

Integrating Enterprise Risk Management (ERM) and Environmental, Social, and Governance (ESG) Risks into Balanced Scorecard (BSC) for Sustainable Performance in a Rural Bank

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ABSTRACT

The research explored how the integration as Enterprise Risk Management (ERM) based on ISO 31000 with Environmental, Social, and Governance (ESG) risk considerations into a Balanced Scorecard (BSC) framework could enhance sustainable financial performance in small financial institutions. A single-case study was conducted on Rural Bank, PT BPR “C”, while primary and secondary data were collected through questionnaires, interviews, and company documents. Risks were identified, analyzed, evaluated, and addressed in accordance with ISO 31000 principles, while ESG factors were embedded in the strategic mapping of BSC perspectives. The results reveal that environmental risks exert the most significant impact on financial outcomes, notably influencing key indicators such as Non-Performing Loan (NPL), Capital Adequacy Ratio (CAR), and Return on Assets (ROA). They highlight the urgent need for proactive risk mitigation strategies. By mapping risks to strategic objectives, the institution improves transparency, resilience, and alignment between risk management and performance measurement. The findings support extending the Resource-Based View (RBV) and Stakeholder theory, demonstrating that internal capabilities and stakeholder-focused governance can serve as critical drivers of competitive advantage and long-term value creation. The research offers practical contributions by presenting a replicable model that enable rural banks to integrate ESG risk management into their operational and strategic frameworks. However, as a single-case study reliant on self-reported measures, the findings are limited in generalizability. Future research should explore longitudinal impacts and cross-institutional applications to validate and refine the integrated ERM-ESG-BSC framework proposed.

Keywords: Enterprise Risk Management (ERM), Environmental, Social, and Governance (ESG), Balanced Scorecard (BSC), sustainable performance

INTRODUCTION

In recent years, business sustainability has garnered increasing attention across industries worldwide, driven by both regulatory mandates and shifting stakeholder expectations (Hristov & Searcy, 2025; Michalski, 2024). Moreover, companies are no longer evaluated solely on financial performance but also on their Environmental, Social, and Governance (ESG) performance, which heavily influences

stakeholder decision-making (Li et al., 2024; Zhao et al., 2023). The emphasis on non-financial disclosure, particularly through sustainability reports, reflects broader concerns about environmental degradation, social inequities, and corporate governance failures that threaten long-term business continuity (Dong et al., 2025; Yang, 2024). Notably, ESG-related risks have emerged as material risks that organizations must manage proactively to secure future success. Financial services, particularly banking, are not

exempt from these pressures. Institutions within this sector are required to demonstrate comprehensive risk management practices encompassing both traditional financial risks and emergent ESG risks, highlighting the growing complexity of contemporary risk landscapes (Ayele & Singh, 2024; Baek & Kang, 2025).

This context has compelled regulatory bodies to enforce more stringent requirements for risk management frameworks across the financial sector. Research shows that financial institutions are among the earliest adopters of Enterprise Risk Management (ERM) systems (Nguyen & Vo, 2020; Saeidi et al., 2019). Their pivotal role in economic development and the potential systemic risks posed by their failure underscore the necessity for robust risk management (Chen et al., 2019; Khafagy, 2019). In Indonesia, regulations, such as POJK No. 13/POJK.03/2015, mandate the implementation of ERM among rural banks (Bank Perekonomian Rakyat (BPR)), emphasizing the national commitment to financial stability and sustainable development. Additionally, POJK No. 51/POJK.03/2017 requires these institutions to report their sustainability performance annually, reflecting the broader alignment with Sustainable Development Goals (SDGs). Such regulatory frameworks increasingly require banks to integrate ESG risks into their ERM processes to protect stakeholder interests and achieve sustainable financial performance (Naeem et al., 2022).

However, while regulations encourage the adoption of ERM and ESG practices, effective integration remains a significant challenge, especially for small banks (Misorimaligayo et al., 2023; Capodagli et al., 2025). A notable research problem lies in the operationalization of ESG risks within conventional ERM frameworks, where traditional financial risk metrics have historically dominated (Capodagli et al., 2025). Despite advancements in ERM methodologies, small banks struggle with limited resources, technological capabilities, and expertise, creating a substantial gap between regulatory expectations and practical implementation (Bolibok, 2024; La Torre et al., 2024). Consequently, without appropriate integration strategies, these institutions face heightened vulnerability to ESG-related disruptions, liquidity crises, reputational damages, and regulatory sanctions (Defung et al., 2024; Galletta et al., 2023).

Generic solutions proposed in the existing literature recommend enhancing traditional risk management systems by incorporating ESG considerations, improving transparency through sustainability disclosures, and fostering a risk-aware organizational culture (Li et al., 2024; Liu & Xie, 2024). Financial institutions are encouraged to embed ESG indicators into internal auditing, strategic planning, and risk modeling functions (Prodanova et al., 2023; Vannoni et al., 2024). However, these recommendations often assume the presence of mature technological infrastructures and significant resource availability, which are luxuries that small banks typically do not possess (Galletta et al., 2023;

Capodagli et al., 2025). Thus, while valuable in theory, these solutions lack direct applicability to resource-constrained banking environments.

A more tailored solution emerges from the convergence of the Balanced Scorecard (BSC) framework and ERM practices (Ratri & Pangeran, 2020). By integrating risk management elements into the BSC, organizations can link strategic objectives with key performance indicators that capture both financial and non-financial dimensions, including ESG risks (Huber et al., 2025; Posch, 2020). Such integration enables banks to directly map risks to strategic outcomes, facilitating the proactive identification, monitoring, and mitigation of emerging threats. In particular, incorporating ESG risks into BSC perspectives provides a comprehensive view of organizational performance that extends beyond profit metrics. It aligns sustainability initiatives with risk mitigation strategies (Michalski, 2024; Yang, 2024). This approach promises greater agility in responding to dynamic regulatory landscapes and shifting stakeholder expectations.

The literature review offers several insights that support integrating ERM and ESG frameworks into strategic management systems, such as the BSC. For instance, embedding ESG performance into corporate strategies enhances competitive advantage (Bhandari et al., 2022). Meanwhile, another previous study has underscored the ethical imperatives of sustainable investments (Chairani & Siregar, 2021). Simultaneously, a previous study has warned that ESG risks, if unmanaged, can severely damage financial performance and investor trust (Bai et al., 2022). Moreover, Resource Dependency Theory (RDT) suggests that firms' reliance on external resources, such as customer trust and regulatory goodwill, further amplifies the importance of managing external ESG risks (Freeman et al., 2020, 2021). Collectively, these studies emphasize the need for integrated risk management approaches that accommodate both internal capabilities and external dependencies, highlighting a critical gap that remains underserved for small banks.

Despite the growing body of research, a significant gap remains in empirical studies demonstrating how small banks in emerging economies, such as Indonesia's BPRs, can practically implement integrated frameworks under resource constraints (Abdalla et al., 2022; Sibarani, 2023). Previous studies have primarily focused on large financial institutions with ample resources or examined the conceptual relationships among ERM, ESG, and strategic management, without offering actionable methodologies suitable for small-scale banking operations (Lose & Sema, 2024; Marques et al., 2024; Usman et al., 2023). Consequently, little is known about how ISO 31000-based ERM systems can be adapted to incorporate ESG risk dimensions and align them with performance measurement systems, such as the BSC, within the specific regulatory and operational context of BPRs.

The research aims to address the gap by developing and applying an integrated ERM framework based on ISO 31000 that includes ESG risk dimensions and aligns them with BSC perspectives to enhance sustainable financial performance. By focusing on PT BPR “C” as a case study, the research offers practical insights into how small financial institutions can implement risk management strategies that are both regulatory compliant and strategically aligned. The research novelty lies in operationalizing ESG risk indicators within an ERM system and systematically integrating them into the BSC, offering a replicable model for other BPRs and similar institutions (Ananta & Anwar, 2025; Lupu et al., 2022).

Furthermore, the research contributes to the academic discourse by bridging Resource-Based View (RBV) (Baek & Kang, 2025; Barney, 1991; Wernerfelt, 1984) and RDT perspectives (Del Sarto, 2025; Galletta et al., 2023; Pfeffer & Salancik, 1978), Stakeholder theory (Freeman et al., 2018; He, 2022; Soana, 2024), demonstrating how internal capabilities and external environmental factors jointly influence sustainable performance outcomes. The RBV supports the notion that internal capabilities, such as a robust ERM-ESG system, constitute strategic resources that enhance competitive advantage (Denia et al., 2024). Stakeholder theory explains that the bank’s response to external demands, such as regulations, customer expectations, and investor pressure, through ESG integration reinforces its legitimacy and strengthens business–societal relationships (Soana, 2024). The RDT suggests that integrating ESG into ERM and the BSC framework represents the bank’s strategy to reduce dependence on an external environment characterized by pressure and uncertainty (Lui & Zainulidin, 2024). The scope of the research encompasses risk identification, analysis, evaluation, treatment, and performance measurement, providing a comprehensive blueprint for building resilient and sustainable banking practices under constrained conditions. The following research question is posed to guide the research: How can ESG risks be operationalized within an ISO 31000–based ERM system and aligned with BSC perspectives to strengthen sustainable financial performance in small financial institutions? Additionally, the research contributes by offering a practical blueprint for rural banks under resource constraints, an operational model integrating ESG risks into ERM-BSC, and theoretical insights extending RBV, RDT, and Stakeholder theory.

METHODS

The research adopts a case study design, following the methodologies outlined by Carter (2024), Joseph and Gupta (2021), and Yin (2016), to provide a deep exploration into the integration of ERM and ESG risk management within a small banking institution. The case study approach is particularly suitable for capturing complex, context-dependent phenomena, allowing rich qualitative insights into

internal risk management practices of PT BPR “C” while acknowledging the limitation of generalizability inherent in case-based research (Carter, 2024; Joseph & Gupta, 2021). Following the case study design by Yin (2016), the research engages intensively with the leaders of PT BPR “C”. Communication occurs throughout key phases, including understanding performance management, implementing ERM and ESG frameworks, designing questionnaires, and collecting data. An informed consent form is obtained before participation, and all respondents are assured of confidentiality.

Data collection employs both quantitative and qualitative methods to ensure robust and triangulated findings. Quantitative data are collected through questionnaires completed by three-unit heads: the Head of Credit Division, the Head of Operations - Consumer Protection Unit, and the Division Heads of Compliance, Risk Management, Human Resources, AML/CTF/CPF-WMD, and Anti-Fraud, who are responsible for reporting to the Financial Services Authority (Otoritas Jasa Keuangan (OJK)). The questionnaire items include scaled assessments of risk probability (1–5) and impact (1–5). These questionnaires assess perceptions and evaluations of various risks based on actual operational conditions. Quantitative analysis involves numerically evaluating the probability and impact of identified risks to facilitate risk scoring. Concurrently, qualitative data are collected through an in-depth interview with the Director (CEO), who is responsible for risk management, credit, and operations at the bank. An interview protocol guides this process, focusing on ERM practices, ESG integration, and governance oversight. Data collection is conducted over a period of seven months, with triangulation achieved through a combination of questionnaires, interviews, and document reviews. These qualitative methods provide a richer interpretation of risk factors and complement numerical analyses by offering context for risk-prioritization outcomes.

Primary data collection focuses on firsthand evaluations from within PT BPR “C”. Questionnaire responses provide a structured framework and quantifiable risk data, while interviews offer nuanced insights into risk management practices, organizational culture, and regulatory compliance. Secondary data sources include the institution’s internal risk profile reports and working papers, offering documentary evidence to corroborate findings. These multiple data streams enhance the reliability of the research outcomes and minimize bias through triangulation. However, reliance on predominantly internal informants is acknowledged as a potential bias that can be mitigated by cross-checking results against publicly available OJK disclosures. Risk assessment follows the sequential stages of risk identification, risk analysis, risk evaluation, and risk treatment, as prescribed by ISO 31000 standards (Fraser et al., 2021; Hopkin, 2018; Norimarna, 2021; Woods, 2022). Importantly, the research expands the traditional

scope of ERM by embedding ESG risks into the risk identification stage, aligning with recommendations for comprehensive and integrated risk frameworks (Adisti et al., 2024; Ananta & Anwar, 2025). The ESG factors are operationalized as distinct risk types, and their corresponding indicators are incorporated into the risk registers.

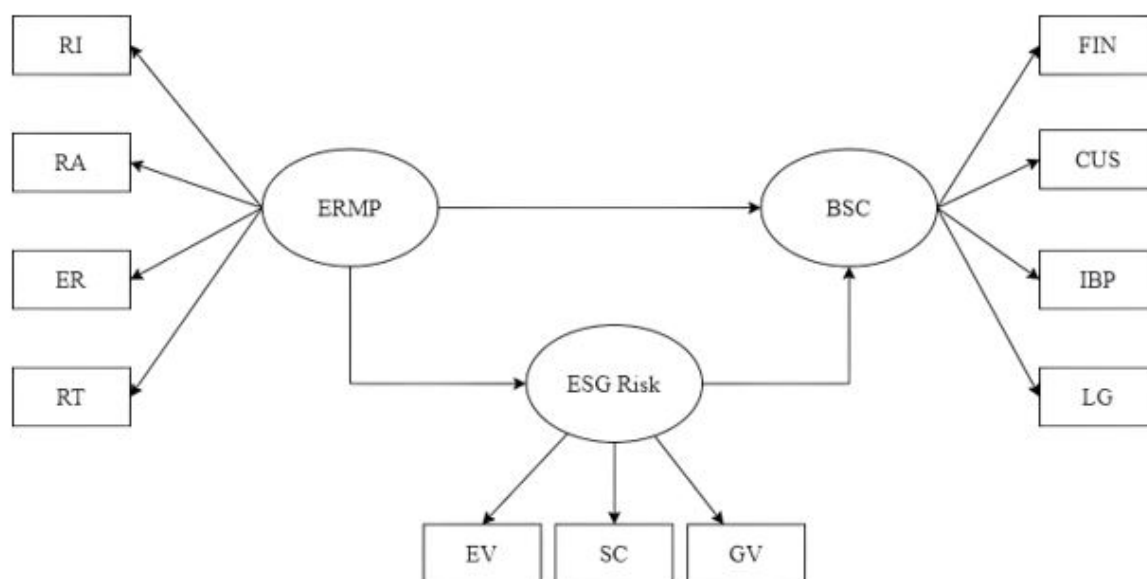
The research model underpinning the research is illustrated in Figure 1. It depicts the integration of ESG risk dimensions into ERM Processes (ERMP), subsequently aligned with performance evaluation through the BSC perspectives: financial, customer, internal business process, and learning and growth (Dong et al., 2025; Samiun & Damau, 2024). This alignment ensures that strategic objectives are assessed not only by financial performance but also by their exposure to ESG-related vulnerabilities, promoting a sustainable BSC approach (Ananta & Anwar, 2025; El Fallahi et al., 2023; Hristov & Searcy, 2025).

Risk types and indicators are classified based on internal and external organizational contexts. Internal risks are drawn from the regulatory framework stipulated in POJK No. 13/POJK.03/2015, defining specific risk categories applicable to rural banks based on their capital structure and business scale. These categories include credit, liquidity, operational, compliance, and strategic risks, each of which is detailed into operationalized indicators. External risks, by contrast, reflect macroeconomic, microeconomic, and market dynamics, structured according to Porter's Five Forces framework. ESG risks are identified by adapting the sustainability indicators proposed by Ielasi et al. (2023) to capture the ESG dimensions relevant to banking operations. This classification scheme is detailed in Table 1 (see Appendices).

Risk impact and probability measurements are customized to reflect the specific operational context of PT BPR "C". Impact criteria are developed through consultations with bank executives and historical performance analysis. Four impact categories are defined: profit decline, service delay, performance degradation, and reputational damage. These categories and their severity gradations are outlined in Table 2 (see Appendices). The scoring rule is defined as multiplying impact (1–5) by likelihood (1–5) to produce risk scores ranging from 1 to 25.

Probability criteria are tailored to the bank's operational rhythms, using a six-month (semester-based) observation window to define likelihood levels, as shown in Table 3 (see Appendices). This six-month horizon is chosen to align with OJK's reporting cycle and internal risk committee reviews. It provides a balance between short-term monitoring and longer-term strategic oversight.

Determining the risk level involves combining likelihood and impact scores using a standardized matrix, adapted from ISO 31000 recommendations and modified to reflect the operational realities of PT BPR "C". The risk level matrix categorizes risks into five levels—very low (1–5), low (6–10), medium (11–15), high (16–20), and very high (20–25)—facilitating the prioritization of risk treatment. Events scoring "very high" are flagged for immediate mitigation actions, while "very low" risks are deemed tolerable or subject to monitoring. The executive leadership of PT BPR "C" set the risk appetite line during board meetings, taking into account capital adequacy, regulatory compliance, and tolerance for reputational risk. Clear decision rules guide the transition from inherent risk scores to residual risk scores after treatment. The risk level matrix is presented in Table 4 (see Appendices).



Note: RI: Risk Identification; RA: Risk Analysis; ER: Risk Evaluation; RT: Risk Treatment; FIN: Financial; CUS: Customer; IBP: Internal Business Process; LG: Learning and Growth; EV: Environmental; SC: Social; and GV: Governance.

Figure 1 Research Model
Source: Authors' Works

Risk mapping visualizes the spread and severity of risks across the organization. The matrix plotted identifies risks along the likelihood and impact axes, with a risk appetite line set by executive leadership in PT BPR “C”. Risks above the appetite line require immediate or proactive action, whereas those below it can be tolerated with minimal intervention. The graphical risk matrix used adheres to ISO 31000 guidelines but is customized to accommodate the institution’s capacity constraints and operational scale. The risk mapping framework is depicted in Table 5 (see Appendices).

By embedding ESG dimensions into the ERM framework and aligning risk assessment outcomes with the BSC performance perspectives, the researchers advance a strategic and forward-looking approach to risk management that is particularly suitable for small financial institutions. ESG factors are systematically integrated throughout the risk identification, evaluation, and treatment stages, encompassing environmental compliance, employee well-being, and governance-related reputational exposure. These dimensions are designed to influence both inherent and residual risk scoring, thereby ensuring that sustainability criteria are embedded within the organization’s overall risk logic. Furthermore, the integration with the BSC operationalizes ESG-linked risk outcomes by translating them into measurable performance indicators across the financial, customer, internal process, and learning and growth perspectives.

This alignment underscores how sustainability considerations are not merely peripheral but central to managerial decision-making and performance monitoring. Consequently, the framework demonstrates the strategic convergence between sustainability imperatives and financial objectives, reinforcing capacity of PT BPR “C” to build a more resilient and sustainable business model.

RESULTS AND DISCUSSION

The research introduces a strategy map for PT BPR “C”, constructed using the BSC framework to illustrate the interconnected cause-and-effect relationships among financial, customer, internal business process, and learning and growth perspectives (Abueid et al., 2023; Bshayreh et al., 2024). Grounded in the strategy map concept by Kaplan and Norton (2004), the framework aligns strategic goals with performance indicators, fostering coherence between vision and execution. It also serves as a strategic tool for integrating ESG-oriented risk management (Hasan & Hasan, 2024; Michalski, 2024). Results are derived from this structure, showing how sustainability and innovation enhance financial outcomes (Ayele & Singh, 2024). In particular, the strategy map illustrates how environmental risks directly impact key financial Key Performance Indicators (KPIs), including the Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL) levels, and Return on Assets (ROA).

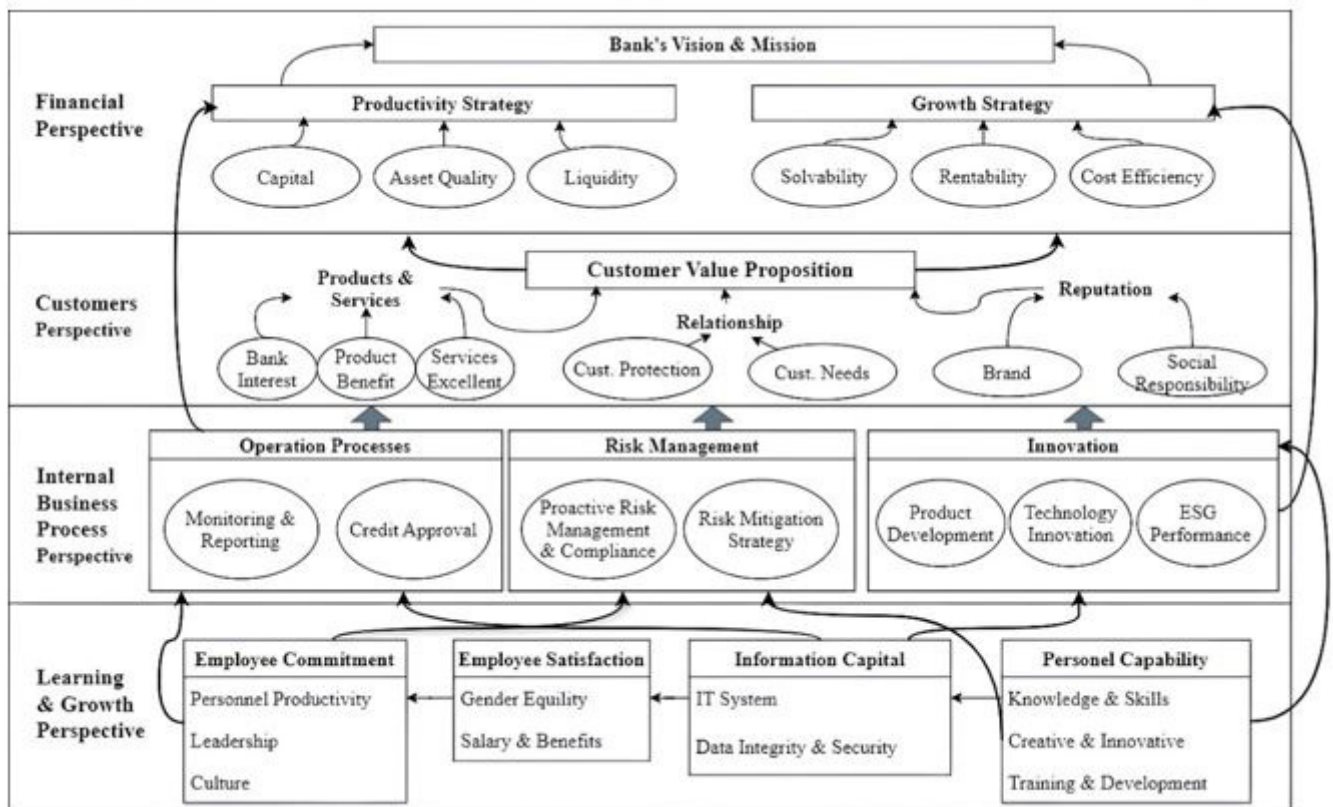


Figure 2 Strategy Map
Source: Survey and Interview Results

Figure 2 illustrates the strategy map, which was constructed based on interviews with the Compliance and Risk Management Officers. Its foundation lies in the learning and growth perspective, comprising strategic objectives, such as personnel capability, information capital, employee satisfaction, and employee commitment. Improvements in personnel capabilities are expected to enhance the institution's information capital, including Information Technology (IT) systems and data security measures, subsequently bolstering employee satisfaction by easing workflows and facilitating operational processes. Elevated employee satisfaction, supported by practices promoting gender equality and competitive compensation, is anticipated to strengthen employee commitment, as measured by KPIs. Furthermore, a strong organizational culture fosters employee loyalty and leadership, reinforcing the institution's ability to achieve its strategic aims. These improvements in the learning and growth layer are causally linked to downstream performance gains in financial KPIs, such as CAR, LDR, and ROA.

Building upon learning and growth, the internal business process perspective outlines strategies focused on operational processes, risk management, and innovation. Operational processes, such as robust credit approval and monitoring systems, have a direct impact on customer value and productivity from a financial perspective. In risk management, PT BPR "C" emphasizes proactive mitigation strategies and enhanced compliance, aligning with contemporary best practices in enterprise risk management (Ananta & Anwar, 2025; Joseph & Gupta, 2021). Innovation processes incorporate product development, ESG performance enhancements, and technological upgrades, all aimed at increasing customer satisfaction and supporting the institution's growth trajectory. The customer perspective is divided into objectives focusing on product and service quality, customer relationships, and reputation, collectively shaping the customer value proposition that drives productivity and growth strategies within the financial perspective. This strategic map and its operationalization through the BCS structure are detailed in Table 6 (see Appendices).

Risk identification at PT BPR "C" is systematically carried out to capture potential threats that can impede business objectives. Risks are categorized into three groups: ESG risks, bank-specific risks, and external risks. ESG risks, encompassing ESG dimensions, are identified using indicators adapted from Ielasi et al. (2023). Bank risks include credit, liquidity, operational, compliance, and strategic risks, classified according to the risk framework established by POJK No. 13/POJK.03/2015. External risks are defined based on macroeconomic, microeconomic, and competitive market forces per Porter's Five Forces framework. Recognizing the role of external dependencies aligns with RDT (Freeman et al., 2020), which emphasizes how external stakeholders and conditions shape an organization's risk exposure. Table 7 (see Appendices) summarizes the integration

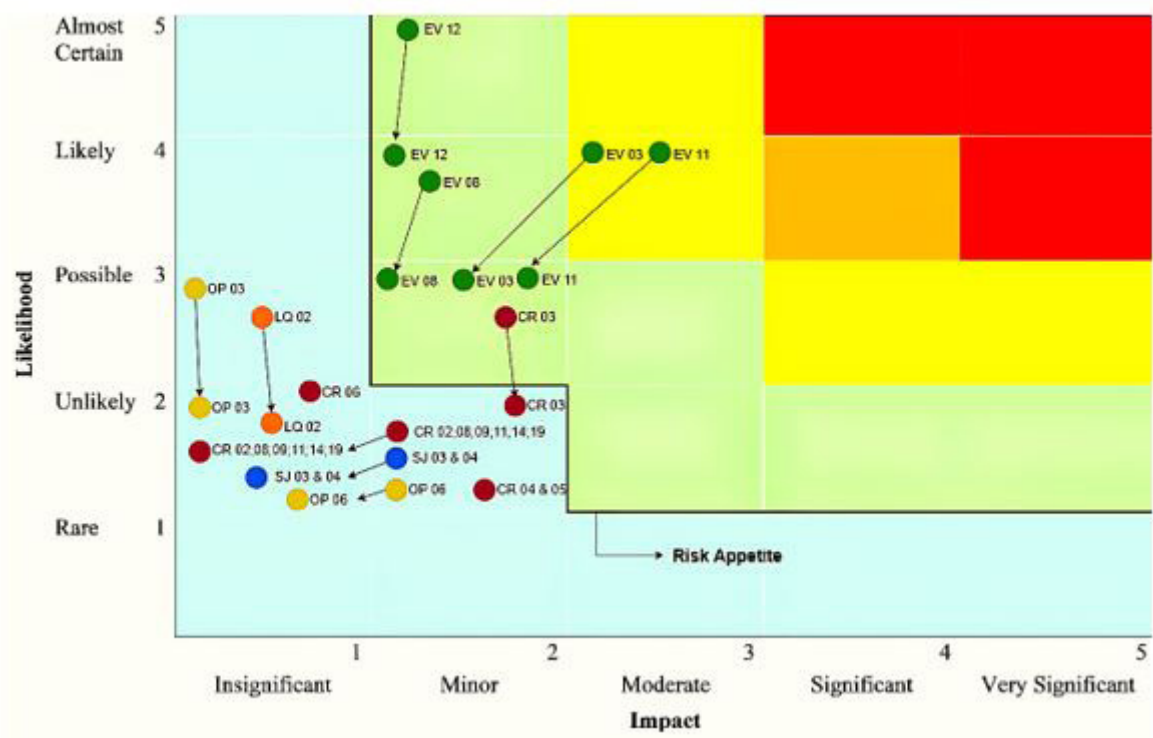
of risks across the four BSC perspectives, explicitly identifying which risk types affect financial KPIs (CAR, NPL, ROA, and others) versus customer, process, and learning outcomes.

The risk assessment process quantifies risk events across four impact dimensions: financial, service, performance, and reputation. Utilizing ISO 31000-based scoring, the combined impact-likelihood scores are plotted on risk maps (Figures 3–6). Financial impact, specifically profit decline, emerges as the most critical threat, with environmental risks (EV 03, EV 11) scoring within the "Medium" zone (score = 12), warranting prioritized mitigation. Credit risks are predominantly "Very Low" to "Low," yet clusters such as CR 02, CR 08, and CR 19 show repeated mapping across all impact types, indicating systemic vulnerability. Reputation and social risks, notably SC-08, display elevated likelihood but low consequence, remaining within risk appetite. Service and performance-related risks (OP 03, SJ 03) align closely with operational inefficiencies. These mappings enable focused mitigation planning, which subsequently reduces residual scores to align with defined appetite and regulatory targets in PT BPR "C", particularly stabilizing CAR, reducing NPL exposure, and supporting ROA improvement.

The financial risk mapping in Figure 3 highlights environmental risks, specifically EV 03 and EV 11, as the most significant inherent threats due to their substantial financial impact. However, these risks have been effectively mitigated through residual risk treatment, placing them within the institution's risk appetite. Credit and operational risks generally have low inherent scores, with corresponding residual risks well managed. This result suggests that the risk management system at PT BPR "C" has successfully minimized and stabilized financial exposure, in line with its ESG-driven strategy.

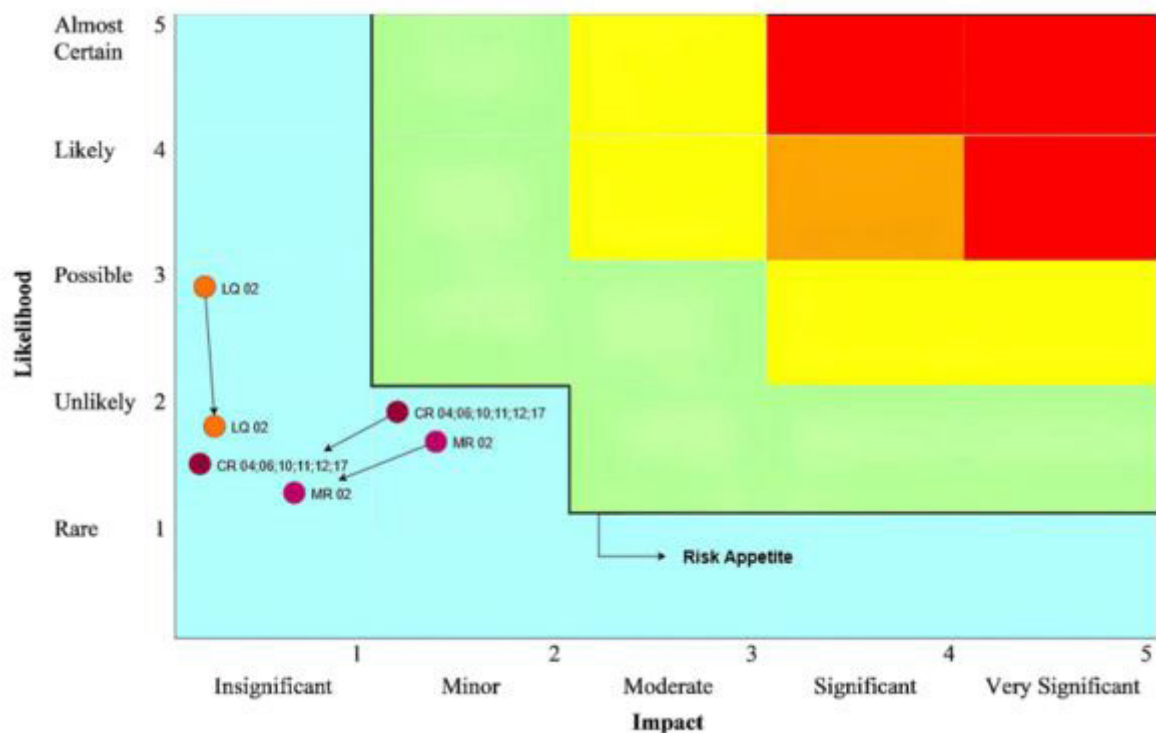
According to Figure 4, all risks on this service impact map fall within the acceptable boundaries of risk appetite in PT BPR "C". There are no medium or high risks identified. This result suggests that existing controls are largely effective, and residual risks are well-aligned with the bank's service continuity strategy. Further actions should focus on continuous monitoring and periodic stress testing rather than aggressive mitigation.

Figure 5 demonstrates that the performance-related risk profile in PT BPR "C" remains well-managed. Nonetheless, environmental risk (EV 08) and social risk (SC 08) exhibit relatively high likelihood levels, which may contribute to inefficiencies if not continuously monitored. These observations highlight the importance of strengthening environmental initiatives and stakeholder engagement as part of ongoing mitigation efforts. In Figure 6, reputation-related risks are effectively controlled, with all mapped events falling within the defined risk appetite. Both social and credit risks have low impact scores. However, in SC 08, a higher probability warrants sustained monitoring and reinforced transparency to



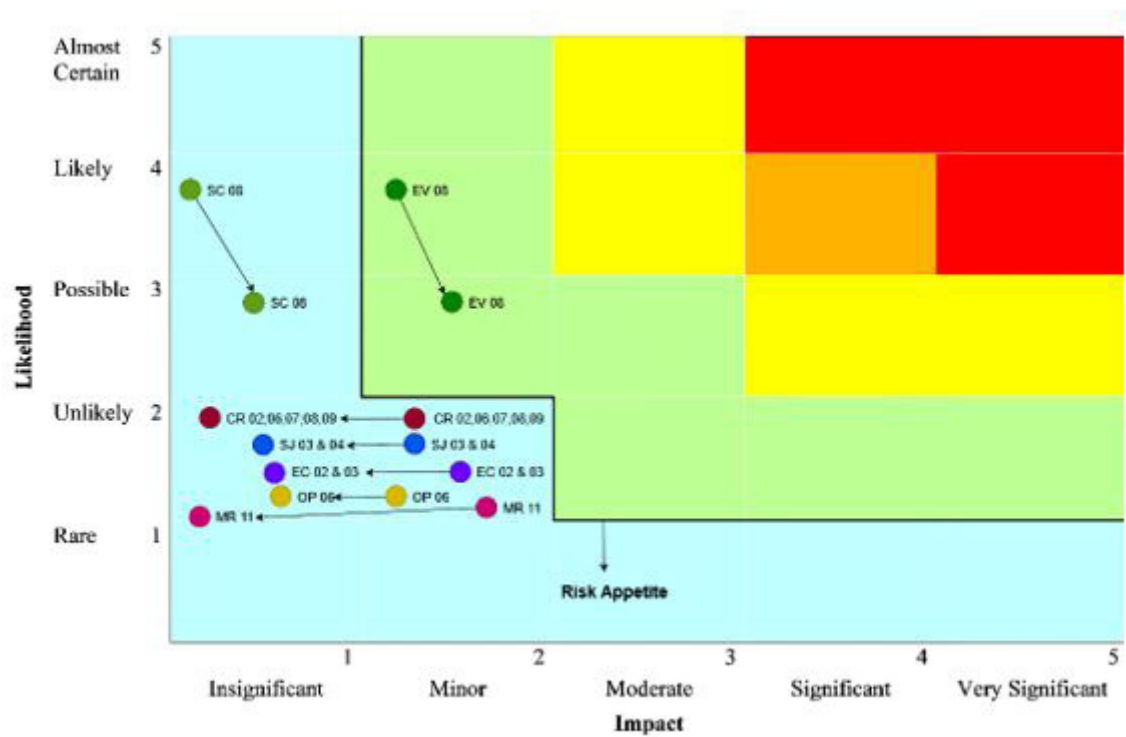
Note: EV= Environmental Risk, CR= Credit Risk, LQ= Liquidity Risk, OP= Operational Risk, and SJ= Strategic Risk.

Figure 3 Inherent and Residual Risk Map (Financial Impact)
Source: Survey and Interview Data



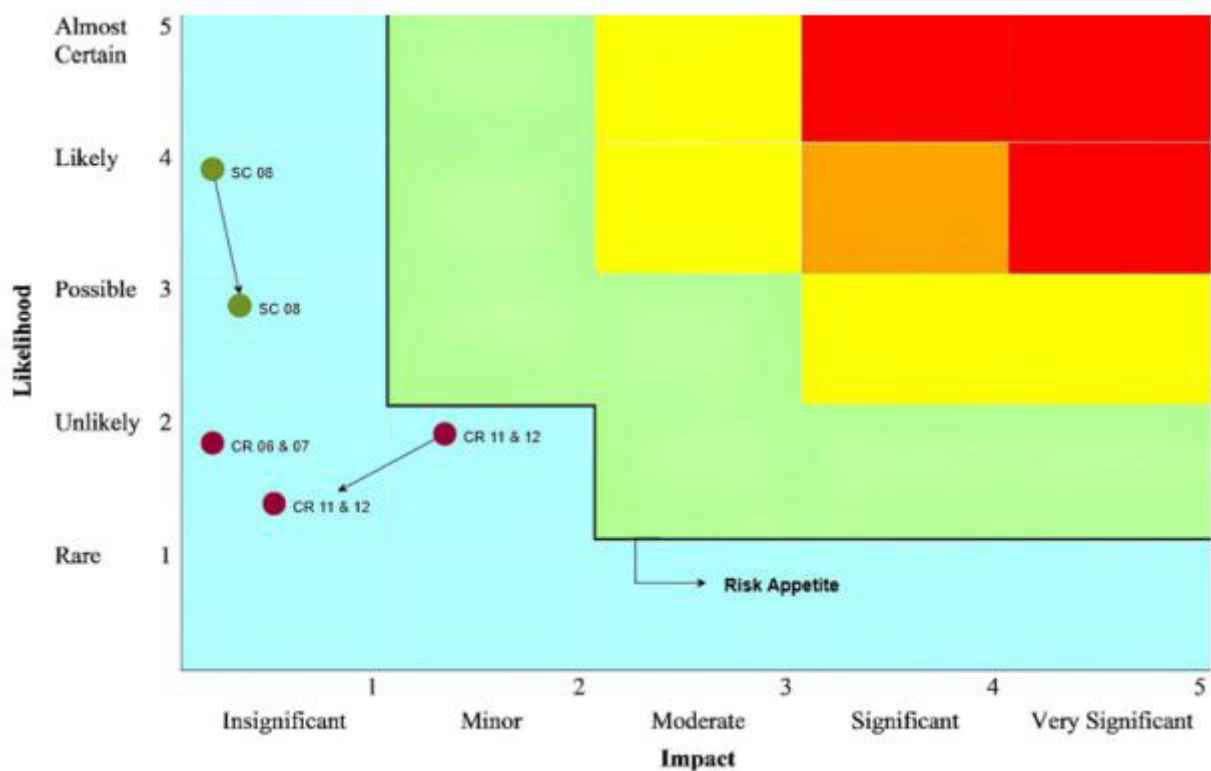
Note: EV= Environmental Risk, CR= Credit Risk, LQ= Liquidity Risk, and MR= Market Risk.

Figure 4 Inherent and Residual Map (Service Impact)
Source: Survey and Interview Data



Note: EV= Environmental Risk, SC= Social Risk, GV= Governance Risk, CR= Credit Risk, LQ= Liquidity Risk, OP= Operational Risk, SJ= Strategic Risk, EC= Economic Risk, and MR= Market Risk.

Figure 5 Inherent and Residual Risk (Performance Impact)
Source: Survey and Interview Data



Note: SC = Social Risk; CR = Credit Risk.

Figure 6 Inherent and Residual Risk Map (Reputation Impact)
Source: Survey and Interview Data

uphold public trust and reputational stability.

Medium-level risks are predominantly environmental, notably EV 03 and EV 11, which concern the use of fossil fuels in operational and employee activities, exacerbating carbon emissions and environmental degradation. These risks score 12, highlighting their strategic importance. Low-level risks include environmental risks (EV 08 and EV 12), related to reliance on non-renewable energy sources and vulnerabilities to Perusahaan Listrik Negara (PLN), as well as electricity supply disruptions. Additionally, credit risk (CR 03), which indicates a high credit-to-total productive assets ratio, is classified as low with a score of 6. Very low-level risks, though below critical thresholds, remain a focus due to their potential cumulative impact and include various credit, strategic, operational, and liquidity risks, each detailed in Table 1 (see Appendices). Then, a concise summary of inherent vs residual scores is presented in Table 8 (see Appendices).

Risk evaluation facilitated prioritization by aligning analyzed risks with predefined criteria detailed in Table 4 (see Appendices). Medium-level environmental risks (EV 3 and EV 11) are prioritized for immediate mitigation, given their potential to materially impair financial and reputational performance if left unaddressed. Secondary priorities include low-level environmental (EV 08, EV 12) and credit (CR 03) risks, while very low-level risks are considered for longer-term monitoring and incremental mitigation efforts. The use of a structured evaluation framework ensures that decision-making regarding risk treatment is systematic, transparent, and aligned with both regulatory expectations and strategic objectives.

Risk treatment strategies are formulated to minimize the probability and impact of prioritized risks. For environmental risks (EV 03, EV 08, EV 11, EV 12), mitigation measures include initiatives to reduce fossil fuel usage, such as transitioning operational vehicles to electric models and promoting energy-saving practices within offices. These actions aim to reduce carbon emissions and operational vulnerabilities, align with ESG goals, and enhance organizational resilience (Bolibok, 2021; Breitenstein et al., 2021). A long-term strategic goal involves investing in solar energy solutions to decrease reliance on external electricity providers. The reduction of EV 03 and EV 11 scores from “Medium” to “Low” demonstrates effective alignment of environmental risk treatment with both regulatory expectations and performance objectives (CAR and ROA).

For credit risks (CR 02, CR 03, CR 04, CR 05, CR 08, CR 09, CR 11, CR 14, CR 19), treatment includes enhanced credit monitoring, restructuring problematic loans where feasible, and reinforcing pre-loan assessment criteria to prioritize environmentally and socially responsible borrowers. Regular debtor site visits and credit performance monitoring are emphasized as proactive steps to minimize NPLs, supporting financial stability and regulatory

compliance (Orazalin et al., 2024).

Strategic risks (SJ 03 and SJ 04) are addressed through initiatives to improve operational performance and align business realization with strategic plans. Outreach programs targeting community financial literacy are introduced to enhance customer acquisition and engagement. Then, operational risks (OP 03 and OP 06) relating to product diversity and workforce competencies are mitigated by refining product offerings based on customer feedback and promoting continuous employee training and certification.

Liquidity risks (LQ 02), primarily related to the ratio of liquid assets to current liabilities, are mitigated through cautious liquidity management strategies and by maintaining adequate buffers to absorb market shocks. By strengthening liquidity positions, the institution aims to better weather external economic fluctuations and maintain operational stability (Saliba et al., 2023). In addition to buffer enhancement, PT BPR “C” implements daily liquidity monitoring, scenario-based stress testing, and stricter controls on funding mismatches. These measures reduce the likelihood of short-term cash shortfalls and ensure that essential services remain uninterrupted during periods of heightened volatility. The improved liquidity profile also supports regulatory compliance and reinforces customer confidence in the bank’s operational resilience.

Table 8 (see Appendices) outlines the inherent and residual risk levels across environmental, credit, operational, strategic, and liquidity domains. Following the implementation of targeted mitigation strategies, medium-level environmental risks (EV 03 and EV 11) are significantly reduced to low levels. All other risks, including those related to credit concentration (CR03 to CR19), operational inefficiencies (OP03, OP06), strategic misalignment (SJ03, SJ04), and liquidity (LQ02), demonstrate very low residual risk levels. These outcomes reflect improved internal controls and systematic risk responses. As residual risk levels decrease, they align more closely with the defined risk appetite in PT BPR “C”. This alignment enhances the institution’s resilience and supports long-term financial sustainability. Furthermore, the structured integration of ESG in risk mapping enhances compliance and supports ESG performance objectives.

These findings reaffirm the critical role of integrated ERM and ESG risk management within small financial institutions. As indicated by Brik (2024) and Jasni and Yusoff (2021), robust internal governance and proactive environmental risk management significantly enhance organizational resilience and financial performance. In the case of PT BPR “C”, alignment with BSC objectives is evident in measurable outcomes, including maintaining CAR above regulatory minimums, reducing NPL exposure, and stabilizing ROA. This embedding of risk considerations fosters a proactive culture that supports sustainable business success.

The research findings provide compelling evidence that integrating ERM and ESG risks within a

BSC framework can enhance the sustainable financial performance of small banking institutions such as PT BPR “C”. Meanwhile, results are limited to a single case. They suggest that systematic integration of ESG into ERM-BSC supports regulatory compliance, operational resilience, and stakeholder trust. This integrated approach also encourages continuous monitoring, improves transparency in decision-making, and reinforces long-term institutional sustainability.

The strategy map developed (Figure 2) effectively demonstrates the interconnectedness of learning and growth, internal business processes, customer relationships, and financial outcomes. Embedding ESG risks within this strategic framework allows PT BPR “C” to visualize how ESG factors permeate multiple performance dimensions. This approach aligns with Alsalamy et al. (2023) that ERM facilitates the systematic identification, monitoring, and mitigation of downside risks, thereby aligning risk management with long-term value creation. Moreover, by linking ESG risks directly to BSC perspectives, the researchers reinforce the idea that sustainability considerations must be integral to strategic planning rather than treated as externalities.

The risk identification process highlights the multidimensional risk exposure faced by small banks. It is consistent with the observations by Bolibok (2021) and Saliba et al. (2023), who have emphasized the layered risk environment in financial institutions. ESG risks, bank-specific operational risks, and external economic and market risks are all mapped systematically to the BSC perspectives (Table 7). For example, environmental risks (EV 3 and EV 11) are mapped onto internal business processes and learning and growth perspectives, demonstrating how environmental inefficiencies can directly impact employee satisfaction, innovation, and operational processes. This comprehensive risk mapping extends the RBV theory by illustrating how internal competencies, such as environmental stewardship and employee commitment, can serve as valuable strategic assets, thereby enhancing organizational resilience.

The risk analysis findings (Figures 3–6) also confirm that environmental risks have a pronounced financial impact, particularly on operational costs and service continuity. These findings resonate with Breitenstein et al. (2021) and Brik (2024), who have demonstrated that environmental negligence increases exposure to operational and credit risks. By quantifying these risks and incorporating them into the risk matrix, PT BPR “C” can effectively prioritize interventions. The medium-level risks, especially those associated with fossil fuel reliance, are recognized as critical due to their potential to undermine sustainability reporting and financial performance. The approach of embedding ESG risks into traditional risk matrices addresses the challenge noted by Denia et al. (2024) regarding the difficulty of quantifying qualitative ESG factors, emphasizing the need for continuous refinement of risk assessment methodologies.

In terms of risk evaluation and prioritization, the structured use of a modified ISO 31000 matrix enables clear differentiation between high-, medium-, low-, and very low-risk events (Table 4 in Appendices). Risk treatment decisions, particularly the commitment to transitioning towards renewable energy sources and the enhancement of credit risk management strategies, demonstrate proactive risk governance practices consistent with ESG integration frameworks advocated by Ananta and Anwar (2025) and Alsalamy et al. (2023). This proactive orientation not only mitigates financial risks but also contributes to reputational resilience and long-term investor confidence, as supported by Saliba et al. (2023).

Theoretical implications are multifold. First, operationalizing ESG risk factors within the ERM framework and aligning them with strategic objectives through BSC, the researchers extend RBV theory (Barney, 1991; Denia et al., 2024; Wernerfelt, 1984). It illustrates how internal resources, such as environmental responsibility initiatives, governance improvements, and employee engagement strategies, can be strategically leveraged to build competitive advantages and improve sustainable performance (Algeri et al., 2025; Zikriani et al., 2025). Furthermore, the findings reinforce Stakeholder theory (Aevoae et al., 2023; Freeman et al., 2018; He, 2022), demonstrating that satisfying stakeholder demands for transparency, sustainability, and ethical governance not only fulfills ethical obligations but also strengthens organizational legitimacy and financial resilience (Liu, 2024; Soana, 2024). The research also contributes to RDT by showing how rural banks, which typically operate with constrained internal resources, respond to external institutional pressures, such as regulatory ESG mandates and investor expectations, by adapting their internal governance and risk management systems (Del Sarto, 2025; Pfeffer & Salancik, 1978). The integration of ESG risks into ERM and BSC frameworks can be interpreted as a strategic effort to reduce environmental uncertainty and secure access to critical external resources, including legitimacy, capital, and public trust.

Moreover, the structured incorporation of ESG into decision-making processes demonstrates how organizations manage their dependencies through structural adjustments, such as risk disclosures, ESG performance alignment, and compliance systems, to maintain stability in a volatile external environment (Lui & Zainuldin, 2024). This perspective underscores the dynamic interplay between environmental pressures and organizational adaptation, supporting the notion that sustainability strategies are as much about managing external dependencies as they are about internal competencies.

Moreover, integrating ERM and BSC provides a pragmatic and comprehensive framework for embedding risk management into strategic execution, supporting the assertions of Kusriani and Sahraen (2021), Safitri and Pangeran (2020), and Tokede and Pangeran (2024). By structuring risk information

within strategic planning processes, PT BPR “C” has created mechanisms for bottom-up risk communication and continuous feedback loops. This alignment enhances strategic adaptability, a crucial capability in the face of evolving regulatory environments and dynamic market conditions (Denia et al., 2024).

The integration of ESG risks into the ERM-BSC framework can be theoretically positioned at the intersection of RBV, Stakeholder theory, and RDT. From the RBV perspective, ESG-aligned risk management systems constitute an intangible strategic resource that enhances competitive advantage by improving adaptability, innovation, and legitimacy (Barney, 1991; Denia et al., 2024). Stakeholder theory adds a normative lens, emphasizing that banks must align their strategies not only with internal goals but also with the evolving expectations of external stakeholders regarding ethical governance, transparency, and sustainability (Freeman et al., 2020; He, 2022; Soana, 2024). Meanwhile, RDT provides an explanatory mechanism for how external pressures, such as ESG regulations, capital market expectations, and reputational concerns, influence internal structural adjustments within resource-constrained institutions like BPRs (Del Sarto, 2025; Lui & Zainulidin, 2024; Pfeffer & Salancik, 1978). Thus, by embedding ESG risk indicators into strategic performance systems, rural banks are not merely complying with external demands but are actively reconfiguring their internal capabilities to maintain autonomy, secure critical resources, and build resilience in a dynamic institutional environment.

Practical implications of the research are significant. The methodology outlined, combining ESG risk identification, ISO 31000-based risk assessment, and BSC alignment, provides a replicable model for other small financial institutions seeking to integrate sustainability into their core operations. For policymakers, the research emphasizes the importance of tailoring regulatory frameworks to support the integration of ESG risks within ERM systems, particularly for smaller institutions with limited resources. In practice, implementation success depends on three enablers: governance ownership at the board and executive levels; reliable data systems for ESG and risk monitoring; and continuous staff training to sustain competence.

Additionally, the risk treatment strategies proposed in the research suggest concrete pathways for banks to manage ESG-related exposures effectively. Initiatives, such as transitioning to renewable energy, incorporating ESG criteria into credit assessments, enhancing community engagement, and strengthening operational risk controls, collectively contribute to building more resilient, future-ready financial institutions. These initiatives, while context-specific, can be generalized into a practical checklist for BPRs. A practical checklist for BPRs to replicate ERM-ESG-BSC integration begins by establishing clear governance ownership – ideally via a risk committee under board oversight – and systematically identifying

risks using the ISO 31000 stages, while explicitly embedding ESG dimensions. Next, there are defining impact–likelihood criteria and a risk-appetite line with executive approval and mapping the resulting risks to the financial, customer, internal-process, and learning-and-growth perspectives in BSC. The next step is to prioritize inherent versus residual risks and document targeted treatment actions, explicitly linking risk outcomes to key performance indicators such as CAR, NPL, ROA, and LDR. Next, the steps are to build a monitoring system with data dashboards, conduct periodic reviews, and invest in continuous staff training focused on integrating ESG risks. Finally, the last step is to report outcomes transparently to regulators and stakeholders, and to institutionalize feedback loops and periodic reassessments to refine governance, metrics, and controls over time iteratively.

The research confirms that integrating ERM with ESG risk management within a BSC framework can enhance the ability of small financial institutions to achieve sustainable performance outcomes. By extending RBV and Stakeholder theory perspectives, the research underscores the strategic value of internal capabilities and stakeholder-centric governance in navigating complex risk environments. The practical roadmap for PT BPR “C” demonstrates how banks can align risk management with strategic goals, enhance resilience, and strengthen stakeholder trust.

CONCLUSIONS

The research demonstrates that integrating ERM based on ISO 31000 with ESG risk considerations into the BSC framework can significantly enhance the sustainable financial performance of small financial institutions, such as PT BPR “C”. The findings reveal that ESG risks, particularly environmental factors, play a critical role in influencing operational and financial stability. By systematically identifying, analyzing, and treating these risks and mapping them to strategic objectives within the BSC, PT BPR “C” can align risk mitigation strategies with performance management, notably stabilizing CAR, reducing NPL levels, and supporting ROA improvements.

The research contributes to the literature by extending the RBV and Stakeholder theory, emphasizing that internal competencies, such as ESG performance and strategic risk governance, are critical sources of competitive advantage. It also highlights that satisfying stakeholder expectations regarding sustainability can simultaneously mitigate risks and create long-term value. Practically, the integrated approach provides a replicable model for small banks facing increasing sustainability and regulatory pressures. To support implementation, the researchers conclude with a practical checklist, as explained in the discussion section, which outlines key areas (governance ownership, data systems, staff training, risk mapping, and KPI linkage) that BPRs can adapt to align ERM and ESG strategies with performance management.

While the research provides valuable insights, it also acknowledges limitations related to its single-case design and reliance on self-reported assessments. As a single case study, the findings may not be universally generalizable to all small banks or across different regional contexts. The reliance on subjective assessments during risk identification and evaluation introduces potential biases, although triangulation with multiple data sources mitigates this to some extent. Future research can expand on the research by conducting multi-case analyses across diverse banking environments and by employing longitudinal designs to assess the long-term impacts of integrated ERM and ESG strategies. Such approaches will strengthen the external validity of findings and provide deeper insights into dynamic risk–performance interactions. Overall, the research highlights the importance of financial institutions incorporating ESG considerations into their core risk management and strategic frameworks to ensure resilience, compliance, and sustainable growth.

AUTHOR CONTRIBUTIONS

Concepted the research and designed the ISO 31000–ESG–BSC framework, research questions, and analysis plan, N. P. G. R.; Coordinated access and collected questionnaires, interviews, and institutional documents at PT BPR ‘C’ under informed-consent procedures, N. P. G. R.; Developed the risk-register taxonomy, 1–5 scoring matrices, and templates for risk mapping and BSC linkage, N. P. G. R.; Conducted risk scoring (impact × likelihood), generated risk maps and before/after residual summaries, and triangulated results, N. P. G. R.; Drafted the manuscript and prepared tables/figures/appendices, N. P. G. R.; Led the study design and refined the ERM–ESG–BSC integration logic, sampling approach, and analytical thresholds including the risk-appetite setting, P. P.; Drafted and revised the manuscript and the methods/results/appendices, P. P.; and Standardized tables/figures/captions and led the response-to-reviewers revisions, P. P.

DATA AVAILABILITY

Due to the confidentiality and banking secrecy obligations, supporting data are not available.

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APPENDICES

Table 1 Risk Type and Indicators

Risk Classification	Risk Type	Risk Indicators
Bank Risk	Credit Risk (CR)	Asset portfolio composition and credit concentration level
		Asset quality
		Funding strategy
		Policies and procedures
	Liquidity Risk (LQ)	Composition and concentration of assets and liabilities
		Vulnerability to funding needs and access to funding sources
		Banking system scenario
	Operational Risk (OP)	Business and institutional complexity
		Human resources
		Information Technology (IT) implementation
External Risk	Compliance Risk (CO)	Legal behaviours
		Organizational behaviours
		Bank business activities
		Weaknesses factors in legal aspects
	Strategic Risk (SJ)	Litigation
		Procurement of new products/activities
		Funding standard
		Target achievement
		Performance change
	Economic Risk (EC)	Government policy
		Macroeconomics
		Microeconomics
ESG Risk	Market Risk (MR)	Porter's Five Forces
	Environmental Risk (EV)	Energy
		Water
		Materials
		Emissions
		Waste
	Social Risk (SC)	Environmental management system
		Employee
		Career development and training
		Working conditions
	Governance Risk (GV)	Community
		Management

Source: Review Results

Table 2 Impact Criteria Level

Impact Area	Insignificant (1)	Minor (2)	Moderate (3)	Significant (4)	Very Significant (5)
Profit Decline	Profit decline of 0%–5%	Profit decline of 6%–10%	Profit decline of 11%–15%	Profit decline of 16%–20%	Profit decline of more than 20%
Service Delay	Extremely low delay in service, i.e., ≤ 1 day	Low service delay, i.e., 1 to 3 days	Moderate service delay, i.e., 3 to 5 days	High service delay, i.e., 5 to 10 days	Very high service delay, i.e., 10 to 30 days
Performance Decline	Very high achievement of performance targets, i.e., above 95%	High achievement of performance targets, i.e., 90% to 95%	Moderate achievement of performance targets, i.e., 80% to 90%	Low achievement of performance targets, i.e., 70% to 80%	Very low achievement of performance targets, i.e., less than 70%
Reputation Decline	Negative company rumors known only to internal bank personnel	Negative company rumors known to shareholders	Negative bank rumors reported in the regional media (local newspapers)	Negative bank rumors spread in the national media (national TV)	Negative bank rumors exposed in the media and widely distributed to the public

Source: Survey and Interview Results

Table 3 Likelihood (Probability) Criteria Level

Level	Probability Level	Quantitative Criteria (Frequency/ Semester)
1	Rare	0-1 event
2	Unlikely	2-3 events
3	Possible	4-5 events
4	Likely	6 events
5	Almost Certain	More than six events

Source: Survey and Interview Results

Table 4 Risk Level Criteria

Color	Level Matrix	Risk Description	Performance	Priorities	Risk Respond
Red	21–25	Very High	Immediate action is required to manage the risk.	I	Risk Mitigation/ Risk Sharing
Orange	16–20	High	Action is required to manage the risk.	II	Risk Mitigation
Yellow	11–15	Medium	Action is recommended.	III	Risk Mitigation
Green	6–10	Low	Action is not recommended. However, it may be taken if resources are available.	IV	Risk Mitigation / Risk Acceptance
Blue	1–5	Very Low	No action is required (only monitoring)	V	Risk Acceptance

Source: Survey and Interview Results

Table 5 Risk Matrix

Likelihood	5	Almost Certain	5 Very Low	10 Low	15 Medium	20 Very High	25 Very High
	4	Likely	4 Very Low	8 Low	12 Medium	16 High	20 Very High
	3	Possible	3 Very Low	6 Low	9 Low	12 Medium	15 Medium
	2	Unlikely	2 Very Low	4 Very Low	6 Low	8 Low	10 Low
	1	Rare	1 Very Low	2 Very Low	3 Very Low	4 Very Low	5 Very Low
Description			Insignificant	Minor	Moderate	Significant	Very Significant
Very Low			1	2	3	4	5
Low							
Very High							
High							
Medium							
Risk appetite			Impact				

Source: Survey and Interview Results

Table 6 Balanced Scorecard of PT BPR “C”

	Strategic Objectives	Objectives	Measures	Targets	Initiatives
Financial	Growth Strategy	Capital	Capital Adequacy Ratio (CAR)	52%	Increasing productivity in loans, savings, and deposits
		Asset Quality	Earning Asset Quality Ratio (KAP)	2%	Improving credit performance and enhancing intermediary function
		Liquidity	Loan to Deposit Ratio (LDR)	75%	Increasing third-party funds and maintaining the balance of loan disbursement and fund collection
		Growth	Savings and Deposits Increase	6%	Services improvement and branding
	Productivity Strategy	Solvability	Loans Growth	16%	Increasing credit growth, followed by growth in third-party fund collection, reducing overhead costs, and reducing Non-Performing Loans (NPLs)
			Debt to Equity Ratio (DTER)	528%	
		Profitability	Debt to Asset Ratio (DTAR)	82%	
			Return on Assets (ROA)	2%	
Customers	Products & Services	Return on Equity (ROE)	10%	Providing products as needed	Giving the best services from the bottom line
		Cost Efficiency	Net Profit Margin (NPM)	13%	
	Relationship	Product Benefit	Customer Feedback	90%	Bank interest competitive
		Service Excellent	Customer Complaint Report	95%	Banking Smart System (BSS)
		Bank Interest	Credit Increase Distribution	90%	Debtor development
		Customer Protection	Consumer Protection Report	90%	Branding and digital marketing
	Reputation	Customers' Needs	Customers Satisfaction	90%	Financial planning workshop at the school and the community
		Brand	Customer Increase	85%	
Internal Business Process	Operations Processes	Social Responsibility	Social Project	90%	
	Risk Management Processes	Credit Process & Approval	Non-Performing Loan (NPL) Net	4%	Monitoring by the manager and the director
		Monitoring & Reporting	Meeting Coordination Attendances	95%	Manager and director attendances
		Proactive Risk Management & Compliance	Risk Management Report	100%	Looking at future risks and integrating them with the company's strategic objectives
		Risk Mitigation Strategy	Business Target	90%	
	Innovation Processes	Product Development	New Products' Revenue	80%	Training and knowledge development
		Technology Innovation	Assets Turnover Ratio (ATR)	85%	
Learning & Growth	Employee Commitment	ESG Performance	ESG Score	85%	
		Personnel Productivity	Key Performance Indicator (KPI)	90%	Fostering a work culture of responsibility, mutual respect, and a sense of belonging to the company
		Leadership	Profit Target & Employee Satisfaction	90%	
		Culture	Employee Satisfaction Survey	90%	
	Employee Satisfaction	Gender Equality	Management Board	95%	Giving appreciation, such as awards, to employees
		Salary & Benefits	Employee Feedback	85%	
	Personnel Capability	Knowledge Skills	Key Performance Indicator (KPI)	90%	Creating a culture that likes to learn new things and improve self-competence
		Creative & Innovative Training & Development			
	Information Capital	IT System	Bank Performance	90%	System maintenance
		Data Integrity & Security			

Source: Survey and Interview Data

Table 7 Risk Types and Balanced Scorecard (BSC)

	Balanced Scorecard			
	Financial Perspective	Customers Perspective	Internal Business Process Perspective	Learning & Growth Perspective
ESG Risk				
Environmental Risk (EV)			√	√
Social Risk (SC)		√		
Governance Risk (GV)			√	
Bank Risk				
Credit Risk (CR)	√		√	
Liquidity Risk (LQ)	√	√		
Operational Risk (OP)		√	√	
Compliance Risk (CO)			√	
Strategic Risk (SJ)			√	√
External Risk				
Economic Risk (EC)	√			
Market Risk (MR)	√	√		

Source: Author's Works

Table 8 Summary of Inherent and Residual Risk Score (Financial Impact)

Risk Types	Risk Code	Risk Events	Risk Treatment	Risk Level			
				Inherent		Residual	
Environmental	EV 03	The use of office operational vehicles powered by fossil fuels and excessive paper consumption.	Reducing the use of fossil fuel vehicles or renting environmentally friendly vehicles for company operations, along with effective paper management	12	Medium	6	Low
	EV 11	Employees relying on fossil fuel-powered vehicles.	Conducting awareness campaigns related to the ESG concept (particularly pillar E) to foster employees' sense of environmental responsibility. This initiative is expected to raise awareness among employees to use public transportation or, when possible, to adopt eco-friendly alternatives such as bicycles or walking to the office	12	Medium	6	Low
	EV 12	The dependence on the state electricity company (PLN).	Conserving energy by utilizing the company's electronic facilities efficiently and according to actual needs. In the long term, the company is expected to develop the capacity to generate its electricity independently.	10	Low	8	Low
Credit	CR 03	Credit-to-total-productive-assets ratio $\geq 75\%$	Restructuring credit facilities based on the criteria of debtors who demonstrate viable business prospects, repayment capacity, and cooperative behavior.	6	Low	4	Very Low
	CR 02	Non-Performing Loan (NPL) gross bank $\geq 5\%$	Executing joint collateral sales while closely monitoring the repayment of loan installments and ensuring that overdue credit payments are managed in a timely and effective manner.	4	Very Low	2	Very Low
	CR 04	The ratio of the 25 largest debtors to total loans $> 20\%$		4	Very Low	3	Very Low
	CR 05	Total credit from all economic sectors $> 85\%$	Evaluating and reassessing economic sectors, determining the proportion of credit targets for each sector, and conducting promotion through credit offerings.	4	Very Low	3	Very Low

Table 8 Summary of Inherent and Residual Risk Score (Financial Impact)
(Continued)

Risk Types	Risk Code	Risk Events	Risk Treatment	Risk Level			
				Inherent		Residual	
	CR 08	A significant decline in credit quality from performing loans to Non-Performing Loan (NPL)	Restructuring credit and monitoring the smooth repayment of customer loan installments, with consideration of economic sectors and industry averages. Evaluating and reassessing economic sectors and determining the proportion of credit targets.	4	Very Low	2	Very Low
	CR 09	A significant concentration in high-risk economic sectors.		4	Very Low	2	Very Low
	CR 11	Problematic components of productive assets being predominantly loans		4	Very Low	2	Very Low
	CR 14	Credit growth remaining below the industry average		4	Very Low	2	Very Low
	CR 19	The rural bank (BPR) not implementing adequate safeguards (identifying, measuring, monitoring, controlling, and allocating capital reserves) against its credit risks.	Evaluating and reviewing existing credit products and implementing safeguards for new products.	4	Very Low	2	Very Low
Operational	OP 03	The BPR offering a diverse range of products aligned with its core business activities	Monitoring, safeguarding, and controlling risks across all products to prevent potential losses.	3	Very Low	2	Very Low
	OP 06	Employees demonstrating insufficient education levels and qualifications, leading to a lack of competence	Continuing training and certification programs in line with employees' areas of expertise.	4	Very Low	2	Very Low
Strategic	SJ 03	The ratio of business plan realization remaining misaligned with actual business performance	Enhancing credit and operational performance through credit restructuring, monitoring loan installment repayments, and implementing promotional programs, such as outreach in schools, communities, and MSMEs, to encourage both savings and business loan applications.	4	Very Low	2	Very Low
	SJ 04	The BPR experiencing performance setbacks, as ineffective strategy implementation significantly impacts capitalization.		4	Very Low	2	Very Low
	LQ 02	The ratio of liquid assets to current liabilities being below 20%		3	Very Low	2	Very Low

Note: CR= credit risk, MR= market, LQ= liquidity risk, Inherent= risk score before treatment, Residual= risk score after treatment, Environmental, Social, and Governance (ESG), and Micro, Small, and Medium Enterprises (MSMEs).

Source: Survey Data