



Analysis of the Financing Eligibility Assessment Business Process Using the Business Process Improvement (BPI) Method

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Abstract: *The rapid development of financial technology (fintech) has transformed lending services, particularly for microenterprises. As a peer-to-peer lending platform, PT Amarta Mikro Fintek relies on an effective financing eligibility assessment. However, operational challenges remain, such as repetitive document verification, field data synchronization delays due to unstable internet connectivity in rural areas, and manual validation bottlenecks. This study analyzes and improves the financing eligibility assessment process using Business Process Improvement (BPI). Employing a qualitative case study, the existing business process (As-Is) was modeled using BPMN 2.0, evaluated via Issue Register and Value-Added Analysis, and redesigned into a proposed model (To-Be). The improvements incorporate process simplification, task elimination, task automation, and integral technology specifically offline synchronization and automated credit scoring pre-validation. Simulation results indicate that the To-Be model is projected to reduce process cycle time by 79–84% (from ±285 minutes to 45–60 minutes) and significantly minimize bottlenecks. Importantly, automation focuses on redundant administrative checks, ensuring core credit-risk controls are preserved through analyst review of high-risk cases. This study provides projected estimates for operational efficiency in fintech microfinance while extending BPI literature in rural lending operations*

Keywords: BPMN 2.0; business process improvement; financing eligibility assessment; fintech lending; operational efficiency

Introduction

The development of information technology has driven digital transformation across various industrial sectors, including the financial services sector (Arner et al., 2017). One of the innovations that has experienced rapid growth is *financial technology (fintech)*, which refers to the use of digital technology to provide financial services that are faster and more accessible (Abad-Segura et al., 2020). In Indonesia, *fintech lending* or *peer-to-peer (P2P) lending* has emerged as an alternative form of financing that can expand financial access for people who are not yet fully served by conventional financial institutions (Baihaqi, 2018; Kohardinata et al., 2020). The presence of *fintech lending* not only enhances financial inclusion but also supports the efficiency of financial services by providing more flexible, faster, and digitally based financing services (Berg et al., 2022; Kohardinata et al., 2020). Furthermore, the development of *fintech* has expanded access to financing for micro, small, and medium-sized enterprises (MSMEs), which have traditionally faced limitations in obtaining formal funding (Batunanggar, 2019; Ozili, 2018).

As one of the fintech lending companies in Indonesia, PT Amarta Mikro Fintek focuses

on providing access to financing for women engaged in microenterprises in rural areas through a group-based financing approach. This business model provides opportunities for individuals with limited access to banking services to obtain productive financing to support the development of their businesses. In its operations, PT Amarta Mikro Fintek utilizes digital technology throughout the financing process, including application, verification, analysis, and approval. Nevertheless, the complexity of its business processes, which involve both field activities and digital data processing, continues to present various operational challenges that may reduce the efficiency of the financing process (Latuconsina et al., 2020; Suryani et al., 2023).

The financing eligibility assessment process is one of the most critical stages in the company's operations, as it is directly related to financing decision-making and credit risk mitigation (Giudici et al., 2019; Lessmann et al., 2015). Inefficiencies at this stage can increase cycle time, raise operational costs, and reduce the quality of service provided to prospective financing recipients (Dewi et al., 2023; Shou et al., 2020). Based on observations conducted at PT

Amartha Mikro Fintek, several issues were identified, including repeated document verification, manual validation of field survey results, and delays in data synchronization due to limited internet connectivity in several operational areas. These issues generate non-value-added activities, prolong process waiting times, and potentially hinder the speed of financing decision-making (Shou et al., 2020).

To address these issues, organizations need to continuously evaluate and improve their business processes to enhance operational effectiveness and efficiency (Dewi et al., 2023; Pamungkas & Fajar, 2022). One widely adopted approach is *Business Process Management* (BPM), which is a systematic approach to managing, monitoring, and improving the performance of an organization's business processes (Dumas et al., 2018; Reijers, 2021). Within the BPM framework, *Business Process Improvement* (BPI) is a method that focuses on identifying process-related problems and designing improvement proposals to enhance the quality, speed, flexibility, and efficiency of business processes (Maulana, 2023; Pamungkas & Fajar, 2022). The implementation of BPI enables organizations to reduce non-value-added activities, eliminate bottlenecks, and improve overall operational performance (Dewi et al., 2023; Pamungkas & Fajar, 2022).

Various studies have applied Business Process Improvement (BPI) across a wide range of sectors, including education, administration, public services, and industry (Dewi et al., 2023; Pamungkas & Fajar, 2022). The findings of these studies indicate that BPI can improve operational efficiency, reduce non-value-added activities, and accelerate the completion of business processes (Dewi et al., 2023; Pamungkas & Fajar, 2022). Furthermore, business process modeling using Business Process Model and Notation (BPMN) has been shown to assist organizations in identifying process-related problems and designing more effective improvement alternatives (Dewi et al., 2023; Marik & Priharsari, 2023).

On the other hand, research on fintech lending has generally focused on the develop-

ment of credit scoring models, credit risk analysis, and the use of machine learning and artificial intelligence to improve decision-making accuracy (Gambacorta et al., 2024; Giudici et al., 2019; Tigges et al., 2024). While these technological advancements enhance credit assessment quality (Mestiri, 2024), studies on business process improvement at the financing eligibility assessment stage remain relatively limited, as BPI has been more widely applied in education, administration, manufacturing, and general services (Dewi et al., 2023; Shou et al., 2020). Importantly, existing BPI literature in fintech assumes fully digitized, urban operations. A critical research gap exists in evaluating hybrid microfinance fintech operations, which must handle physical field survey activities, manual multi-stage validations, and severe internet connectivity constraints in rural areas (Latuconsina et al., 2020; Suryani et al., 2023).

Based on the identified problems and research gap, this study aims to analyze and improve the financing eligibility assessment business process at PT Amarta Mikro Fintek using the Business Process Improvement (BPI) method. The analysis involves modeling the current process (As-Is) using Business Process Model and Notation (BPMN) 2.0, identifying bottlenecks via Issue Register and Value-Added Analysis, and designing a redesigned process (To-Be). The explicit novelty of this study lies in applying BPI techniques specifically Task Automation, Task Elimination, and Integral Technology (offline synchronization) to resolve operational bottlenecks in rural fintech lending. Unlike previous studies, this paper demonstrates how hybrid process optimization can dramatically reduce cycle times while preserving essential credit-risk control governance. This study provides actionable practical recommendations for microfinance operators and enriches BPI literature within the fintech domain.

Literature Review

Financial Technology (FinTech)

Financial Technology (FinTech) refers to innovations in the financial services sector that utilize digital technologies to improve the effi-

ciency, accessibility, and quality of financial services (Abad-Segura et al., 2020; Arner et al., 2017). The development of FinTech has transformed the way people access various financial services, including digital payments, investment, insurance, and technology-based financing (Abad-Segura et al., 2020; Ozili, 2018). In addition to fostering the emergence of new business models, FinTech also contributes to the transformation of governance and regulation in the financial sector through the use of information technology, data analytics, and business process automation (Abad-Segura et al., 2020; Arner et al., 2017).

One of the rapidly growing forms of FinTech is peer-to-peer (P2P) lending, which refers to a funding service that connects fund providers and fund recipients through digital platforms (Baihaqi, 2018; OJK, 2024). This model enables financing processes to be carried out more quickly and efficiently than conventional financing mechanisms, as the entire process is supported by digital technologies (de Roure et al., 2024; Kohardinata et al., 2020). In addition to improving service efficiency, fintech lending also expands access to financing for individuals who previously faced difficulties obtaining credit from traditional financial institutions and supports greater financial inclusion through the use of alternative data in the credit evaluation process (Berg et al., 2022; Kohardinata et al., 2020; Ozili, 2018).

In Indonesia, fintech lending has become an important instrument in supporting the financing of micro, small, and medium-sized enterprises (MSMEs) by providing easier, faster, and more flexible access to financing (Kohardinata et al., 2020; Rizal et al., 2019). The digitalization of financial services implemented through fintech lending has further expanded public access to productive sources of funding while increasing the level of national financial inclusion (Batunanggar, 2019; Ozili, 2018).

PT Amarta Mikro Fintek is one of the fintech lending companies that focuses on empowering women engaged in microenterprises in rural areas through a group-based financing scheme (Latuconsina et al., 2020; Suryani et al., 2023). In its operations, the company relies on

business processes that encompass the stages of financing application, verification, eligibility assessment, and financing approval. Therefore, the effectiveness of these business processes is an important factor in maintaining operational efficiency and supporting the quality of financing decision-making (Berg et al., 2022; Dumas et al., 2018).

Financing Eligibility Assessment and Credit Scoring

Financing eligibility assessment is an evaluation process conducted by financial institutions to determine the eligibility of prospective borrowers based on their level of risk (Giudici et al., 2019; Lessmann et al., 2015). This process aims to minimize the potential for default while ensuring that the financing provided is appropriate to the capacity and business conditions of the prospective financing recipients (Dumitrescu et al., 2022; Lessmann et al., 2015). In the fintech lending industry, financing eligibility assessment is one of the core processes because it directly affects the quality of the financing portfolio and the operational sustainability of the company (Balyuk, 2023; Najaf et al., 2022).

The development of digital technologies has driven the transformation of financing eligibility assessment processes through the implementation of data-driven credit scoring. Credit scoring is a method used to predict the credit risk level of prospective borrowers based on various characteristics and available information, thereby improving objectivity and consistency in financing decision-making (Dumitrescu et al., 2022; Giudici et al., 2019; Lessmann et al., 2015). In addition to utilizing traditional financial data, fintech companies have also begun to optimize alternative data, such as transaction patterns, digital activities, and social information, to improve the accuracy of credit risk assessment (Gambacorta et al., 2024; Tigges et al., 2024).

The development of artificial intelligence and machine learning has further enhanced the ability of credit scoring models to predict credit risk in a more adaptive and accurate manner (Gambacorta et al., 2024; Mestiri, 2024). Various studies have shown that combining machine learning with alternative data can achieve

higher levels of accuracy than conventional statistical approaches, leading an increasing number of fintech lending companies to adopt these technologies in their financing evaluation processes (Gambacorta et al., 2024; Mestiri, 2024; Tigges et al., 2024).

Nevertheless, the financing eligibility assessment process in fintech companies cannot be fully automated (Gambacorta et al., 2024; Tigges et al., 2024). In practice, the process still involves various supporting activities, such as document verification, field surveys, data validation, risk analysis, and the preparation of financing recommendations (Latuconsina et al., 2020; Suryani et al., 2023). Human involvement in these stages may lead to process delays, duplication of work, and non-value-added activities if they are not managed effectively (Dumas et al., 2018; Shou et al., 2020).

At PT Amarta Mikro Fintek, the financing eligibility assessment process relies not only on credit scoring results but also considers field survey findings and the verification of the business conditions of prospective financing recipients (Latuconsina et al., 2020; Suryani et al., 2023). These characteristics make the financing assessment process more complex than fully data-driven digital financing models (Gambacorta et al., 2024; Tigges et al., 2024). Therefore, effective business process management is required to ensure that each stage of the financing eligibility assessment is carried out efficiently without compromising the quality of decision-making. In this context, Business Process Improvement (BPI) is a relevant approach for identifying non-value-added activities and designing more effective and structured process improvements (Dumas et al., 2018; Maulana, 2023; Pamungkas & Fajar, 2022; Reijers, 2021).

Business Process Improvement (BPI)

Business Process Improvement (BPI) is a systematic approach used to examine, evaluate, and enhance business process performance to achieve higher levels of effectiveness and efficiency (Maulana, 2023; Pamungkas & Fajar, 2022). This approach focuses on identifying non-value-added activities, reducing process waste, and designing solutions that can improve

service quality, shorten process cycle times, and reduce operational costs (Dewi et al., 2023; Pamungkas & Fajar, 2022). BPI is regarded as a continuous improvement method aimed at streamlining business processes, enabling organizations to achieve more effective and competitive performance (Maulana, 2023).

In its implementation, Business Process Improvement (BPI) is carried out through a series of stages that include reviewing the existing business processes, identifying problems, tracing the root causes of inefficiencies, formulating various improvement alternatives, and redesigning business processes to make them more effective and efficient (Maulana, 2023; Pamungkas & Fajar, 2022). This approach enables organizations to eliminate non-value-added activities while improving activities that have become bottlenecks in the smooth execution of business processes (Dewi et al., 2023). Structured business process improvement can increase organizational productivity and strengthen the organization's capability to address and respond to changes in the business environment (Dumas et al., 2018; Reijers, 2021).

One of the core concepts underlying Business Process Improvement (BPI) is the classification of activities based on the extent to which they contribute to value creation (Dumas et al., 2018; Maulana, 2023). Activities within a business process can be classified into three categories: value-added activities, business value-added activities, and non-value-added activities (Dumas et al., 2018; Reijers, 2021). Activities that do not contribute to value creation become the primary targets of improvement efforts because they may result in wasted time, costs, and organizational resources (Dewi et al., 2023; Shou et al., 2020). Identifying non-value-added activities is an important step in improving process efficiency and minimizing operational impediments that do not contribute additional value (Shou et al., 2020).

In addition, Business Process Improvement (BPI) offers various improvement techniques that can be selected and adapted to the specific characteristics of each identified problem (Maulana, 2023; Pamungkas & Fajar,

2022). These techniques include *task automation*, *process simplification*, *error prevention*, *integral technology*, and *activity elimination* (Dumas et al., 2018; Reijers, 2021). The selection of the most appropriate improvement technique is based on an in-depth assessment of the existing business process conditions, ensuring that the resulting solutions are more relevant and appropriately targeted (Dewi et al., 2023; Marik & Priharsari, 2023). By leveraging the rapid advancement of digital technologies, organizations can automate routine activities, reduce manual work, and improve the speed and accuracy of business process execution (Hende et al., 2018; Pamungkas & Fajar, 2022).

Several studies have confirmed that the implementation of *Business Process Improvement* (BPI) makes a significant contribution to improving organizational business process performance (Dumas et al., 2018; Reijers, 2021). (Hende et al., 2018) successfully implemented BPI to improve the magazine publishing service process by reducing non-value-added activities. (Hutagalung et al., 2019) demonstrated that the application of BPI can improve business process efficiency in the service sector by simplifying the existing workflow. Consistent with these findings, studies by (Dewi et al., 2023; Marik & Priharsari, 2023; Pamungkas & Fajar, 2022) confirmed that the BPI approach is effective in identifying business process problems and developing proposed process designs that are more efficient than the existing process conditions.

In the operational context of fintech lending companies, the effectiveness of the financing eligibility assessment process plays a crucial role in determining service quality for customers and the speed of financing decision-making (Balyuk, 2023; Najaf et al., 2022). Repeated verification activities, delays in data synchronization, and validation stages that are still performed manually may reduce the company's operational efficiency (Dewi et al., 2023; Shou et al., 2020). Therefore, the Business Process Improvement (BPI) approach is considered appropriate for identifying non-value-added activities and designing more effective and efficient busi-

ness processes for the financing eligibility assessment process at PT Amarta Mikro Fintek (Maulana, 2023; Pamungkas & Fajar, 2022).

Business Process Model and Notation (BPMN)

Business Process Model and Notation (BPMN) is a business process modeling standard designed to represent business process flows visually, systematically, and in a manner that is easily understood by all parties involved within an organization (Dumas et al., 2018; Reijers, 2021). BPMN provides graphical notations capable of representing activities, process flows, decisions, actors, and interactions among different organizational units within a business process. BPMN has become one of the most widely adopted business process modeling standards due to its ability to bridge communication between business and technical stakeholders in developing a shared understanding of processes (Dumas et al., 2018).

BPMN consists of several main elements used to model business processes, including events, activities, gateways, sequence flows, and swimlanes (Dumas et al., 2018; Reijers, 2021). The combination of these elements enables organizations to visualize business processes more clearly, thereby facilitating the identification of activities, workflows, and problem areas within a process. BPMN provides a more systematic representation of business processes, thereby facilitating the analysis and evaluation of ongoing activities (Homaidi et al., 2022).

The use of Business Process Model and Notation (BPMN) in business process modeling provides several significant benefits. In addition to facilitating the understanding of organizational workflows, BPMN also helps identify non-value-added activities, activities that experience delays, and potential bottlenecks that may hinder business process performance (Dumas et al., 2018; Reijers, 2021). BPMN can serve as an effective analytical instrument for documenting business processes while also supporting decision-making in business process improvement initiatives (Ismanto et al., 2020).

Within the Business Process Improvement framework, BPMN serves as a medium for modeling both the current state of a business process

(As-Is) and the proposed future state (To-Be) (Dumas et al., 2018; Reijers, 2021). Through As-Is modeling, organizations can obtain a comprehensive understanding of how business processes operate under actual conditions while simultaneously identifying various problems that arise within them (Ismanto et al., 2020). The results of this analysis are then used as the basis for designing a To-Be model that represents a more efficient and effective business process. BPMN therefore serves not only as a process documentation instrument but also as a medium for evaluating and developing more optimal and structured business process designs (Choudhary & Riaz, 2023).

In this study, Business Process Model and Notation (BPMN) 2.0 is used as a tool to model the financing eligibility assessment process at PT Amarta Mikro Fintek. The modeling focuses on the existing business process (As-Is) to identify activities that contribute to process inefficiencies (Dumas et al., 2018; Ismanto et al., 2020), followed by the development of a proposed business process model (To-Be) based on the results of the Business Process Improvement analysis (Maulana, 2023; Pamungkas & Fajar, 2022). Thus, BPMN serves as the primary instrument for visualizing, analyzing, and designing business process improvements, which constitute the main focus of this study (Choudhary & Riaz, 2023; Reijers, 2021).

Method

This study employs a qualitative approach using a case study method at PT Amarta Mikro Fintek. The qualitative approach was selected because the study focuses on gaining an in-depth understanding of the financing eligibility assessment business process within the company's operational environment. The case study method was employed to obtain a comprehensive overview of the activities, problems, and opportunities for business process improvement identified in the research setting.

The focus of this study is the financing eligibility assessment business process at PT Amarta Mikro Fintek. The scope of the study is limited to activities beginning with the collec-

tion and verification of data from prospective financing recipients through the process of providing recommendations based on the financing assessment results. Activities performed after fund disbursement, as well as financing monitoring activities, are excluded from the scope of this study.

Primary data were gathered through semi-structured interviews, direct field observations, and operational workflow tracking during a three-month internship program at PT Amarta Mikro Fintek. To ensure research rigor, data collection involved six key internal informants selected via purposive sampling based on their direct operational roles: two Community Officers (COs) conducting field surveys, two Credit Analysts responsible for credit validation, one Operational Manager overseeing financing approvals, and one IT System Specialist managing digital infrastructure. Over the observation period, a total of 35 financing application transactions were tracked across urban and rural operating regions to capture workflow patterns, actor interactions, and operational delays. Baseline cycle times for the As-Is model were determined using a combined measurement procedure consisting of AmartaFin system log timestamps and manual stopwatch timing during field surveys, capturing each sub-process duration from document submission to final approval (establishing an average baseline of ≈ 285 minutes).

Meanwhile, secondary data were obtained from company operational documents, scientific literature, and regulations related to fintech lending, Business Process Improvement (BPI), and financing eligibility assessment.

The research was conducted based on the Business Process Management (BPM) lifecycle, which consists of four stages: process identification, process discovery, process analysis, and process improvement (Dumas et al., 2018). In the process identification stage, the financing eligibility assessment process was established as the focus of the study based on its level of urgency and importance to the company's operations. Subsequently, the *process discovery* stage was conducted by modeling the existing business process (As-Is) using *Business Process Model and Notation* (BPMN 2.0) through the Visual

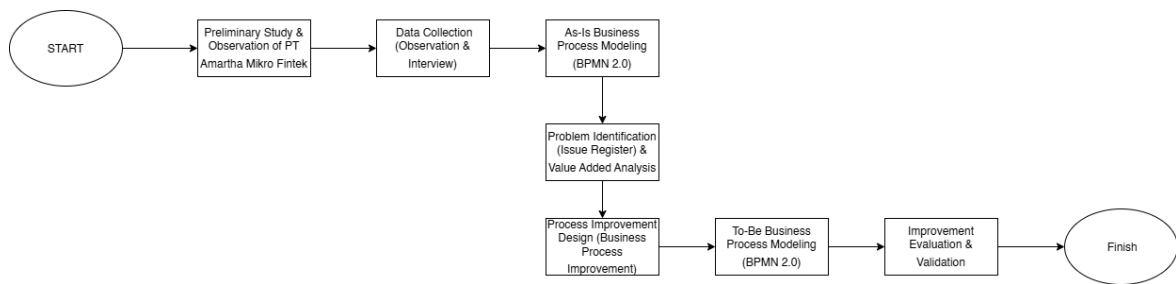


Figure 1. BPMN As-Is Model of the Financing Eligibility Assessment Process

Paradigm application, based on data obtained from the observations and interviews conducted (Dumas et al., 2018; Reijers, 2021).

The process analysis stage was then conducted to identify bottlenecks, non-value-added activities, and various operational constraints that affect business process efficiency. The analysis was carried out using the Value-Added Analysis (VAA) and Issue Register approaches to evaluate activities that provide added value as well as activities that may result in wasted time and resources (Shou et al., 2020).

Based on the findings from the analysis stage, the process improvement stage was conducted by developing a proposed business process model (To-Be) using the Business Process Improvement (BPI) approach (Maulana, 2023; Pamungkas & Fajar, 2022). The proposed process improvements were implemented through

the application of *Task Automation* and *Integral Technology* techniques, which aim to improve operational efficiency, reduce non-value-added activities, and support more effective and standardized processes.

The validity of the data in this study was ensured through source triangulation by comparing the results of field observations, interviews, and company operational documents. This approach was applied to ensure consistency between the observed business processes and the actual operational practices implemented at PT Amarta Mikro Fintek.

Results and Discussions

Identification of the Existing Business Process for Financing Eligibility Assessment (As-Is)

Based on the results of field observations and in-depth interviews conducted during the

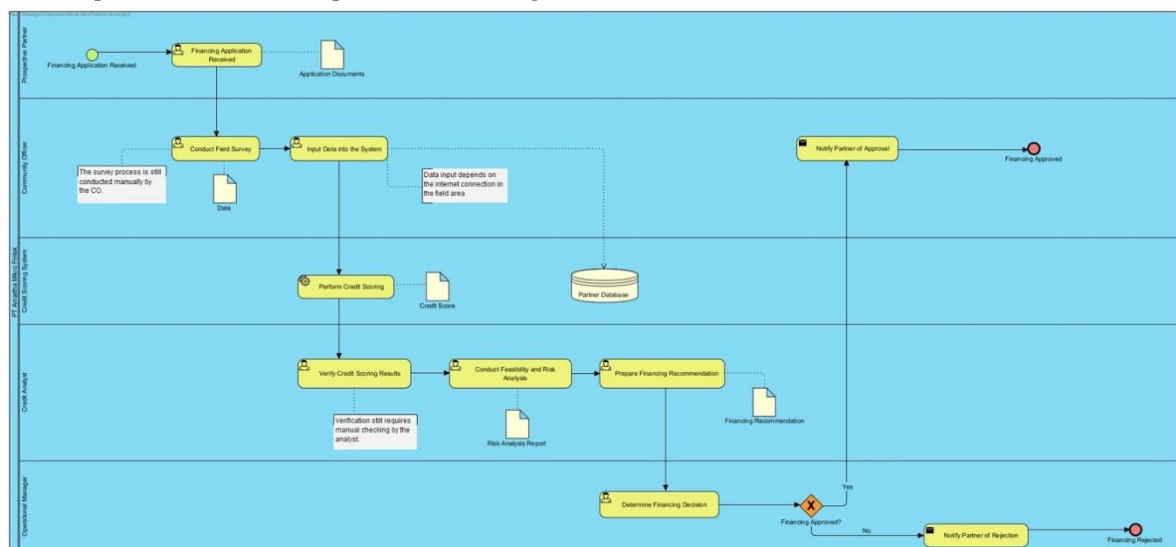


Figure 2. BPMN As-Is Financing Feasibility Assessment Process

internship program at PT Amarta Mikro Fintek, the financing eligibility assessment business process involves several key actors, namely Prospective Partners, Community Officers (COs), the Credit Scoring System, Credit Analysts, and Operational Managers. The process begins with the acquisition stage, in which COs collect data from prospective partners through the operational application used in the field. This stage is followed by the verification of administrative documents and a business feasibility survey to ensure the consistency of the submitted data with the actual conditions in the field. The survey results are subsequently entered into the system and processed through an automated credit scoring mechanism as the basis for the initial financing eligibility assessment. However, the process is not fully automated, as the credit scoring results must still undergo comprehensive manual validation by the Credit Analyst before the final recommendation is forwarded to the Operational Manager for financing approval.

The existing business process (As-Is) was modeled using the Business Process Model and Notation (BPMN) 2.0 standard to visually map the overall actual workflow. The modeling results revealed redundancy in the flow of information. The financing eligibility assessment process is still dominated by repetitive activities because the credit scoring system is not yet fully relied upon to make decisions autonomously, thereby requiring a second layer of manual validation. Furthermore, infrastructure constraints are particularly evident in the field data synchronization process. The absence of a temporary local data storage (caching) feature makes COs highly dependent on the stability of the internet connection in rural operational areas, which frequently causes data transmission failures in real time.

Problem Analysis Using Issue Register

To investigate the root causes of the inefficiencies identified in the As-Is process model, problems were systematically identified through the development of an *Issue Register*. This analysis was based on direct observations of operational bottlenecks occurring on a daily basis.

Table 1. Issue Register for Financing Feasibility Analysis Process

No	Problem	Cause	Impact
1	Document verification is done repeatedly	Validation isn't fully integrated yet	Adding processing time
2	Field data synchronization is delayed	Dependence on the internet	Waiting time is increasing
3	Final validation is still done manually	There isn't any automatic standardization yet	Bottleneck in Credit Analyst
4	Rechecking the survey data	Validation activity duplication	Process efficiency has decreased

Based on the *Issue Register* presented in Table 1, the fundamental problems were identified at two critical points. First, the repeated manual validation activities performed by Credit Analysts create work duplication (redundancy). Documents whose risks have essentially been assessed by the credit scoring system are still manually re-examined, which not only reduces process efficiency but also contributes to work backlogs. Second, the complete dependence on internet connectivity during survey data input results in prolonged waiting times for COs in the field. When the signal is inadequate, the business process comes to a complete halt, consequently delaying the Service Level Agreement (SLA) for fund disbursement to partners.

Value Added Analysis (VAA)

To measure the extent to which each activity contributes meaningfully to the overall objectives of the financing process, a *Value-Added Analysis (VAA)* was conducted. The activities were classified into three categories: *Value Added (VA)*, which directly contributes to business value; *Business Value Added (BVA)*, which is required to comply with regulatory or organizational policies; and *Non-Value Added (NVA)*, which represents waste within the process.

The Value-Added Analysis identified eight activities in the existing financing eligibility as-

assessment process. Two activities (25%) were classified as Value Added (VA), two activities (25%) as Business Value Added (BVA), and four activities (50%) as Non-Value Added (NVA). The identified NVA activities indicate opportunities for process improvement through task elimination, integral technology, task automation, and process simplification. However, the proposed improvements should be evaluated carefully to ensure that reducing non-value-added activities does not compromise the accuracy of financing assessments or the effectiveness of credit risk controls.

Table 2. Value Added Analysis

No	Activity	Category
1	Collecting data of potential partners	VA
2	Enter the field survey results	VA
3	Data synchronization	BVA
4	Repeated manual validation	NVA
5	Document recheck	NVA
6	Final approval of financing	BVA
7	Waiting for delayed field-data synchronization	NVA
8	Rechecking survey data	NVA

Analysis of Business Process Cycle Time

Cycle time analysis was conducted to measure the duration required for each stage of the existing business process.

Table 3. Cycle Time Proses As-Is

No	Process Stages	Duration
1	Field data collection	45 minutes
2	Data synchronization	60 minutes
3	Document verification	75 minutes
4	Credit Analyst validation	75 minutes
5	Final approval	30 minutes
Total Cycle Time		285 minutes

The measurement results indicate that the total time required to process a single financing application from start to finish is approximately 285 minutes. The most significant duration anomalies occur during the document verification stage (75 minutes) and Credit Analyst validation stage (75 minutes), which collectively account for more than half of the total process time. Data synchronization (60 minutes) also represents a substantial source of delay due to waiting time caused by internet connectivity issues. These prolonged durations provide a

strong indication of bottlenecks that reduce the organization's throughput in executing financing decisions.

Suggestions for Improving the Financing Feasibility Assessment Process

Based on the empirical findings from the Issue Register, Value-Added Analysis, and Cycle Time Analysis, improvement proposals were formulated using the Business Process Improvement (BPI) framework. The selected approach focuses on process rationalization techniques that are relevant to the company's information technology capabilities.

The proposed improvements in the To-Be model are directly formulated by triangulating the findings from the Issue Register, Value-Added Analysis (VAA), and Cycle Time Analysis. Each identified problem can be logically traced to a specific bottleneck and non-value-added (NVA) activity. For instance, the issue of delayed data synchronization (Issue P2) was identified as an NVA activity that consumes up to 60 minutes of operational delay. This specific constraint is addressed using the Integral Technology technique via offline synchronization. Similarly, the repetitive manual validation by Credit Analysts (Issues P1 and P3), which constitutes a combined 150 minutes of cycle time, is resolved through Task Elimination and Task Automation. Lastly, the duplication in rechecking survey data (Issue P4) is addressed through Process Simplification. This logical mapping ensures that every proposed heuristic redesign is grounded in empirical operational constraints, as summarized in Table 4.

Business Process Management. The implementation of the Integral Technology technique focuses on optimizing the mobile application architecture used by Community Officers (COs) through an offline synchronization feature, allowing data to be initially stored on the device's local storage and then automatically synchronized when a network connection is available. Meanwhile, a combination of Task Automation and Task Elimination techniques is used to reduce non-value-added activities by enhancing the credit scoring system's capability to perform the pre-validation process automatically.

Table 4. Traceability Matrix of Identified Problems and Proposed Improvements

No	Problem (Issue Register)	NVA Activity (VAA)	Affected Stage (Cycle Time)	Redesign Technique	Improvement
1	Repeated document verification	Documents re-check	Document verification (75 min)	Task Elimination	Removing duplicate checks
2	Delayed field data synchronization	Waiting for delayed field-data synchronization	Data synchronization (60 min)	Integral Technology	Offline synchronization
3	Manual final validation	Repeated manual validation	Credit Analyst validation (75 min)	Task Automation	Automatic pre-validation
4	Rechecking survey data	Rechecking survey data	Field data collection (45 min)	Process Simplification	Simplifying the validation process

Thus, the role of the Credit Analyst no longer involves conducting a thorough re-examination but only carries out verification on applications with certain risk profiles, such as anomaly cases or high-risk cases. This approach can improve process efficiency without altering the main structure of the business processes implemented by PT Amarta Mikro Fintek.

Proposed Business Process Model (BPMN To-Be)

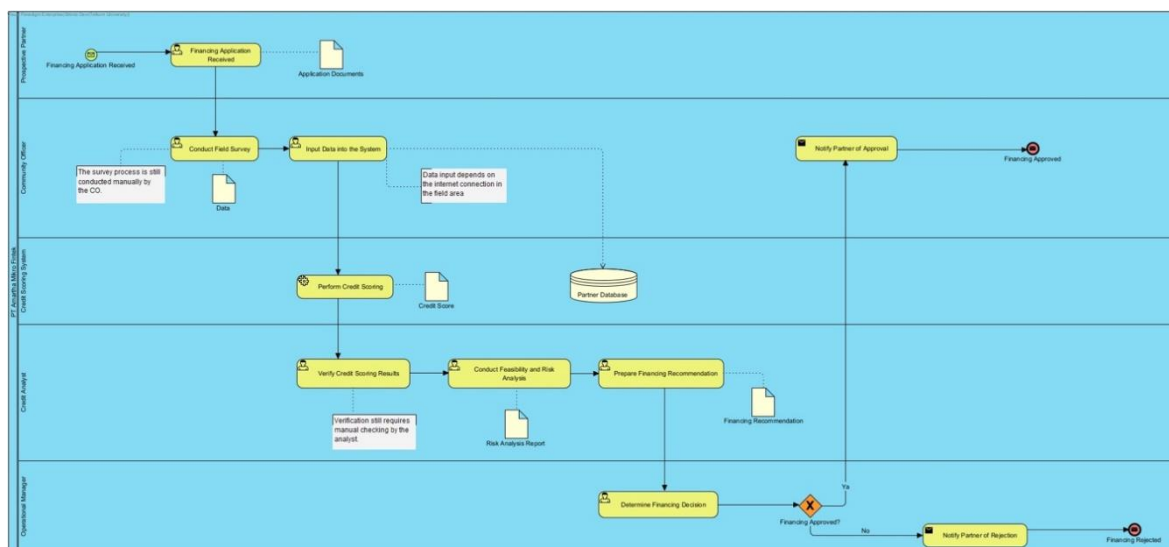
The proposed design from the BPI Table was then transformed into the proposed business process model (To-Be). Improvements in this model highlight the streamlining of data bureaucratic pathways, the integration of asynchronous synchronization, as well as the empowerment of the system to take over repetitive clerical tasks.

The To-Be model continues to maintain the framework of the main risk mitigation flow at PT Amarta Mikro Fintek. The difference lies in the removal of convoluted activity swimlanes on the Credit Analyst side and the addition of system logic to manage field data independently of connectivity conditions.

The implementation of this proposed modeling is designed to create operational agility. Community Officers can work more quickly in the field, while Credit Analysts can allocate their time to analyze more strategic credit portfolios, rather than merely validating administrative matters.

Comparison of As-Is and To-Be Performance

The final stage of the BPI evaluation is to measure the projected success of the To-Be model implementation by comparing the key

**Figure 3. BPMN To-Be Financing Feasibility Assessment Process**

performance indicators (KPIs) against the As-Is conditions.

Table 5. Comparison of Process Performance

No	Indicator	As-Is	To-Be
1	Total Cycle Time	Approximately 285 minutes	45–60 minutes
2	NVA Activities	4 activities	1–2 activities
3	Validation Bottleneck	High	Expected to be lower
4	Process Efficiency	Low	Expected to improve

The comparison between the existing and proposed business processes indicates the potential to reduce cycle time and minimize operational bottlenecks. The existing process requires approximately 285 minutes per application and includes four Non-Value Added (NVA) activities, as identified in the Value-Added Analysis. Based on the simulation of the proposed To-Be process, the projected cycle time is 45–60 minutes per application, while the number of NVA activities is expected to decrease to one or two. These projected changes are associated with task automation, integral technology, and process simplification.

The efficiency gains in the To-Be process extend beyond simple time reduction; they represent a structural optimization of operational workflows. The transition from manual, multi-stage document verification to automated credit-scoring pre-validation eliminates human processing queues and mitigates delays caused by rural connectivity constraints through offline synchronization. Beyond operational speed, this

architectural shift has significant implications for the quality and reliability of financing decisions. Standardizing initial administrative and preliminary risk checks through system logic reduces human bias and operational error, ensuring consistent decision-making criteria across all applicants. Furthermore, by liberating Credit Analysts from repetitive clerical validation, human expertise is strategically redirected toward thorough evaluations of high-risk, borderline, or anomalous cases. Consequently, the To-Be model achieves greater operational throughput without compromising credit risk mitigation, ultimately improving the overall reliability and integrity of the financing portfolio.

The detailed stage-level simulation assumptions and activity-time inputs that form the basis for the projected 45–60 minutes To-Be cycle time are documented in Table 6.

The projected cycle-time reduction was calculated using the following formula: Using the existing cycle time (T_A) of 285 minutes and the simulated To-Be cycle time (T_T) of 45–60 minutes, the projected reduction ranges from 78.95% to 84.21%, which is approximately 79–84% when rounded to whole percentages. These figures represent projected cycle-time reductions rather than measured post-implementation improvements. The proposed changes may reduce repeated verification and waiting time caused by data synchronization delays. However, automation should retain appropriate human oversight, particularly for high-risk applications, to maintain the accuracy of financing assessments and the effectiveness of credit risk

Table 6. Stage-Level Cycle Time Estimates of the As-Is and To-Be Processes

No	Process Stage	As-Is (min)	To-Be(min)	Basis of Estimate
1	Field data collection	45	30	Survey data are entered once; the rechecking of survey data is simplified (process simplification)
2	Data synchronization	60	0.5	Data are stored on the device and synchronized automatically when a connection is available (integral technology)
3	Document Verification	75	5	Duplicate document checks are removed, and pre-validation is performed automatically by the credit scoring system (task elimination and task automation)
4	Credit Analyst validation	75	5–10	Review is limited to anomaly and high-risk cases (task automation)
5	Final approval	30	5–10	The recommendation for the Operational Manager is already pre-validated
	Total	285	45–60	

controls. Further evaluation after implementation is required to verify the actual effects on cycle time, process performance, and financing decision quality.

posed business process model (To-Be) was successfully refined by applying Task Automation and Integral Technology strategies. This improvement focused on reducing manual activi-

Table 7. Comparison of Duration and Efficiency of Business Process Activities

No	Evaluation Aspect	Existing Condition (As-Is)	Proposed Plan (To-Be)
1	Total Cycle Time	±285 minutes	45–60 minutes
2	Document Validation Process	Done manually by the Credit Analyst	Full automation by the Credit Scoring System
3	Field Data Input by CO	Manual and depends on signal stability	Supported by Offline Sync feature on the mobile app

While the To-Be model significantly improves operational efficiency, the impact of automation on credit risk and internal control must be carefully managed. Reducing manual validation does not imply eliminating oversight; rather, it shifts the focus of Credit Analysts toward high-value risk mitigation. By delegating routine administrative checks to the automated credit scoring system, human analysts can concentrate on evaluating anomaly cases and high-risk applications, thereby maintaining a high level of accuracy and reducing the potential for human error. Furthermore, retaining an appropriate level of human oversight is crucial to detect potential fraud risks and complex anomalies that automated algorithms might overlook. This hybrid approach ensures that the pursuit of efficiency does not compromise the company's internal controls and remains strictly aligned with regulatory compliance standards in the fintech lending sector.

Conclusions and Suggestions

Various operational constraints, such as manual verification, bottlenecks in the validation stage, and slow data synchronization due to limited internet connectivity in rural areas, are still encountered in the financing feasibility analysis process at PT Amartho Mikro Fintek. These conditions directly impact the reduction of business process efficiency and the increase in operational cycle time (Dewi et al., 2023; Shou et al., 2020).

Through the Business Process Improvement approach using Business Process Model and Notation (BPMN 2.0) modeling, the pro-

ties and optimizing the system through the implementation of an offline-first concept and system-based document validation automation using credit scoring, which aligns with the principle of reducing non-value-added activities in business process improvement (Dumas et al., 2018; Reijers, 2021).

Research results indicate that the redesigned business process is projected to reduce the cycle time of the financing feasibility analysis process by an estimated 79-84% compared to the existing baseline. This efficiency improvement implies a reduction in process waiting times, a decrease in bottlenecks in validation activities, as well as an increase in the speed and consistency of financing decision-making (Pamungkas & Fajar, 2022; Dewi et al., 2023). Furthermore, the reduction of non-value-added activities allows for the optimization of resource allocation to more strategic activities, thereby supporting the enhancement of financing service effectiveness at PT Amartho Mikro Fintek (Shou et al., 2020; Dumas et al., 2018).

This research is a qualitative case study that focuses on business process improvement in a single entity, namely PT Amartho Mikro Fintek. Therefore, the proposed results and improvement recommendations (To-Be model) are specific and may not be directly generalizable to other fintech lending companies without adjustments. Furthermore, this study does not cover technical implementation aspects and post-implementation performance measurement, but rather only presents projected efficiency improvements.

Suggestions for future research include validating the implementation of the proposed To-Be business process model, particularly by measuring the real impact of offline synchronization and Task Automation features on operational efficiency and the quality of credit risk mitigation over a specific period. In addition, future studies could broaden the focus by integrating the results of Business Process Improvement with the development of a machine learning-based credit scoring model for more accurate and comprehensive feasibility analysis.

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