

THE IMPACT OF FINANCIAL LITERACY AND RECOVERY STRATEGY ON RECOVERY RATE AMONG CUSTOMERS OF PT BANK RAKYAT INDONESIA (PERSERO) TBK IN BANDUNG CITY

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Abstract:

Background: Credit recovery among micro and small enterprises remains a significant challenge in developing economies, where non-performing loans (NPLs) are prevalent. Traditional approaches to credit recovery often emphasize institutional metrics such as repayment rates and financial ratios. However, recent developments highlight the importance of behavioral and perceptual factors, including borrower trust, fairness perception, and financial literacy. These psychological dimensions influence how borrowers respond to recovery strategies, particularly in the context of microfinance, where personal interaction and borrower experience are crucial.

Purpose: This study aims to analyze the influence of financial literacy and recovery strategies on the perceived recovery rate among borrowers who have experienced default. It further explores how behavioral and perceptual factors contribute to credit recovery dynamics, moving beyond purely financial measures.

Design/methodology/approach: The study employs a quantitative research design using Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the proposed model. Data was collected through structured questionnaires from 240 micro and small enterprise borrowers at BRI Bandung with non-performing loans. The main variables examined are financial literacy, recovery strategy, and recovery rate, with an emphasis on perceptual and behavioral dimensions.

Findings/Result: The results show that financial literacy significantly and positively affects the recovery rate. Additionally, recovery strategies, reflecting borrowers' experiences with the bank's recovery efforts, also significantly influence their perception of recovery outcomes. The findings suggest that psychological and perceptual factors, as explained by the Theory of Planned Behavior, are as important as financial metrics in determining credit recovery performance.

Conclusion: The study concludes that financial institutions should not rely solely on enforcing repayment through traditional mechanisms but must also emphasize borrower-centered recovery strategies. Enhancing financial literacy, trust, understanding, and perceived fairness can improve loan recovery outcomes and contribute to sustainable credit rehabilitation in microfinance contexts.

Originality/value (State of the art): This research introduces a novel framework by integrating perceived recovery as a key perceptual variable in management studies. By applying psychometric concepts to credit recovery evaluation, the study shifts the analytical focus from institutional performance indicators toward borrower experiences and trust. This contribution highlights the behavioral and perceptual dimensions of credit recovery, offering new insights into microfinance management and financial education strategies.

Keywords: financial literacy, perceived recovery strategy, perceived recovery rate, credit recovery, non-performing loans

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INTRODUCTION

The role of banks as financial intermediaries is crucial for economic stability, primarily through their credit distribution function. Effective credit management is not only central to bank profitability but also supports overall financial system stability by ensuring funds are available for productive investments (Michelangeli & Piersanti, 2023). However, this function is inherently exposed to credit risk, often materializing as Non-Performing Loans (NPLs). The case of PT. Bank Rakyat Indonesia (Persero) Tbk. Concerningstrates this challenge, its NPL ratio showed a concerning upward trend from 2.14% in 2018 to 3.12% in 2023 (BRI Financial Report, 2023). This increase reflects heightened credit risk within BRI's loan portfolio, necessitating substantial provisions for credit losses (CKPN), which significantly erode net profit and underscore the urgency of improving credit recovery management. The escalating NPL ratio suggests underlying inefficiencies in the initial credit screening and monitoring processes, which consequently strain the bank's overall financial performance.

A significant portion of BRI's non-performing borrowers are micro and small enterprise (MSE) actors who often experience cash flow mismatches, lack discipline in recording business finances, and possess a limited understanding of ongoing interest obligations and late payment penalties. Many are also unaware of the long-term consequences of default, including restricted access to future credit. This phenomenon indicates that low financial literacy is a structural cause behind the rising NPLs at BRI. Studies have shown that borrowers with high financial literacy tend to exhibit wiser and more responsible financial behaviors, enabling them to select suitable loan products and formulate realistic repayment strategies (Lu et al., 2024; Kara et al., 2021). Therefore, enhancing financial literacy is a proactive measure to prevent delinquency from occurring. This deficit in knowledge makes MSE actors highly vulnerable to financial distress and poor decision-making when faced with economic difficulties. The evidence highlights the necessity for specific and structured financial education interventions to be integrated as a key component of credit risk mitigation strategies.

Once NPLs materialize, banks must implement recovery strategies, such as rescheduling, restructuring, or legal collection, to mitigate their impact. At BRI,

these strategies include debt restructuring, payment rescheduling, interest relief, and personal approaches like field visits by officers. However, the success of these technical strategies is not solely dependent on their design but is also significantly influenced by how customers perceive whether they understand, accept, and trust that the strategy can help them escape debt. A customer's perception of the recovery strategy shapes their psychological and behavioral response. If the approach is perceived as fair, transparent, and negotiable, customers are more likely to cooperate, thereby enhancing the recovery process. Conversely, strategies perceived as overly coercive, unjust, or lacking in transparency can trigger resistance and non-cooperative attitudes from borrowers. Thus, effective communication and a customer-centric approach are paramount in translating the technical soundness of the recovery strategy into successful execution.

This study posits that the success of credit recovery is not merely a function of institutional policies and financial metrics but is also deeply rooted in the borrower's psychological and perceptual dimensions. Drawing from the Theory of Planned Behavior (Ajzen, 2011), an individual's perception of control over a situation influences their intentions and actual actions. In the context of non-performing borrowers at BRI Bandung, a positive perception of one's own financial literacy can trigger a shift from a passive to a cooperative attitude in the credit resolution process. Similarly, the perceived recovery rate, the borrower's own assessment of their ability to settle the debt, is a critical perceptual outcome that combines self-belief, financial understanding, and judgment of the bank's treatment. A high perception of behavioral control, underpinned by confidence in one's financial literacy, provides the psychological impetus for borrowers to take restorative action. These subjective factors, such as an optimistic outlook on debt resolution, play a pivotal role in determining whether a customer will adhere to a restructuring plan or re-default. In essence, successful credit recovery often commences with a change in how the borrower perceives both their debt predicament and the available solutions.

Consequently, there is a compelling need to empirically investigate the relationship between financial literacy, recovery strategy, and the recovery rate from the customer's perspective. Previous studies have often focused on objective financial data or institutional recovery tactics, leaving a gap in understanding the

behavioral and perceptual drivers of successful credit recovery, particularly within the MSE segment in Indonesia. By integrating these perceptual variables into a comprehensive framework and analyzing them using a quantitative approach with PLS-SEM, this research aims to provide a novel, human-centered perspective. The findings are expected to offer valuable insights into BRI and similar financial institutions in designing more effective, empathetic, and sustainable credit rehabilitation strategies that not only enforce repayment but also build customer trust and financial capability. This customer-centric approach is especially relevant for the Indonesian MSME context, which heavily relies on personal relationships and trust. The hypotheses of this research are as follows: H1: Financial Literacy has a positive and significant effect on Recovery Rate. H2: Recovery Strategy has a positive and significant effect on Recovery Rate. These hypotheses directly address the research gap by focusing on subjective, behavioral drivers rather than solely relying on objective institutional metrics. Specifically, this research seeks to test the hypothesis that borrowers' positive perceptions of both the bank's strategies and their own financial competence will significantly enhance their self-assessed likelihood of successful debt resolution. The outcomes of this study will serve as a robust basis for recommending policy modifications that integrate psychological dimensions and financial education into the core of credit recovery efforts.

Previous research has extensively established the significance of financial literacy and recovery strategies as independent domains of study. Financial literacy is widely recognized as a critical determinant of sound financial behavior, encompassing knowledge, awareness, and skills in areas such as budgeting, credit management, and understanding interest rates (Siyal et al., 2024; Lu et al., 2024; Bilici & Çevik, 2023). Concurrently, the literature on recovery strategy is well-developed, focusing on institutional tactics to maximize returns from NPLs. Studies in this area have explored various dimensions, including debt relief interventions (Piskorski & Seru, 2021), the efficiency of the recovery process (Bellotti et al., 2021; Khieu et al., 2012), and the optimization of debt collection timing to minimize portfolio losses (Botha et al., 2021). Furthermore, recovery rate has been predominantly analyzed as an objective, institutional metric, often modeled using financial variables, loan characteristics, and macroeconomic factors (Wang et al., 2020;

Sopitpongstorn et al., 2021; Bruche & González-Aguado, 2010). However, despite the extensive coverage of these areas, a discernible gap remains in studies that integrate the borrower's perception of these variables, especially in relation to their motivation and ability to repay a defaulted loan. This lacuna suggests that the existing models of credit recovery may be incomplete, overlooking the critical psychological drivers inherent in the borrower's decision-making process during distress.

The principal novelty of this research lies in its integrative and perceptual shift. While prior studies have examined these variables in isolation—for instance, linking financial literacy to general financial behavior (Hermansson & Jonsson, 2021; Disney & Gathergood, 2013) or using machine learning to predict recovery rates based on loan-specific data (Bellotti et al., 2021; Lu et al., 2024)—they have largely overlooked the customer's subjective perception as the central mechanism. This study bridges this gap by constructing a novel framework that positions financial literacy and recovery strategy as direct antecedents to the recovery rate. By applying the Theory of Planned Behavior (Ajzen, 2011), it moves beyond institutional metrics to investigate the psychological and behavioral dynamics of borrowers themselves. This approach is particularly novel in the context of microfinance recovery in an emerging market, offering a human-centered complement to the traditional technical and administrative focus of credit management literature. Specifically, the research hypothesizes that a borrower's subjective belief in their financial competence and their positive evaluation of the bank's recovery tactics will synergistically enhance their confidence in successfully settling the debt. The integration of these perceptual variables into a structural model provides a unique contribution by empirically testing the behavioral drivers of debt resolution from the client's viewpoint, thereby deepening the understanding of successful credit rehabilitation.

This study employs a quantitative explanatory design using Partial Least Squares Structural Equation Modeling (PLS-SEM) as the main analytical method. A Disjoint Two-Stage Approach is applied to separate the analysis of predictor constructs (financial literacy and recovery strategy) from the outcome construct (recovery rate). This approach enables clearer examination of causal relationships by first validating the measurement models of the exogenous constructs

and subsequently using their latent variable scores to test the hypothesized paths toward the endogenous variable. Data were collected through structured questionnaires from 240 purposively selected non-performing micro and small enterprise borrowers of BRI in Bandung. This two-stage analytical process allows the testing of complex perceptual relationships and provides empirical evidence that improving borrowers' financial literacy and refining bank recovery strategies can enhance perceived credit rehabilitation outcomes.

The purpose of this research is to empirically examine the impact of Financial Literacy and Recovery Strategy on the Recovery Rate of non-performing loan customers at PT Bank Rakyat Indonesia (Persero) Tbk in Bandung. Specifically, this study aims to analyze and determine the extent to which customers' financial literacy, encompassing dimensions such as knowledge, awareness, and credit management, influences their perceived ability to repay debts. Furthermore, it seeks to investigate the role and effectiveness of the bank's recovery strategies, including debt relief interventions and the recovery process, in enhancing the recovery rate. By employing a quantitative verification method with a PLS-SEM approach, this research intends to provide empirical evidence and a deeper understanding of the key factors that drive successful credit resolution, thereby offering practical insights for the bank to design more effective, human-centered recovery programs.

METHODS

This study employs a mixed-data approach, relying primarily on primary data collected directly from a purposively selected sample of respondents. The main instrument is a structured questionnaire distributed to SME customers of PT Bank Rakyat Indonesia (Persero) Tbk in Bandung who have experienced non-performing loans. To support the analysis and provide context, secondary data are also utilized, including internal bank reports on NPL, financial statements, and other relevant documents pertaining to credit performance and recovery processes for the 2018–2023 period. The triangulation of primary perceptual data with objective secondary financial data strengthens the validity and contextual depth of the research findings.

Data was collected using a facilitated survey technique to ensure data quality and respondent understanding. A 5-point Likert scale questionnaire on Google Forms

was administered by the bank's Relationship Managers (RMs) from the Credit Restructuring and Recovery department, rather than directly by the researcher. Because these RMs already maintain relationships with the clients, they interviewed pre-identified delinquent borrowers verbally and recorded the responses in the form. This approach ensures respondents clearly understand each question and that the data comes from individuals with direct knowledge of their business and financial obligations. Moreover, the method reduces interpretation bias, increases participation among distressed borrowers, and encourages honest responses through the trust established between clients and the RMs.

The study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS to analyze relationships between latent and observable variables and to support predictive modeling aligned with the research objectives. The analysis follows a two-stage procedure. First, the outer model is evaluated to test the validity (convergent and discriminant) and reliability (internal consistency) of the construct Financial Literacy, Recovery Strategy, and Recovery Rate. Second, the inner (structural) model is examined to assess the hypothesized causal relationships and path coefficients among the latent variables. PLS-SEM is appropriate for this study because it is robust to non-normal data and effective for relatively small samples, which are common in delinquent borrower segments. The significance of relationships is tested using bootstrapping to ensure the robustness of the empirical results.

This study proposes two hypotheses based on theories of behavioral finance and credit recovery. H1: Financial Literacy positively and significantly affects Recovery Rate, as borrowers with stronger perceived understanding of credit terms, interest rates, and budgeting are more capable of making disciplined decisions to manage and repay defaulted debts. H2: Recovery Strategy positively and significantly affects Recovery Rate, since bank initiatives perceived as fair, flexible, and professionally managed, such as effective restructuring and timely relief, facilitate borrowers' ability to settle their obligations and strengthen cooperative relationships. These hypotheses address a research gap by emphasizing subjective behavioral drivers rather than relying solely on institutional metrics.

The conceptual framework (Figure 1), posits a direct causal relationship where Financial Literacy and Recovery Strategy act as independent variables that influence Recovery Rate as the dependent variable. The model suggests that a customer's inherent understanding of financial management (Financial Literacy), combined with the bank's proactive measures to manage non-performing loans (Recovery Strategy), are both critical drivers that directly contribute to improving the rate at which delinquent credit is recovered. Financially literate borrowers are more capable of understanding loan restructuring options, interest obligations, and repayment schedules. This cognitive capability reduces information asymmetry between the borrower and the bank, allowing borrowers to make more rational repayment decisions and actively participate in the recovery process. This framework moves beyond traditional institutional perspectives by integrating psychological and behavioral components, thus highlighting the borrower's subjective assessment as the key mechanism for debt resolution. Consequently, the success of credit recovery is theorized to hinge not just on the technical design of the bank's policies but also on the borrower's capability and perception of fairness. The structured model provides the theoretical basis for the empirical verification conducted using PLS-SEM.

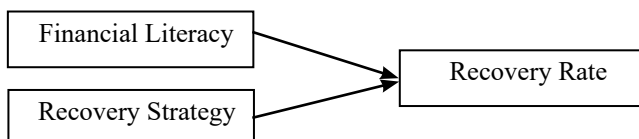


Figure 1. Research framework of financial literacy, recovery strategy, and recovery rate

RESULTS

Outer Model Evaluation

The outer (measurement) model was evaluated to assess the validity and reliability of the constructs: Financial Literacy, Recovery Strategy, and Recovery Rate. The results confirm that the model meets the required psychometric standards. Convergent validity was examined through indicator loadings and Average Variance Extracted (AVE). As shown in Table 1, all

indicator loadings exceeded the recommended threshold of 0.70, ranging from 0.803 to 0.946, indicating that the items effectively represent their respective constructs. These high loadings demonstrate strong and statistically significant relationships between indicators and their latent variables, confirming robust convergent validity and internal consistency of the measurement scale.

Convergent validity is further supported by the Average Variance Extracted (AVE) values: Financial Literacy = 0.744, Recovery Rate = 0.743, Recovery Strategy = 0.783 (Table 2). AVE assesses the degree to which indicators within a construct explain its variance. Following Hair et al. (2014), AVE values above 0.50 indicate acceptable convergent validity. Thus, all three constructs exceed this threshold, with over 74% of each construct's variance explained by its indicators, confirming strong convergent validity.

Discriminant validity was evaluated using the Fornell-Larcker Criterion, which requires a construct's square root of AVE to exceed its correlations with other constructs. As shown in Table 3, this condition is met: Financial Literacy's AVE root (0.863) exceeds its correlations with Recovery Rate (0.580) and Recovery Strategy (-0.075), while Recovery Rate (0.862) and Recovery Strategy (0.884) also surpass their correlations with other constructs. These results confirm that each construct is distinct and empirically unique, demonstrating strong discriminant validity.

The reliability of the constructs was assessed using Cronbach's Alpha and Composite Reliability. As shown in Table 4, all constructs exhibit excellent internal consistency: Financial Literacy (0.974, 0.976), Recovery Rate (0.884, 0.920), and Recovery Strategy (0.944, 0.956), all well above the 0.70 threshold. These high values confirm that the items reliably measure their intended constructs. Overall, the outer model demonstrates strong validity (convergent and discriminant) and reliability, providing a robust foundation for testing the hypothesized relationships in the inner model. The strong loading factors across the financial literacy indicators suggest that respondents consistently perceive financial knowledge, budgeting capability, and debt management understanding as closely related dimensions of financial literacy.

Table 1. Loading factor of financial literacy, recovery rate, and recovery strategy

	Financial Literacy	Recovery Rate	Recovery Strategy
AW1	0.873		
AW2	0.881		
CE1			0.879
CE2			0.889
CM1	0.867		
CM2	0.857		
DI1			0.904
DI2			0.882
IR1	0.839		
IR2	0.83		
KN1	0.863		
KN2	0.86		
KN3	0.873		
KN4	0.858		
LZ1		0.89	
LZ2		0.891	
RC1	0.879		
RC2	0.874		
RP1			0.88
RP2			0.871
RY1		0.862	
RY2		0.803	
SC1	0.861		
SC2	0.861		

Table 2. Average Variance Extracted (AVE) test result for financial literacy, recovery rate, and recovery strategy

Average Variance Extracted (AVE)	
Financial Literacy	0.744
Recovery Rate	0.743
Recovery Strategy	0.783

Table 3. Fornell-larcker criteria of financial literacy, recovery rate, and recovery strategy

	Financial Literacy	Recovery Rate	Recovery Strategy
Financial Literacy	0.863		
Recovery Rate	0.58	0.862	
Recovery Strategy	-0.075	0.339	0.884

Table 4. Cronbach's alpha and composite reliability test result of financial literacy, recovery rate, and recovery strategy

	Cronbach's Alpha	Composite Reliability	Explanation
Financial Literacy	0.974	0.976	Reliable
Recovery Rate	0.884	0.92	Reliable
Recovery Strategy	0.944	0.956	Reliable

Inner Model Evaluation

The inner (structural) model was evaluated to examine the predictive power and significance of the hypothesized relationships. The R-square for Recovery Rate was 0.484 (adjusted R-square = 0.480), indicating that Financial Literacy and Recovery Strategy together explain 48.4% of its variance (Table 5). An R-square near 0.50 is considered substantial in behavioral research, demonstrating the model's strong explanatory power, while the remaining variance is due to factors outside this study. Although the R-square value of 0.484 indicates moderate explanatory power, this level is considered acceptable in behavioral and financial behavior studies where multiple psychological and environmental factors influence decision making. The remaining unexplained variance suggests that other determinants such as borrower income stability, macroeconomic conditions, or institutional policies may also influence recovery outcomes.

The effect size (f-square) was calculated to assess the relative impact of each predictor (Table 6). Financial Literacy has a large effect on Recovery Rate ($f^2 = 0.716$), while Recovery Strategy shows a medium effect ($f\text{-square} = 0.286$). These results indicate that Financial Literacy is the dominant factor, contributing more than twice the unique explanatory power of Recovery Strategy. This highlights that improving borrowers' financial competence is the most effective strategy for enhancing recovery outcomes.

The model's predictive relevance was assessed using the Q-square statistic (Table 7), with a value of 0.353 for Recovery Rate, well above zero. This confirms that the model has strong predictive power, accurately forecasting the dependent construct beyond the sample data, and demonstrates its practical significance and utility.

Table 5. R-square and R-square adjusted test result of recovery rate

	R-square	R-square adjusted
Recovery Rate	0.484	0.48

Table 6. f-square test result of financial literacy, recovery rate, and recovery strategy

	f-square
Financial Literacy → Recovery Rate	0.716
Recovery Strategy → Recovery Rate	0.286

Table 7. Q-square Test Result of Recovery Rate

	SSO	SSE	Q ² (=1-SSE/SSO)
Recovery Rate	960.000	620.714	0.353

The overall model fit was evaluated using the Standardized Root Mean Square Residual (SRMR), yielding a value of 0.020 for both saturated and estimated models (Table 8). This is well below the 0.08 threshold indicates an excellent fit, showing minimal differences between observed and model-implied correlations and confirming that structural relationships are accurately specified.

The significance of the path coefficients was tested via bootstrapping (Table 9). Both paths are statistically significant: Financial Literacy → Recovery Rate (estimate = 0.609, $t = 14.610$, $p < 0.001$) and Recovery Strategy → Recovery Rate (estimate = 0.385, $t = 8.533$, $p < 0.001$). Both t -values exceed 1.96, confirming H1 and H2 and showing that borrowers' financial competence and perceptions of bank recovery strategies significantly enhance their ability to resolve non-performing loans. The stronger influence of financial literacy compared to recovery strategy indicates that internal borrower capability plays a more decisive role than external institutional intervention. This suggests that recovery policies may be more effective when they empower borrowers rather than relying solely on procedural collection mechanisms.

H1: The Effect of Financial Literacy on Recovery Rate

The first hypothesis (H1), that Financial Literacy positively affects Recovery Rate, is strongly supported. The path coefficient is 0.609, meaning a one-unit increase in Financial Literacy raises Recovery Rate

by 0.609 units. This relationship is highly significant ($t = 14.610$, $p < 0.001$), confirming that borrowers' financial competence is a robust and reliable predictor of successful credit recovery. This result confirms the theoretical assumption that financial capability plays a critical role in shaping borrowers' financial decision-making. According to financial behavior theory, individuals with higher levels of financial literacy are more capable of evaluating financial obligations and selecting appropriate repayment strategies. Therefore, the acceptance of H1 strengthens the argument that financial literacy is not only important in preventing loan default but also in facilitating successful credit recovery once financial distress occurs.

The strong influence of Financial Literacy is highlighted by its large effect size (f-square = 0.716), making it the most dominant predictor of Recovery Rate in the model. According to the Theory of Planned Behavior, higher financial literacy enhances perceived control over financial obligations, fostering confident, proactive, and disciplined behaviors, such as planning repayments, understanding restructuring options, and maintaining bank communication, that directly improve recovery outcomes. This study supports and extends prior research, notably Lu et al. (2024) and Siyal et al. (2024), which highlight financial literacy as key to reducing default risk and promoting responsible credit management. The construct's high composite reliability (0.976) and AVE (0.744) confirm consistent and precise measurement. Aligning perceptual findings with earlier objective evidence underscores the lasting importance of financial knowledge across the credit life cycle. For BRI, borrowers with strong understanding of budgeting, interest rates, and debt management are less likely to default and more likely to resolve credit issues, making financial education a strategic recovery tool rather than just a preparatory measure.

H2: The Effect of Recovery Strategy on Recovery Rate

The second hypothesis (H2), that Recovery Strategy positively affects Recovery Rate, is supported, with a path coefficient of 0.385, $t = 8.533$, and $p < 0.001$. This confirms that borrowers' perceptions of the bank's interventions, such as debt relief, transparent procedures, and efficient collection, significantly influence their ability to resolve debts. Although its effect is smaller than Financial Literacy, Recovery Strategy remains crucial for managerial and operational success in

credit recovery. The acceptance of H2 confirms that institutional recovery mechanisms implemented by the bank significantly influence borrowers' ability to resolve their non-performing loans. This finding supports the conceptual argument that recovery strategies are not merely administrative procedures but also behavioral interventions that shape borrower cooperation during the debt resolution process. In the context of credit risk management, effective recovery strategies reduce moral hazard and encourage borrower engagement in repayment negotiations.

The effect size (f-square) for Recovery Strategy is 0.286, indicating a medium effect. This shows that while the bank's proactive measures are important for recovery, they are secondary to borrowers' financial capabilities. The strategy's effectiveness depends on its human-centered design; when borrowers perceive interventions, such as feasible restructuring, empathetic support, and professional collections, as fair and supportive, their cooperation in repayment increases. This aligns with modern credit risk frameworks that emphasize adaptive, post-default strategies tailored to individual debtor circumstances.

This finding is consistent with previous studies on credit recovery management, which emphasize that borrower cooperation and effective recovery processes significantly improve loan recovery outcomes. For example, Botha et al. (2021) show that structured recovery strategies and optimal collection timing can increase recovery value and reduce portfolio losses. Similarly, Bellotti et al. (2021) demonstrate that information related to recovery processes and borrower interactions plays a crucial role in predicting and

improving recovery rates. In addition, Nkamnebe and Idemobi (2011) highlight that cooperative relationships between financial institutions and borrowers can enhance repayment commitment, particularly in microfinance contexts. These findings suggest that recovery programs perceived as fair, transparent, and supportive are more likely to encourage borrower cooperation and ultimately increase loan recovery performance.

Overall, the findings of this study highlight that both internal borrower capability (financial literacy) and external institutional intervention (recovery strategy) jointly influence credit recovery outcomes. However, the stronger effect of financial literacy suggests that borrower capability plays a more dominant role in determining recovery success. This indicates that recovery policies should not rely solely on enforcement or procedural collection methods but should also incorporate financial education and borrower empowerment initiatives.

For BRI, these findings validate existing strategies like rescheduling, restructuring, and persuasive field officer interventions, while highlighting that purely administrative approaches are less effective. The results emphasize the need for a human-centered recovery strategy focused on transparent communication, empathy, and collaborative problem-solving. Refining recovery protocols to be adaptive and relational is crucial for managing NPLs and maintaining positive long-term relationships with borrowers, particularly within vulnerable MSMEs. Perceived fairness and effectiveness of the strategy are key to rebuilding trust and encouraging self-motivated debt repayment.

Table 8. Model fit test result of financial literacy, recovery rate, and recovery strategy

	Saturated model	Estimated model
SRMR	0.020	0.020
d_ ULS	0.026	0.026
d_ G	0.109	0.109
Chi-square	167.698	167.698
NFI	0.950	0.950

Table 9. Significance test result of financial literacy, recovery rate, and recovery strategy

	Original sample (O)	Sample means (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Financial Literacy → Recovery Rate	0.609	0.611	0.042	14.610	0.000
Recovery Strategy → Re-covey Rate	0.385	0.387	0.045	8.533	0.000

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The Recovery Strategy dimension has the strongest impact on Recovery Rate, with a factor loading of 0.884, driven by Recovery Assistance (0.921), Collection Efficiency (0.891), and Collection Professionalism (0.888). These high loadings indicate that borrowers' perceptions of efficient, professional, and supportive collection and restructuring processes are the main drivers of credit recovery success at BRI. The findings highlight that borrower-oriented approaches, rather than structural factors like loan size, are crucial, emphasizing the strategic value of training field officers to combine efficiency with empathy.

The Sharia Compliance dimension has the lowest loading on Recovery Rate (0.622), with indicators SY1 (Preference for Sharia Products, 0.828) and SY2 (Understanding of Sharia Principles, 0.752). Although the indicators reliably measure sharia compliance, its overall influence on Recovery Rate is weaker than other factors. This suggests that adherence to sharia principles is not a primary driver of credit recovery for most non-performing borrowers, who prioritize practical aspects like payment feasibility and process efficiency. The low impact may also reflect limited borrower knowledge of sharia-based recovery alternatives.

The findings of this study generally align with the results reported in previous studies on financial literacy and credit recovery behavior. Many earlier studies suggest that borrowers with higher financial literacy tend to make more rational financial decisions and demonstrate greater responsibility in fulfilling their debt obligations. Similarly, the positive effect of recovery strategy found in this study is consistent with the general findings in credit risk management literature, which emphasize the importance of structured recovery mechanisms in improving loan repayment outcomes. However, this study highlights that financial literacy shows a relatively stronger influence compared to recovery strategies, suggesting that borrower capability may play a more dominant role in the success of credit recovery.

Recommendations

Based on the findings, this study offers recommendations for academia, practitioners, and the financial industry. Future research should deepen the

analysis of mentoring approaches in MSME credit recovery, compare soft versus conventional collection methods, and explore the adoption of Sharia principles, including the development of an Islamic recovery framework. From a theoretical perspective, this study contributes to the literature on financial behavior and credit risk management by confirming that borrower capability, particularly financial literacy, plays an important role not only in preventing loan default but also in supporting the recovery process of non-performing loans. The findings reinforce the theoretical argument that financial knowledge influences financial decision-making and repayment behavior. For BRI, the standardization of empathetic and professional recovery procedures, digital monitoring systems, and continuous solution-oriented training is advised, while Sharia compliance, though less influential, may serve as a unique value proposition through education and non-litigation mechanisms. From a managerial perspective, the findings suggest that recovery management should not rely solely on enforcement mechanisms. Instead, integrating financial literacy programs into recovery processes may significantly improve repayment outcomes among distressed borrowers. For the wider financial industry, it is essential to maintain humanistic approaches, establish national standards for ethical collection practices, and promote professional, efficient recovery as cross-institutional best practice. In the Sharia sector, greater public literacy, institutional collaboration, and the development of adaptive, competitive recovery products are crucial to strengthening trust and effectiveness in credit recovery. From a policy perspective, the findings indicate the importance of strengthening financial literacy programs at both institutional and national levels. Regulators and financial authorities may consider promoting financial education initiatives aimed at improving borrowers' financial capability, which in turn could help reduce the level of non-performing loans and support the stability of the financial system.

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