. FINDINGS AND DISCUSSION

6.1 Finding 1 – AI Should Focus on Exceptions

The existing process already includes automated reconciliation. Therefore, the greatest opportunity for AI is likely to be transactions that remain unresolved after existing automation, rather than routine transactions that are already successfully matched.

6.2 Finding 2 – Manual Effort Remains Important

Manual reconciliation requires employees to examine multiple transaction attributes and determine appropriate actions. AI could reduce repetitive analysis, allowing employees to spend more time on complex exceptions.

6.3 Finding 3 – Human Oversight Is Essential

A financial reconciliation process cannot rely on AI without appropriate controls. High-value, unusual or low-confidence transactions should remain subject to employee review. The objective should be risk-based human intervention rather than verification of every AI output.

6.4 Finding 4 – Data Quality Is a Key Requirement

AI recommendations are dependent on the information available to the system. Missing references, inconsistent narrations and incomplete transaction information can reduce the reliability of automated recommendations.

6.5 Finding 5 – Structured Data Should Be the Starting Point

The contrast between standardised transaction information and handwritten deposit slips indicates that implementation should begin with structured transaction data. More complex document-processing applications can be tested later.

6.6 Finding 6 – AI Should Complement Existing Automation

The proposed approach does not require replacement of the existing reconciliation framework. AI can operate as an intelligence layer that analyses unresolved transactions and supports employee decision-making.

6.7 Proposed AI-Integrated Workflow

Existing Automation → Unmatched Transactions / OTR → AI Analysis → Match / Remark / Priority Recommendation → Confidence Score → Human Review Where Required → Final Reconciliation

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VII. CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

The study examined the potential role of Artificial Intelligence in enhancing Bank Reconciliation, with specific focus on Gold Loan BRS at M&R Finance (Mehta & Rao Finance). The internship provided practical exposure to automated matching, OTR investigation and manual reconciliation, allowing the study to identify where AI could potentially add value.

The research indicates that AI is most relevant as an additional intelligence layer over existing automation. AI-assisted matching, AI-generated remarks and OTR prioritisation are particularly practical starting points because they directly address repetitive activities associated with unresolved transactions.

At the same time, AI implementation must recognise the importance of financial controls. Human oversight, data quality, auditability and confidence-based escalation are essential. The study therefore recommends a phased approach in which AI supports employees rather than attempting to remove human judgement completely.

7.2 Recommendations

Recommendation	Purpose
Pilot AI-assisted matching	Test AI on a controlled population of unresolved transactions.
Introduce confidence scores	Separate high-confidence recommendations from uncertain cases.
Develop AI-assisted remarks	Reduce repetitive remark preparation while retaining approval.
Prioritise OTR	Direct employee attention towards aged, complex or important items.
Use human-in-the-loop controls	Ensure uncertain and high-impact decisions receive review.
Start with structured data	Improve reliability before processing complex documents.
Maintain audit trails	Make AI recommendations and actions traceable.
Measure manual effort	Evaluate reduction in employee effort, not only automation percentage.
Run controlled pilots	Compare accuracy, processing time and manual effort before scaling.

VIII. LIMITATIONS OF THE STUDY

The study is based primarily on qualitative internship observations and secondary research.

The internship period was limited, restricting long-term observation.

No AI system was implemented as part of the study.

The proposed use cases have not been statistically validated through a production pilot.

The study does not claim actual cost or productivity improvements from AI implementation.

Confidential transaction-level data was not used in the research paper.

Handwritten deposit-slip processing was identified as a challenge, but detailed technical OCR testing was outside the study scope.

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APPENDIX

Appendix A: Existing BRS Process

Process Stage	Description
Bank statement / transaction data	Relevant banking and internal transaction information is obtained.
Data preparation	Information is formatted for reconciliation.
Automated reconciliation	Transactions meeting configured conditions are matched.
OTR	Unmatched transactions are identified for further attention.
Manual investigation	Employee checks references, amount, narration and remarks.
Resolution	Matching, remarks, follow-up or other required action is completed.

Appendix B: Proposed AI-Integrated BRS Workflow

Stage	AI Role
Bank + internal data	Receive transaction information.
Existing automation	Continue current rule-based/system matching.
Unmatched / OTR	Send exception population for AI analysis.
AI analysis	Analyse transaction attributes and historical patterns.
Recommendations	Suggest match, remark, priority or anomaly flag.
Confidence score	Classify recommendation reliability.
Human review	Review medium/low-confidence or high-impact cases.
Final reconciliation	Complete controlled reconciliation and retain audit trail.

Appendix C: Major AI Use Cases

Use Case	Objective	Expected Contribution
AI-assisted matching	Recommend probable matches	Reduce manual matching effort
AI-generated remarks	Suggest transaction remarks	Reduce repetitive data entry
OTR prioritisation	Rank unresolved items	Improve focus and turnaround
Anomaly identification	Flag unusual patterns	Strengthen exception review
Intelligent document processing	Extract document information	Reduce manual data extraction
Confidence scoring	Indicate reliability	Support risk-based human review

Appendix D: Internship Learning

Bank Reconciliation Statement processes
Gold Loan BRS and OTR investigation
Automated and manual transaction matching
Bank statement processing
Branch-related reconciliation
Open Credit, Short and Excess Credit
Bank Balance Matching and Book Balance Matching
ECS/PDC-related processes
BRS submission and related reporting
PayU/Axis reconciliation exposure
AI opportunity identification in financial reconciliation
Process mapping and presentation of AI recommendations