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Research Article

An Evaluation of Supply Chain Reliability Strategies in the Garment Industry Based on the SCOR 14.0 Racetrack Framework

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Abstract: This study presents an evaluation of supply chain reliability strategies in the garment industry by utilizing the SCOR 14.0 Racetrack Framework. The research was conducted at Raja Konveksi Kaos Makassar, a garment manufacturing company that has encountered recurring issues related to delayed deliveries, inaccurate order documentation, and poor product conditions upon customer receipt. To identify the underlying causes, a Fishbone Diagram was employed for structured root cause analysis. Based on the insights gained, a portfolio of ten improvement projects was formulated, adopting best practices outlined by the Association for Supply Chain Management (ASCM). These projects were classified according to SCOR process categories and then prioritized using a Prioritization Matrix to ensure alignment with organizational goals and resource allocation. Each prioritized project was executed using a Project Charter approach, supported by a Gantt Chart to track implementation timelines and manage activities efficiently. The evaluation phase indicated significant improvements in key SCOR reliability metrics: RL.3.3 improved by 9.23%, RL.3.5 by 2.07%, and RL.3.10 by 3.54%. These results demonstrate that the implemented strategies effectively enhanced supply chain reliability, operational performance, and service quality. Overall, this study affirms the value of the SCOR 14.0 Racetrack Framework as a practical and data-driven tool for evaluating and improving supply chain reliability in the garment industry, offering relevant insights for both academics and practitioners.

.**Keywords:** Supply Chain Reliability, SCOR 14.0 Racetrack, Garment Industry, Improvement Strategy Evaluation, Project Prioritization.

1. Introduction

In the era of globalization and growing industrial competition, supply chain effectiveness plays a vital role in ensuring business sustainability, particularly in the manufacturing sector [1], [2]. Reliability, which refers to the ability to deliver products accurately in terms of time, quantity, and quality, is a key performance indicator [3]. However, issues such as delays in raw materials, production bottlenecks, and poor distribution often reduce reliability [4]. To address these challenges, a structured and standardized model is required to analyze problems and improve supply chain performance effectively [5].

The garment industry is a labor-intensive sector that relies heavily on effective supply chain coordination [6], [7]. One active player in this field is Raja Konveksi Kaos Makassar, a medium-scale enterprise producing ready-to-wear garments such as t-shirts, polos, and uniforms for local and regional markets. The company faces notable challenges in ensuring timely deliveries, raw material availability, and responsiveness to fluctuating customer demands [8]. Moreover, the absence of a

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structured supply chain performance evaluation system hinders comprehensive process analysis [9]. Therefore, adopting a standardized framework like SCOR is essential to assess and enhance supply chain reliability [10].

Reliability in supply chains reflects the system's ability to fulfill delivery commitments with high consistency [11]. It encompasses production schedule accuracy, on-time delivery, and minimal order errors. In the garment sector, such as at Raja Konveksi Kaos Makassar, supply chain reliability plays a crucial role in maintaining customer satisfaction and long-term business relationships. Failures in timely fulfillment can lead to contract cancellations, financial losses, and reputational damage [12]. Therefore, improving this attribute requires a systematic and measurable approach, one of the most suitable being the comprehensive and updated SCOR model framework [13].

SCOR 14.0 Racetrack, developed by ASCM in 2022, is the latest iteration of the globally recognized supply chain reference model [14]. It integrates four key components: processes, performance, best practices, and people into a unified framework [15], [16]. Focusing on five core processes: Plan, Source, Make, Deliver, and Return, it provides a systematic approach to evaluating and improving performance attributes such as reliability [17]. By incorporating digital technologies and workforce capabilities, SCOR 14.0 enables the assessment of business processes using key metrics like Perfect Order Fulfillment and Delivery Performance, offering strategic insights for reliability enhancement [18].

The SCOR model has been extensively used for assessing and enhancing supply chain performance, especially reliability [19]. Studies have shown that applying SCOR 12.0 in the food industry improved distribution efficiency by 15% through Perfect Order monitoring [20], SCOR 13.0 in the automotive sector optimized Order Fulfillment and reduced production cycle times [21]. However, adoption of SCOR 14.0 Racetrack remains limited in Indonesia's garment industry. This study addresses the gap by directly implementing SCOR 14.0 in a local garment manufacturing context, yielding valuable theoretical and practical insights effectively.

This study aims to formulate strategies for improving supply chain reliability at Raja Konveksi Kaos Makassar through the implementation of the SCOR 14.0 Racetrack model. The focus includes identifying critical processes within the Source–Make–Deliver cycle, evaluating performance based on SCOR metrics, and developing improvement strategies grounded in best practices. The research provides practical value in enhancing competitiveness through a structured supply chain assessment framework, while also contributing to academic literature on SCOR application in labor-intensive industries [22]. The article outlines literature review, methodology, performance evaluation, strategy development, and implementation recommendations.

2. Research and Methodology

This study employs a quantitative descriptive case study approach, focusing on Raja Konveksi Kaos Makassar, a large-scale garment manufacturer. The research aims to develop strategies for improving supply chain performance, specifically on the reliability attribute, using the SCOR 14.0 Racetrack model. The primary focus is on analyzing delivery delays and unmet customer time commitments, which negatively impact satisfaction, contractual risks, financial losses, and company reputation. SCOR 14.0 Racetrack offers a structured framework based on five core process stages [18].

a. Engage – Identifying key business problems, including the impact of reliability on maintaining customer relationships, as well as understanding the company's organizational structure and business processes.
b. Define – Determining the relevant scope of the supply chain to be assessed, with a specific focus on order fulfillment and delivery time management.

c. Analyze – Utilizing SCOR Level 3 metrics, such as RL.3.3 (Customer Commit Date Achievement) and RL.3.10 (Orders Received Damage Free), to evaluate the company's actual performance. The gap between current conditions and ideal targets is identified and further analyzed using a Fishbone Diagram to determine root causes.
d. Plan – Developing a list of proposed improvement projects based on the gap analysis findings, followed by a cost–benefit analysis to prioritize initiatives.
e. Launch – Designing an implementation plan for selected improvement projects, including strategies for monitoring progress and evaluating outcomes.

Data were collected through direct observation of production and delivery processes, interviews with managerial and operational staff, and the review of historical order and shipment records [11]. Quantitative analysis was conducted to measure performance gaps against SCOR standards, while qualitative analysis explored causes of delivery delays and product damage [12]. Based on the findings, improvement projects were proposed, including real-time order scheduling, periodic maintenance SOPs, and more structured raw material vendor management to enhance supply chain reliability and strengthen customer satisfaction and loyalty in the competitive garment industry [23], [24].

3. Results and Discussion

3.1 Engage Phase: Problem Identification and Business Goal Definition

Raja Konveksi Kaos Makassar is a medium-sized garment manufacturer that produces t-shirts for the local market and bulk orders. Based on interviews and direct observations, the main issues identified include delivery delays and defective products, both of which negatively impact customer satisfaction and lead to a decline in repeat orders..

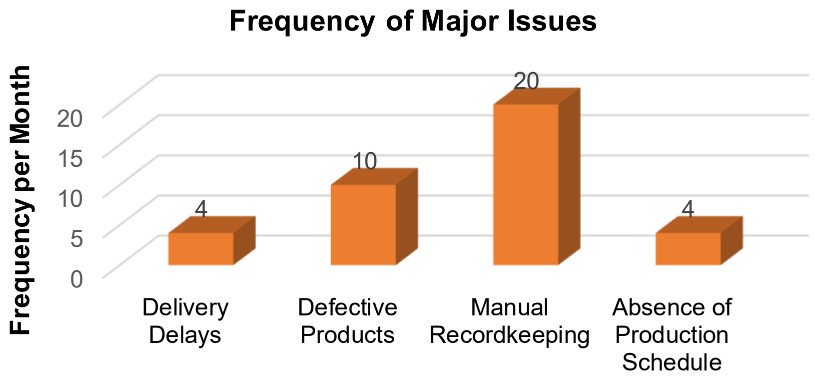

Figure 1. Types of Problems and Frequency of Occurrence

Figure 1 illustrates the frequency of major issues occurring at Raja Konveksi Kaos Makassar within one month. Manual recordkeeping was the most frequent issue (20 cases), followed by defective products (10 cases), while delivery delays and the absence of a production schedule each occurred four times. These findings highlight weaknesses in production and distribution management, indicating the need for comprehensive improvement using the SCOR 14.0 Racetrack framework.

3.2 Define Phase: Determining the Supply Chain Scope

This stage aims to develop a comprehensive understanding of the current supply chain conditions at Raja Konveksi Kaos Makassar, including business positioning, material flow, customer geographic mapping, and the primary product focus targeted for improvement. This approach consists of the following six sub-stages:

a. Business Environment Summary

This section outlines the company's internal and external conditions through a SWOT analysis, identifying key strengths, weaknesses, opportunities, and threats [25]. The analysis helps position Raja Konveksi Kaos Makassar within the local garment industry and supports strategic efforts to improve supply chain reliability.

Strengths	**Weaknesses**
- High production capacity - Experienced human resources - Custom order services	- Manual data recording - Lack of a structured production schedule
Opportunities	**Threats (Ancaman)**
- Increasing demand for custom T-shirts - Potential orders from institutions and communities	- Intense price competition - Faster production capabilities from competitors

Figure 2. SWOT Diagram – Raja Konveksi Kaos Makassar

Figure 2: The SWOT diagram illustrates that Raja Konveksi Kaos Makassar possesses strong production capabilities and experienced staff, yet faces challenges with manual processes and intense competition, necessitating strategic improvements to remain competitive and meet growing demand.

b. Documentation of the Current Supply Chain Structure and Processes

The documentation of the current supply chain structure and processes at Raja Konveksi Kaos Makassar outlines a series of interconnected activities, starting from raw material sourcing to the final delivery of products to customers. Each stage is critical to maintaining production continuity, product quality, and delivery accuracy. This documentation provides a clear overview of how the supply chain operates, highlighting key components that influence efficiency and reliability.

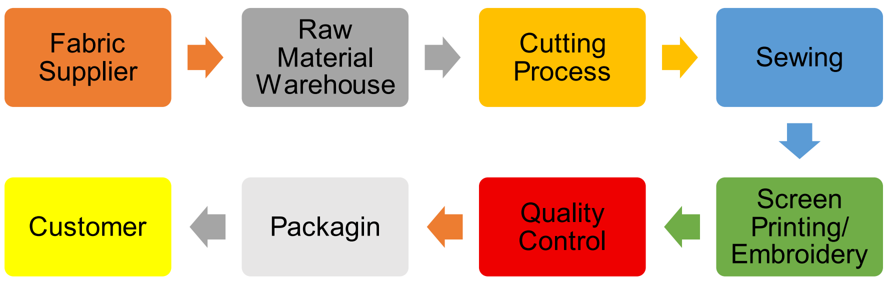

Figure 3. Supply Chain Flow Diagram of Raja Konveksi Kaos Makassar

The supply chain flow diagram illustrates the integrated production process at Raja Konveksi Kaos Makassar, starting from fabric suppliers to final delivery [2]. Key stages include warehousing, cutting, sewing, screen printing/embroidery, quality control, packaging, and distribution to customers. Each phase plays a critical role in ensuring product quality and timely delivery.

c. Geographical Mapping

Geographical mapping illustrates the customer distribution of Raja Konveksi, mainly concentrated in South Sulawesi, particularly Makassar, Gowa, and Maros. Additionally, regular institutional customers are located in cities such as Palopo, Parepare, and Kendari. This map provides insights into market distribution and the logistics routes taken.

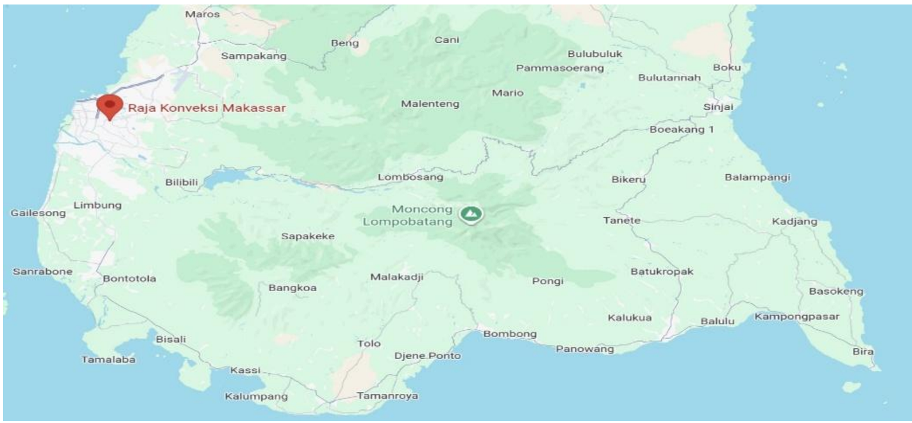

Figure 4. Market Distribution Routes of Raja Konveksi Kaos Makassar

d. Priority Matrix

Based on the sales data analysis from January to June 2024, it was found that the Screen-Printed T-Shirt is the top-performing product, contributing 40% of total revenue, followed by shirts and polo shirts. This matrix serves as the basis for determining the product focus in improving supply chain reliability.

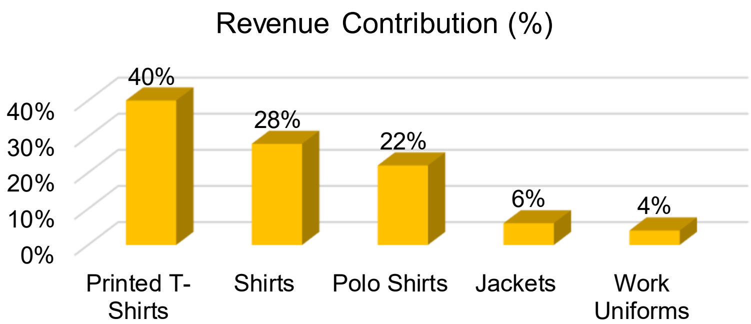

Figure 5. Product Contribution to Revenue Chart

From the chart above, it is evident that Printed T-shirts are the flagship product, contributing the highest revenue share at 40% from 8,000 units, making them the top priority in strategies to enhance supply chain reliability. This is followed by Shirts (28%) from 4,500 units, and Polo Shirts (22%) from 3,000 units, which are also considered strategic products. Meanwhile, Jackets and Work Uniforms contribute relatively less, at 6% from 1,200 units and 4% from 800 units, respectively, but they may be considered for further development if demand increases.

e. Mapping of Material Flows

The material flow begins with fabric suppliers in Soreang, continues through production stages, and concludes with delivery, yet it lacks digital integration, resulting in delays.

f. Define The Scope

Based on sales data from January to June 2024, printed T-shirts contributed the most to company revenue (40%), prompting this study to focus on improving supply chain reliability for this product, especially in procurement, production, quality, and delivery.

g. Project Charter

This project charter outlines a supply chain performance improvement plan for Raja Konveksi Kaos Makassar, focusing on reliability using the SCOR 14 Racetrack. It aims to improve delivery timeliness and reduce defects in printed T-shirts from July to September 2024.

3.3 Analyze Phase: Identifying Supply Chain Challenges

The analysis using the SCOR 14 Racetrack framework focuses on the Reliability performance attribute, as sales and return data indicate that delayed deliveries and defective products are the two main issues. The SCOR analysis is carried out through the following steps:

a. Selection of SCOR Performance Attribute

The primary attribute selected is Reliability, specifically at Level 1 of the matrix, identified as RL.1.1 Perfect Order Fulfillment.

b. Calculation of Level-2 Metrics

The determination of the Reliability attribute in the SCOR model is illustrated in the following bar chart of Level-2 performance metrics.

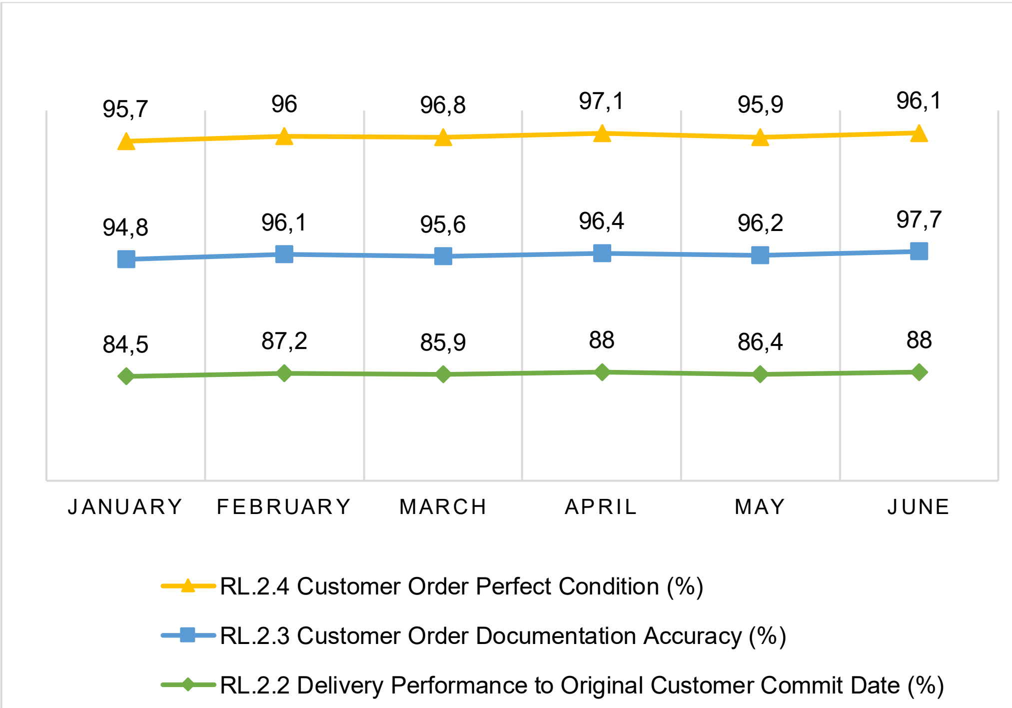

Figure 6. Level-2 Metrics Calculation Chart

Figure 6 illustrates the results of the Level-2 Metrics calculation for the Reliability attribute from January to June 2024. The RL.3.10 indicator (Orders Received Damage Free) shows the highest and most stable performance, ranging from 95.7% to 97.1%. RL.3.5 (Documentation Accuracy) also performs well, improving from 94.8% to 97.7%. However, RL.3.3 (Customer Commit Date Achievement) remains low and fluctuates between 84.5% and 88%. This indicates that improvements are most needed in the area of on-time delivery to customers.

c. Reliability

The Reliability score is calculated based on the two interrelated metrics above, and the measurement results indicate that all three indicators are still below the industry benchmark.

d. Calculation of Level-3 Metrics

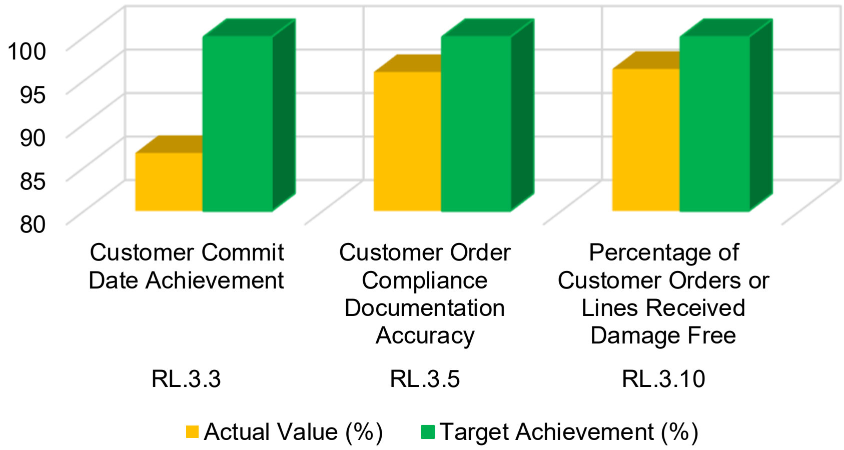

Figure 7. Results of Level 3 Metrics Calculation

Figure 7 presents the results of the Level 3 Metrics calculation for the Reliability attribute in the SCOR model. Three key metrics were analyzed: Customer Commit Date Achievement (86.67%), Customer Order Compliance Documentation Accuracy (95.98%), and Orders Received Damage Free (96.33%). Although the actual values are close to the 100% benchmark target, there are still performance gaps, particularly in delivery date commitment, which shows the greatest deviation. This data serves as the basis for conducting a deeper analysis of the root causes behind the suboptimal performance.

e. Benchmarking

The benchmarking process is conducted using internal targets set by the company. The following presents the benchmarking results based on the calculated values compared to the company's internal performance targets.

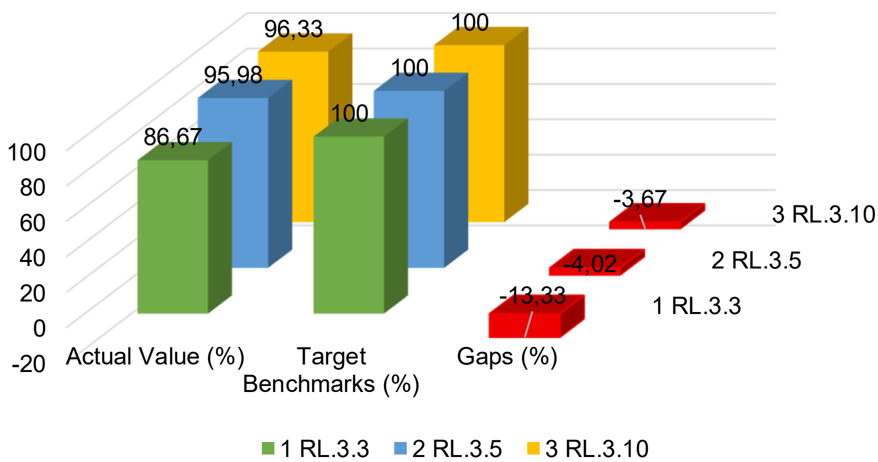

Figure 8. Benchmarking Results

Figure 8 illustrates the benchmarking results for three performance metrics under the Reliability attribute in the SCOR model. Metric RL.3.3 (1) shows the largest gap at -13.33%, indicating that on-time delivery remains a key area for improvement. RL.3.5 (2) records a gap of -4.02%, reflecting inaccuracies in order documentation. Meanwhile, RL.3.10 (3) presents the smallest gap of -3.67%, demonstrating relatively strong performance in damage-free delivery. These findings highlight that the top priority for improvement lies in enhancing delivery time commitment.

Root cause analysis was conducted using a Fishbone Diagram to identify the primary factors contributing to low reliability in the supply chain process. Based on the benchmarking results in Figure 8, metric RL.3.3 (1) showed the largest gap at -13.33%, followed by RL.3.5 (2) at -4.02%, and RL.3.10 (3) at -3.67%. The main causes of these performance gaps can be categorized into several key areas as follows:

Table 1. Fishbone Diagram Analysis of the Root Causes of Low Reliability (Level-3 Metrics)

Category	RL.3.3	RL.3.5	RL.3.10
Man	Lack of staff understanding of delivery schedules	Insufficient training for documentation staff	Low discipline of packaging operators
Machine	The delivery tracking system is not automated	No reliable digital documentation system	The packaging equipment is not functioning optimally
Method	Inconsistent implementation of delivery SOPs	Documentation procedures are still manual	No standard procedure for product handling
Material	Picking errors cause item mismatches	Physical documents are prone to damage or loss	Packaging materials do not meet the required standards
Environment	Poor road conditions and extreme weather	Operational disruptions during data entry	Rough handling during distribution
Management	Inaccurate demand planning	No regular audits of documentation	No final quality control before delivery

Table 1 highlights key factors affecting reliability performance: the highest gap, RL 3.3, results from a lack of understanding and ineffective tracking systems. RL.3.5 suffers from manual documentation and weak audits. RL.3.10 issues stem from improper handling and low packaging quality, requiring targeted process and training improvements.

3.4 Plan Phase: Development and Selection of Improvement Projects

The Plan phase involves developing a project portfolio, grouping related issues, drafting a project charter, and prioritizing improvement initiatives to ensure that selected projects align with organizational goals and deliver measurable performance improvements.

a. Project Portfolio

The Project Portfolio is the initial identification of planned initiatives to address issues at Raja Konveksi Kaos Makassar, focusing on improving supply chain Reliability based on SCOR model best practices recommended by ASCM.

Table 2. Results of Project Portfolio Determination

Project Code (SCOR)	Improvement Project Plan	Target SCOR Metric	SCOR Category
Del-01	Regular training and briefing on the delivery SOP	RL.3.3	Deliver
Make-01	Technical training for production operators	RL.3.10	Make
Del-02	Development of quality inspection SOP before delivery	RL.3.5, RL.3.10	Deliver
Plan-01	Implementation of a priority-based scheduling system	RL.3.3, RL.3.5	Plan
Make-02	Regular maintenance program for production equipment	RL.3.10	Make
Make-03	Procurement of final inspection supporting tools	RL.3.10	Make
Make-04	Selection of raw material vendors with quality standards	RL.3.10	Make
Plan-02	Implementation of a digital-based inventory management system	RL.3.5	Plan
Make-05	Reorganization of warehouse and workspace layout	RL.3.5, RL.3.10	Make
Del-03	Collaboration with logistics partners for weather risk mitigation	RL.3.3	Deliver

Table 2 presents the improvement project portfolio categorized under SCOR elements: Plan, Make, and Deliver, designed to enhance the reliability of processes at Raja Konveksi. Each project specifically targets SCOR metrics RL.3.3, RL.3.5, and RL.3.10. These initiatives follow best practices recommended by ASCM to address the root causes of low supply chain performance.

b. Grouping Issues

The Grouping Issues phase clusters improvement projects by SCOR processes to align focus areas and streamline project management across the supply chain.

Table 3. Grouping Issues (Based on SCOR Project Code)

Group	Orchestrate	Plan	Order	Source	Transform	Fulfill	Return
Production	Make-01, Make-02	Plan-01, Plan-02			Make-04, Make-05		
Quality Control					Del-02, Make-03		
Inventory		Plan-02				Make-05	
Administration	Del-01		el-03				

Table 3 presents the grouping of improvement projects based on core SCOR processes. Projects involving production fall under the categories of Orchestrate, Plan, and Transform, while those in Quality Control and Inventory emphasize inspection, logistics, and coordination.

c. Implementation Project Charter

The Implementation Project Charter outlines comprehensive details and goals of an improvement project based on identified existing problems.

Table 4. Implementation Project Charter

Project Code	Target SCOR Metric	Implementation Project Charter
PRJ-RL.3.3-01	RL.3.3	Conduct regular training for delivery staff to ensure understanding and compliance with SOPs, aiming to reduce delays and improve distribution reliability.
PRJ-RL.3.10-02	RL.3.10	Provide technical training for operators to enhance work skills and minimize production errors affecting product quality and reliability.
PRJ-RL.3.5-03	RL.3.5, RL.3.10	Design a final inspection SOP prior to delivery to ensure that products are defect-free and meet company quality standards.
PRJ-RL.3.3-04	RL.3.3, RL.3.5	Implement a priority-based scheduling system to process urgent orders earlier, reducing delays and enhancing workflow efficiency.
PRJ-RL.3.10-05	RL.3.10	Carry out routine maintenance programs on machines and production tools to prevent sudden breakdowns that may delay production and reduce quality.
PRJ-RL.3.10-06	RL.3.10	Provide inspection tools to enhance the accuracy and efficiency of final quality checks, reducing defects detected at the end of production.
PRJ-RL.3.10-07	RL.3.10	Select raw material vendors based on quality certifications and supply consistency to ensure product quality from the beginning of production.
PRJ-RL.3.5-08	RL.3.5	Implement a digital inventory management system to ensure accurate and real-time stock control, avoiding material shortages or excess.
PRJ-RL.3.5-09	RL.3.5, RL.3.10	Reorganize the warehouse and workplace layout to improve production flow, reduce waiting time, and increase output quality.
PRJ-RL.3.3-10	RL.3.3	Establish active communication with logistics partners to develop contingency plans for extreme weather, preventing shipment delays.

d. Project Prioritization

The Prioritization Matrix ranks 10 improvement projects by assessing risk and effort levels (scale 1–5) through discussions with Raja Konveksi's business owner.

Table 5. Prioritazion Matrix

Raja Konveksi Kaos Makassar		Effort				
		1 (Low)	2	3	4	5 (High)
Impact	1 (Low)					
	2					
	3			#5		
	4		#8			#9 #10
	5 (High)	#1 #2 #6	#3		#7	#4

Table 5 presents the Prioritization Matrix of ten improvement projects at Raja Konveksi Kaos Makassar, categorized by impact and effort. Projects #1, #2, and #6 fall under high impact–low effort (quick wins). Projects #3 and #8 are moderate, while #4, #7, #9, and #10 require greater effort for long-term benefits.

3.5 Launch Phase: Priority Project Implementation Plan

The Launch Phase marks the execution of prioritized projects based on the Prioritization Matrix. It focuses on implementing low-effort, low-risk initiatives to achieve quick wins in improving supply chain performance. Key initial projects include:

Table 6. Implementation Stages of 10 Priority Projects (Launch Plan)

Implementation Phase	Project Code	Priority Category	Estimated Timeline
Phase 1 (Quick Win)	PK-SC/01	High Impact – Low Effort	Week 1 – Week 2
	PK-SC/03	High Impact – Low Effort	Week 1 – Week 2
	PK-SC/09	High Impact – Low Effort	Week 1 – Week 2
Phase 2 (Moderate Execution)	PK-SC/06	High Impact – Medium Effort	Week 3 – Week 4
	PK-SC/10	High Impact – Medium Effort	Week 3 – Week 4
Phase 3 (High Leverage)	PK-SC/11	High Impact – High Effort	Week 5 – Week 7
Phase 4 (Moderate Priority)	PK-SC/04	Medium Impact – Medium Effort	Week 3 – Week 5
	PK-SC/07	Medium Impact – Medium Effort	Week 3 – Week 5
	PK-SC/12	Medium Impact – Medium Effort	Week 5 – Week 6
	PK-SC/13	Medium Impact – Medium Effort	Week 5 – Week 6

Table 6 outlines the implementation stages of ten priority projects based on their urgency and complexity levels. Quick-win projects, such as SOP training and procurement of inspection tools, are scheduled for implementation during the first and second weeks. Moderate-stage projects, including SOP development and vendor selection, are planned for the third to fourth weeks. The digital inventory system implementation is categorized as a high-leverage project due to its significant effort requirements. The final stage involves production scheduling, maintenance activities, and warehouse layout restructuring, classified as medium-priority initiatives to be executed during weeks five and six.

3.6 Reliability Score Results After Project Implementation

These results aim to determine whether there is an improvement in reliability scores following the implementation of the proposed projects. Based on a comparison between the actual values before and after execution, an increase is observed across all monitored reliability metrics.

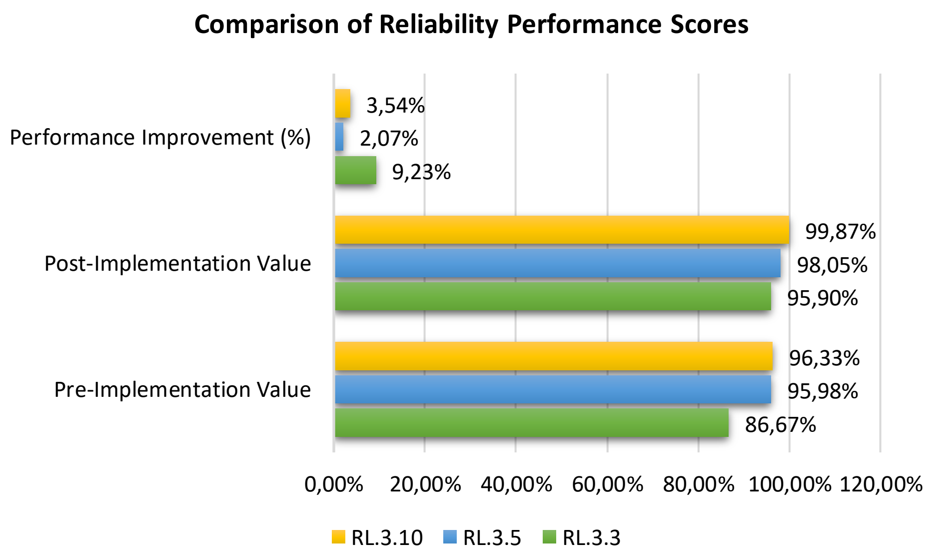

Figure 9. Reliability Performance Score Chart

Figure 9 illustrates a significant improvement in reliability performance scores following the implementation of the improvement projects. The three key SCOR metrics RL.3.3 (Customer Commit Date Achievement), RL.3.5 (Customer Order Compliance Documentation Accuracy), and RL.3.10 (Percentage of Customer Orders or Lines Received Damage-Free) increased by +9.23%, +2.07%, and +3.54%, respectively. These gains reflect the effectiveness of the implemented programs, particularly in enhancing delivery reliability, documentation accuracy, and the quality of products received by customers [23]. This demonstrates that system improvements have had a direct positive impact on service performance.

The increase in each reliability metric confirms that the prioritized projects have successfully strengthened the supply chain system at Raja Konveksi Kaos Makassar. The rise in Customer Commit Date Achievement indicates improved on-time delivery to customers [18]. Additionally, better documentation accuracy and fewer damaged goods upon receipt highlight enhanced process control and operational quality. Overall, the results prove that the improvement initiatives have delivered positive and sustainable outcomes, contributing to a more reliable and efficient operational system.

4. Conclusion

This study aims to develop a supply chain reliability improvement strategy for the garment industry, specifically at Raja Konveksi Kaos Makassar, using the SCOR 14.0 Racetrack Model approach. Based on the identification and analysis of SCOR reliability metrics, it was found that the company's initial performance in Customer Commit Date Achievement (RL.3.3), Customer Order Documentation Accuracy (RL.3.5), and Percentage of Customer Orders or Lines Received Damage Free (RL.3.10) had not yet met industry benchmark standards. Through an evaluative and benchmarking approach, significant performance gaps were identified, which then served as the foundation for designing ten prioritized improvement projects. After implementing the projects in four stages Quick Win, Moderate Execution, High Leverage, and Moderate Priority the evaluation results indicated a significant improvement across all reliability metrics. Delivery performance (RL.3.3) improved by +9.23%, documentation accuracy (RL.3.5) increased by +2.07%, and damage-free order fulfillment (RL.3.10) rose by +3.54%. Post-implementation graphs and reliability data confirmed that the SCOR Racetrack approach effectively identified critical issues and provided measurable, strategic improvement steps. Thus, the SCOR-based strategy not only supported the company in designing a systematic improvement program but also enhanced operational capabilities that directly impact customer satisfaction. This strategy is recommended for continuous adoption by similar companies aiming to remain competitive in the dynamic and fast-paced garment supply chain industry.

Author contributions: Asrul Fole led the project design and manuscript writing. Takdir Alisyahbana conducted data analysis. Nur Ihwan Safutra and Muh. Ridzwan collected and validated the data. Alifah Dwi Wulandari contributed to the literature review and formatting. All authors reviewed and approved the final version of the manuscript.

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Conflict of Interest: The authors declare no conflict of interest. All contributions were made objectively, and no financial, commercial, or personal relationships influenced the outcomes or interpretations presented in this research.

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