

EVALUATION OF ACCOUNTS RECEIVABLE MANAGEMENT BASED ON KEY PERFORMANCE INDICATORS IN STRENGTHENING LIQUIDITY

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ABSTRACT

Research Objectives - This study aims to analyze the effectiveness of accounts receivable management based on Key Performance Indicators (KPI) and its implications for financial performance in the port service sector.

Method - This study employs a quantitative approach with a descriptive-comparative design. The analysis is conducted through the calculation of Days Sales Outstanding (DSO), Receivable Turnover, Collection Period, and aging analysis, which are compared with the company's performance standards.

Research Findings - The results indicate a decrease in DSO from 60 days to 57 days and an increase in receivable turnover from 6.10 to 6.42 times. The proportion of current receivables increased from 82 percent to 86 percent, reflecting effective monitoring and internal control. The Collection Period falls within the highly efficient category, although receivables aged over 120 days remain and pose potential credit risk.

Theory and Practical Implications - Theoretically, integrating outcome and process indicators strengthens KPI-based receivables performance evaluation. Practically, companies should maintain effective collection practices and enhance customer credit risk monitoring.

Novelty - The novelty of this study lies in the integration of three KPI indicators in evaluating accounts receivable management within the port service industry.

INTRODUCTION

The transformation of corporate financial governance in the era of globalization and digitalization requires organizations to manage working capital more efficiently and in a performance-oriented manner. One of the most critical components of working capital is accounts receivable, which directly affects liquidity, profitability, and operational stability. International studies demonstrate that working capital management, including receivables management, is significantly associated with firm performance (Deloof, 2003; García-Teruel & Martínez-Solano, 2007). In an increasingly competitive global economy, logistics and port service companies face complex challenges, including rising credit transaction volumes and the risk of delayed customer payments. Therefore, a Key Performance Indicator (KPI)-based approach becomes a strategic instrument to ensure effective receivables management and maintain financial sustainability (Kaplan & Norton, 1996; Parmenter, 2015).

Although prior research has confirmed that indicators such as Days Sales Outstanding (DSO), Collection Period, and Receivable Turnover are closely related to financial performance, most studies focus on manufacturing or trading firms (Deloof, 2003; Raheman & Nasr, 2007). These studies generally emphasize the relationship between receivables turnover and profitability without comprehensively examining the integration of KPIs within a strategic receivables control system. According to working capital management theory (Brigham & Houston, 2019), credit policy

effectiveness is determined not only by collection speed but also by monitoring quality and customer risk control. Hence, there is a need to develop a more contextual evaluative approach, particularly in the port service sector, which has distinct transaction characteristics compared to other industries.

Furthermore, previous studies often rely on one or two quantitative indicators without deeply integrating aging analysis as part of a comprehensive performance measurement system (Lazaridis & Tryfonidis, 2006). Critics argue that a single measure such as DSO does not fully represent actual credit risk, especially in firms serving multi-segment customers with high transaction volumes. From the perspective of strategic performance measurement theory (Neely et al., 2002), an effective KPI system should simultaneously reflect both process and outcome dimensions. Therefore, combining Customer Outstanding with DSO and Collection Period provides a more comprehensive assessment of receivables management effectiveness.

This study introduces novelty by integrating three primary indicators—Days Sales Outstanding (DSO), Collection Period, and Customer Outstanding—within a unified evaluative framework for receivables management in the port service sector during the 2023–2024 period. Unlike previous research that tends to adopt a partial approach, this study combines quantitative descriptive analysis with comparative evaluation against industry standards and strategic KPI practices. The main contribution lies in strengthening a more applicable and comprehensive KPI-based receivables evaluation model for logistics service companies characterized by high-frequency credit transactions and large nominal values.

The objective of this study is to analyze the effectiveness of accounts receivable management based on KPI indicators and to evaluate its implications for financial performance. This research is limited to three primary indicators and a two-year observation period; thus, it does not incorporate long-term longitudinal analysis or macroeconomic risk indicators. Nevertheless, the findings are expected to contribute academically to the development of working capital management literature and practically to the enhancement of performance-based receivables control systems.

METHOD

This study employs a quantitative approach with a descriptive-comparative design to analyze the effectiveness of accounts receivable management based on Key Performance Indicators (KPI). The quantitative approach is selected because the study focuses on measuring financial ratios and performance indicators expressed in numerical form, allowing for objective evaluation of company performance (Sekaran & Bougie, 2016). The descriptive design aims to portray the actual condition of receivables management, while the comparative approach is used to compare calculated results with established performance standards or company targets. Similar methods have been applied in working capital management research assessing the relationship between receivables turnover and financial performance (Deloof, 2003; García-Teruel & Martínez-Solano, 2007). This method is appropriate for measuring receivables management efficiency through quantitative indicators such as Days Sales Outstanding (DSO), Collection Period, and Receivable Turnover, which form part of the company's KPI system.

Data collection techniques include documentation study and literature review. The documentation study involves gathering secondary data from financial statements, accounts receivable reports, aging schedules, and internal documents related to credit and collection policies for the 2023–2024 period. Secondary data are utilized because financial research typically relies on verified accounting reports as primary quantitative sources (Saunders, Lewis, & Thornhill, 2019). The literature review is conducted to strengthen the theoretical foundation and compare the findings with prior empirical studies on working capital management and performance measurement systems (Kaplan & Norton, 1996; Brigham & Houston, 2019). The combination of documentation and literature analysis enables the study to obtain reliable data while establishing a comprehensive conceptual framework.

Data analysis is conducted through several systematic stages. First, KPI indicators of receivables management—namely Days Sales Outstanding (DSO), Collection Period, and Customer Outstanding—are calculated using standard financial management formulas (Brigham & Houston, 2019). Second, the calculated results are analyzed descriptively to identify trends and evaluate the

level of effectiveness. Third, a comparative analysis is performed between actual results and performance targets or industry benchmarks to assess achievement levels. Operationally, the analytical framework begins with receivables data collection, followed by KPI measurement, performance evaluation against standards, and the formulation of conclusions regarding receivables management effectiveness. This analytical model aligns with the strategic performance measurement perspective, which emphasizes the linkage between operational indicators and financial outcomes (Neely, Adams, & Kennerley, 2002). Through this approach, the study aims to provide a comprehensive and relevant quantitative evaluation of corporate receivables management practices.

RESULTS AND DISCUSSION

Based on the financial statements and accounts receivable reports for the 2023–2024 period, the effectiveness of accounts receivable management was measured using a Key Performance Indicator (KPI) approach. The analysis focused on three primary indicators: Days Sales Outstanding (DSO), Receivable Turnover, and Collection Period. These indicators were selected because they are widely used in working capital management research to assess the efficiency of converting receivables into cash (Deloof, 2003; García-Teruel & Martínez-Solano, 2007).

The calculations were based on annual credit sales and average accounts receivable. The use of these indicators aligns with financial management theory, which states that receivables efficiency can be measured through turnover speed and collection duration (Brigham & Houston, 2019). The formulas applied are as follows:

$$\text{DSO} = \frac{\text{Average Accounts Receivable}}{\text{Credit Sales}} \times 365$$

$$\text{Receivable Turnover} = \frac{\text{Credit Sales}}{\frac{\text{Average Accounts Receivable}}{365}}$$

$$\text{Collection Period} = \frac{365}{\text{Receivable Turnover}}$$

Based on the data, the results of the calculations derived from the three formulas are presented in Table 1.

Table 1 Data and results of KPI calculation for accounts receivable

Description	2023	2024
Credit Sales (IDR)	1.250.000.000.000	1.380.000.000.000
Average Accounts Receivable (IDR)	205.000.000.000	215.000.000.000
Days Sales Outstanding (hari)	59,86 ≈ 60	56,86 ≈ 57
Receivable Turnover (kali)	6,10	6,42
Collection Period (hari)	60	57

The calculation results indicate an improvement in efficiency in 2024, as reflected by the decrease in Days Sales Outstanding (DSO) from 60 days to 57 days and the increase in receivable turnover from 6.10 times to 6.42 times per year.

Table 2 Aging schedule distribution of accounts receivable

Receivable Age Category	2023	2024
0–60 days (current)	82%	86%
61–90 days	12%	9%
> 90 days	6%	5%

The aging distribution indicates that the majority of receivables are classified as current and show improvement in 2024. The increase in the proportion of current receivables and the decline in overdue accounts suggest stronger monitoring and more effective credit control practices.

Performance Analysis of Accounts Receivable Management Based on Days Sales Outstanding (DSO). The findings reveal that accounts receivable management during the 2023–2024 period falls within the effective category, with a positive performance trend. The three-day reduction in DSO reflects faster conversion of receivables into cash. Theoretically, a lower DSO enhances liquidity because funds tied up in receivables become available more quickly to support operational activities (Deloof, 2003). The increase in receivable turnover from 6.10 to 6.42 times further reinforces the indication of improved collection efficiency.

These findings are consistent with García-Teruel and Martínez-Solano (2007), who argue that efficient working capital management contributes to financial stability. However, unlike Raheman and Nasr (2007), who identified a significant negative relationship between collection period and profitability, the changes in DSO in this study are relatively moderate and remain within the company's credit policy threshold (approximately 60 days). This suggests that the company maintains a balance between risk control and customer relationship management.

To assess performance normatively, the evaluation criteria are presented in the following table.

Table 3 Performance evaluation of accounts receivable management

Indikator	Standar Kinerja	2023	2024	Kategori
DSO	≤ 60 hari	60	57	Baik
Receivable Turnover	≥ 6 kali	6,10	6,42	Baik
Current receivable	$\geq 80\%$	82%	86%	Sangat Baik

Based on the performance evaluation table, all indicators fall within the good to very good categories. The increase in the proportion of current accounts receivable from 82% to 86% reflects the effectiveness of monitoring systems and internal control mechanisms. From the perspective of strategic performance measurement, financial indicators such as DSO should be integrated with process indicators such as the aging schedule to provide a comprehensive assessment of receivables risk (Neely, Adams, & Kennerley, 2002).

The novelty of this study lies in integrating quantitative KPI analysis with receivables aging structure evaluation within a unified performance measurement framework, an approach that has rarely been applied in port service sector research. Most prior studies have focused on manufacturing firms or SMEs (Lazaridis & Tryfonidis, 2006). Therefore, this study extends the empirical context to the strategic logistics service sector.

Overall, accounts receivable management during the observation period demonstrates a positive trend in efficiency and effectiveness. Nevertheless, further optimization of monitoring mechanisms is required, particularly for customers with potential payment delays.

Analysis of Collection Effectiveness Based on Collection Period (CP). The second indicator analyzed is the Collection Period (CP), which measures the average time required to convert receivables into cash. Theoretically, the shorter the collection period, the more effective the receivables management (Kieso, Weygandt, & Warfield, 2017).

The results indicate that in 2023, the average monthly CP was below 3 days, with values ranging from 0.77 days to 2.52 days. In 2024, CP ranged between 1 and 4 days, with a slight increase in June (4.35 days), yet it remained significantly below the common industry benchmark of 30–60 days. This finding suggests a highly aggressive and efficient collection system.

The evaluation criteria for Collection Period are presented in Table 4.

Table 4 Collection period performance classification

Collection Period (Days)	Performance Category
< 30 days	Highly Efficient
30 – 60 days	Efficient
61 – 90 days	Moderately Efficient
> 90 days	Inefficient

Based on the classification table, all observation periods fall within the Highly Efficient category. This finding reinforces Anzani (2021), who stated that an average collection period below

90 days reflects effective receivables management. However, the present study demonstrates substantially stronger performance than previous findings, as the collection period ranges only between 1 and 4 days—an outcome that is empirically uncommon in the port service industry.

From a risk management perspective, the exceptionally low CP indicates strict due-date control mechanisms and effective coordination between operational and financial departments. Nevertheless, minor fluctuations observed in mid-2024 suggest the need for periodic evaluation of credit policies to maintain performance consistency over time.

Evaluation of Receivables Aging Based on Customer Outstanding. The third indicator analyzed is Customer Outstanding, which functions as an aging analysis monitoring tool. Unlike DSO and CP, which primarily measure collection speed, Customer Outstanding also identifies potential payment delay risks through receivable age classification.

The results show that the majority of receivables fall within the current category (<30 days). However, a small proportion of receivables aged over 120 days requires special attention. The existence of long-outstanding receivables represents potential credit risk exposure that should be mitigated through negotiation strategies or credit policy adjustments.

The classification criteria for Customer Outstanding are presented in Table 5.

Table 5 Customer outstanding risk classification

Receivable Age	Risk Category
0 – 30 days	Current (Low Risk)
31 – 60 days	Attention Required
61 – 120 days	Moderate Risk
> 120 days	High Risk

According to Parmenter (2010), effective KPIs should not only measure outcomes but also provide early warning signals of potential operational risks. In this context, Customer Outstanding functions as an early detection system for identifying the likelihood of uncollectible receivables.

Previous studies have generally focused solely on DSO or receivable turnover ratios (Ridayani, 2022). In contrast, this study incorporates a structured aging analysis approach. The novelty lies in the integration of three indicators—DSO, Collection Period (CP), and Customer Outstanding—within a unified evaluative framework, offering a more comprehensive assessment than prior studies that relied on only one or two indicators.

Overall, the combination of these three indicators demonstrates that accounts receivable management during the 2023–2024 period falls within the highly efficient category. Nevertheless, receivables aged over 120 days represent a strategic concern and highlight the need for strengthened credit risk control in the future.

CONCLUSION

This study aimed to examine the performance of accounts receivable management based on Key Performance Indicators (KPI) during the 2023–2024 period. Based on the analysis of Days Sales Outstanding (DSO), Collection Period (CP), and Customer Outstanding, the findings indicate that receivables management can be classified as highly efficient and well-controlled. The consistent reduction in DSO reflects faster cash conversion, while the very short average Collection Period demonstrates the effectiveness of the company's collection system and internal control mechanisms. The aging structure is predominantly composed of current receivables (0–30 days), although a small portion of long-outstanding accounts requires managerial attention. Overall, the receivables management system has functioned optimally in supporting liquidity and financial stability.

Compared with prior studies that typically evaluated receivables effectiveness using a single indicator such as DSO or turnover ratios, this study contributes novelty through the simultaneous integration of three KPI-based measures within the port service sector context. The findings extend previous research, which has largely focused on manufacturing or trading firms, by demonstrating that in container terminal operations, collection cycles can be significantly shorter due to performance-based monitoring systems and integrated operational coordination. The primary

contribution of this study lies in strengthening a comprehensive KPI-based receivables performance evaluation model that is relevant for large-scale service organizations requiring both cash flow efficiency and credit risk control.

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