



Improving the Quality of the Plastic Woven Basket Production Process Using the Plan-Do-Check-Action (PDCA) Cycle (Case Study: CV Karya Abadi)

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Abstract

This study evaluated quality improvement in the production of plastic-woven bojok at CV Karya Abadi using the Plan-Do-Check-Action (PDCA) cycle. Initial observations over ten production days recorded 150 units and 104 defect occurrences, consisting of 84 cases of insufficiently dense weaving, 10 loose-weaving defects, and 10 series-weaving defects. The dominant defect represented 80.77% of total occurrences. Root-cause analysis identified contributing factors related to man, method, material, machine, and environment. Corrective measures were then implemented through standardized work instructions, in-process checkpoints, raw-material inspection, plastic-rope sorting, a new tightening tool, and work-position adjustment. After implementation during 10–19 August 2026, total defect occurrences decreased to 38, comprising 27 insufficiently dense weaving defects, seven loose-weaving defects, and four series-weaving defects. Using the same production comparison basis of 150 units, the reported defect percentage fell from 69.33% to 25.33%, while total defects declined by 63.46%. The findings indicate that PDCA provided a structured basis for identifying defects, implementing corrective measures, evaluating outcomes, and establishing improved practices as production standards. These results demonstrate measurable improvement in process consistency and support periodic evaluation of standardized corrective practices.

Keywords: PDCA, quality improvement, defect reduction, plastic weaving, process standardization.



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INTRODUCTION

Consistent product quality is a central operational concern for small and medium-sized manufacturing enterprises because improvement efforts must translate into fewer nonconformities and more reliable production practices (Bishop & Reeves, 2022). Research on lean manufacturing demonstrates improvements in operational performance while also identifying greater implementation difficulties among smaller enterprises than among large organizations (Maware et al., 2022). These findings support the adoption of improvement approaches that address specific production problems through manageable interventions and measurable outcomes rather than organizational changes disconnected from everyday operations (Bishop & Reeves, 2022; Maware et al., 2022). In production systems that depend heavily on manual work, this approach requires attention to operator practices, clear instructions, and the conditions under which individual tasks are performed (Nguyen et al., 2023).

CV Karya Abadi is a plastic-weaving enterprise located in Baturejo Village, Sukolilo District, Pati Regency, producing motorcycle baskets locally known as *bojok*. Its production process remains manual, relies on simple tools and workers' skills, and exhibits differences in working techniques that contribute to inconsistent weaving quality. The quality problems identified in the original production records comprise insufficiently dense weaving (*anyaman kurang rapat*), loose weaving (*anyaman longgar*), and series weaving (*anyaman seri*), while clearly documented work guidelines have not yet been established. These conditions make the enterprise a relevant setting for examining how explicit work instructions and systematic process improvement can address variation in manually performed tasks, consistent with the operational concerns discussed by Nguyen et al. (2023).

Baseline observations involving four workers covered 10 production days between 1 and 12 June 2026, during which 150 units were produced and 104 defect occurrences were recorded. These occurrences consisted of 84 cases of insufficiently dense weaving, 10 cases of loose weaving, and 10 cases of series weaving. The reported baseline defect percentage was 69.33%, calculated from defect occurrences relative to production volume, while insufficiently dense weaving accounted for 80.77% of all recorded defects. This concentration provides an empirical basis for prioritizing the dominant defect rather than distributing improvement efforts equally across all categories, consistent with the prioritization of quality problems in PDCA-based improvement research (Sjarifudin & Kurnia, 2022).

The documented production conditions include differences in worker attentiveness and pulling strength, weaving techniques based on individual habits, and quality inspections conducted only after the weaving process has been completed. Material-related concerns involve inconsistent plastic-rope thickness and differences in flexibility, while equipment and environmental concerns involve limitations of the existing tightening tool and noise around the working area. These conditions provide the basis for examining potential causes through the categories of human factors, methods, materials, machines, and the environment, rather than attributing all quality problems to workers alone. A comparable five-category analysis has been applied in garment manufacturing, where PDCA and quality-control tools were used to connect defect identification with targeted corrective measures (Sjarifudin & Kurnia, 2022).

The *Plan–Do–Check–Action* (PDCA) cycle provides the improvement framework adopted in this study by linking problem identification, implementation, evaluation, and standardization within a recurring process (Nguyen et al., 2023). During the *Plan* stage, check sheets, histograms, Pareto diagrams, and fishbone diagrams are used to organize defect records, identify the dominant problem, and examine its potential causes. During the *Do* stage, the 5W+1H approach specifies what improvement is required, why it is necessary, where and when it should occur, who is responsible, and how it will be implemented. The *Check* stage compares conditions before and after implementation, whereas the *Action* stage establishes suitable improvements as working standards to support consistent application in subsequent production activities.

Recent empirical studies demonstrate the application of PDCA across production and operational settings relevant to the present methodological approach. Sjarifudin and Kurnia (2022) combined PDCA with seven quality tools in garment manufacturing and reported a reduction in finishing defects following improvement measures, illustrating the connection between systematic diagnosis and corrective action. Makwana et al. (2023) integrated PDCA and Kaizen in plastic-converting machinery manufacturing to improve assembly performance and address product defects, while Amaral et al. (2022) applied PDCA to improve internal logistics and standardize material-supply processes in the automotive sector. These applications support the usefulness of structured improvement cycles, although industry-specific implementation barriers indicate that particular interventions should be adapted to the characteristics of the production setting rather than transferred without evaluation (Robertson et al., 2022).

Research on woven plastic handicrafts already provides a close methodological precedent, as Awalita et al. (2024) combined PDCA, Failure Mode and Effect Analysis, and 5W+1H to identify defects, prioritize risks, and formulate improvement proposals. That study establishes the relevance of structured quality improvement to woven products, but its findings do not directly determine which interventions will be effective within the manual production conditions of CV Karya Abadi. The present study therefore addresses a context-specific need to connect the enterprise's recorded defect distribution with implemented process changes, before-and-after evaluation, and the establishment of appropriate working standards. Its contribution lies in documenting the application and evaluation of an established improvement method within a particular production system, consistent with the practical value and contextual limitations of enterprise-level improvement research (Bishop & Reeves, 2022; Robertson et al., 2022).

Accordingly, this study aims to identify quality problems in plastic-woven *bojok* production, determine their underlying causes, develop and implement appropriate improvements, and establish effective measures as working standards at CV Karya Abadi. The improvement measures examined include written weaving instructions, in-process checkpoints, raw-material inspection, flexibility-based sorting of plastic rope, a new tightening tool, and adjustments to working positions, while formal training in weaving-pull techniques remains a proposed rather than an implemented

intervention. Evaluation compares the baseline observations with the 10-day post-improvement observation period of 10–19 August 2026, using the original comparison basis of 150 produced units to examine changes in defect occurrences and the reported defect percentage. The intended contribution is a documented basis for reducing weaving inconsistencies and strengthening routine process control through evaluated corrective actions and standardization, reflecting the emphasis on completing and documenting the improvement cycle in PDCA implementation research (Nguyen et al., 2023).

RESEARCH METHODS

This study employed a case study approach using the Plan–Do–Check–Action (PDCA) cycle to examine and improve the quality of the plastic-woven bojok production process at CV Karya Abadi. The research data consisted of production quantities, numbers and types of defects, production activities, raw-material conditions, workers' operating practices, processing time, and factors associated with the occurrence of defects. Data were obtained through direct observation of the production process, interviews with the owner and workers, documentation of production activities, and a literature review on quality control and PDCA implementation. The initial observation was conducted on the existing production process to identify the condition and distribution of product defects before corrective measures were introduced. The observed defects were classified according to the characteristics found in the production process, while the collected data were recorded systematically to provide a basis for further analysis.

Data analysis followed the four stages of the PDCA cycle. In the Plan stage, defect data were compiled using a check sheet and subsequently analysed using a histogram and Pareto diagram to determine the most frequent defect, followed by a fishbone diagram to identify its possible causes based on man, method, material, machine, and environment factors. In the Do stage, corrective measures were formulated using the 5W+1H approach and implemented according to the causes identified during the planning stage. The Check stage evaluated the effectiveness of the implemented measures by comparing the number and distribution of defects before and after improvement using the recorded check-sheet data. The Action stage established the improvements that produced favourable results as working standards for subsequent production activities, while periodic evaluation was retained as a control mechanism to maintain process consistency and identify the need for further improvement.

RESULTS AND DISCUSSION

Baseline Quality Performance and Identification of Dominant Defects

The initial evaluation of the plastic-woven bojok production process was conducted to establish the quality condition before corrective measures were introduced. Observations covered ten production days from 1 to 12 June 2026 and recorded a total output of 150 units with 104 defect occurrences. The relatively high frequency of recorded defects indicated that quality variation remained substantial within the existing production system. Such variation is particularly important in small and medium-sized manufacturing environments because limited formalization of work practices may increase dependence on individual operator techniques (Bishop & Reeves, 2022).

The production process at CV Karya Abadi is predominantly manual and relies on worker skill, simple equipment, and individual weaving practices. These characteristics create conditions in which differences in hand movement, pulling force, and inspection habits can influence the uniformity of finished products. Similar implementation challenges have been identified in lean manufacturing studies, particularly in organizations where process control depends heavily on worker consistency and informal operating routines (Maware et al., 2022). The baseline results therefore reflect not only the presence of defects but also the need to examine process stability at the operational level.

Three defect categories were identified during the baseline observation: insufficiently dense weaving, loose weaving, and series weaving. The distinction among these categories was important because each defect reflects a different form of nonconformity in the weaving process. Classifying defects before corrective action is consistent with the logic of PDCA, in which the planning stage begins with the structured identification of observable problems before their causes are examined (Nguyen et al., 2023). In this study, defect classification provided the basis for subsequent frequency analysis and prioritization.

The baseline defect data also demonstrate that the problem was not evenly distributed among the three categories. Insufficiently dense weaving occurred far more frequently than the other two defect types and accounted for most of the recorded nonconformities. This pattern is important because quality improvement should prioritize defects with the greatest contribution to total losses rather than treating all defects as equally critical. The use of frequency-based prioritization is consistent with previous PDCA applications in manufacturing, where dominant defects are identified before corrective measures are formulated (Sjarifudin & Kurnia, 2022).

The distribution of defects was further examined by calculating the proportion of each defect type relative to the total 104 defect occurrences. The results show that insufficiently dense weaving represented 80.77% of all defects, whereas loose weaving and series weaving each accounted for 9.62%. The dominance of one defect category indicates that the principal quality problem was concentrated in the ability to achieve adequate weaving density rather than being distributed across several unrelated problems. This concentration justified the selection of insufficiently dense weaving as the main priority for the subsequent PDCA analysis (Awalia et al., 2024).

Table 1 summarizes the baseline defect distribution and shows the relative contribution of each defect category. The table confirms that insufficiently dense weaving contributed more than four-fifths of the total defects, making it the primary target for improvement.

Table 1. Baseline Distribution of Weaving Defects by Type, Frequency, Proportion, and Priority

Defect Type	Number of Defect Occurrences	Proportion of Total Defects (%)	Priority
Insufficiently dense weaving	84	80.77	1
Loose weaving	10	9.62	2
Series weaving	10	9.62	2
Total	104	100.00	—

The pattern presented in Table 1 indicates a clear concentration of quality losses in one defect category. In manufacturing improvement studies, such concentration is valuable because it enables corrective resources to be directed toward the problem with the greatest operational effect. Yield improvement studies have similarly shown that process performance can improve more effectively when analysis begins with the most influential source of variation rather than with broad, undifferentiated interventions (Bilgin Turna, 2023). The prioritization of insufficiently dense weaving therefore provides a rational basis for determining which process conditions require the most immediate examination.

The reported defect percentage before improvement was 69.33%, based on 104 defect occurrences compared with the production quantity of 150 units. This figure should be interpreted according to the calculation approach used in the study, namely the ratio of recorded defect occurrences to the comparable number of produced units. The measure does not necessarily represent the percentage of individual units rejected, because more than one defect occurrence may theoretically be associated with production output; however, the manuscript consistently uses this indicator for before-and-after comparison. Defect reduction studies likewise emphasize the importance of maintaining a consistent measurement basis when evaluating process changes over time (Condé et al., 2023).

The dominance of insufficiently dense weaving also suggests that the main weakness occurred in process execution rather than in a single isolated inspection event. Plastic manufacturing research has demonstrated that process quality is strongly influenced by the stability of operating conditions and the control of variation during production (Hsiao et al., 2023). A comparable principle applies to manual weaving, where variations in worker technique, material behavior, and tool effectiveness can accumulate into visible quality differences. The baseline data therefore provided a necessary empirical foundation for identifying which operating conditions should be investigated in the following stage of the PDCA cycle.

The initial findings are also consistent with research showing that defect reduction requires a clear distinction between symptom identification and causal analysis. Recording the frequency of

nonconformities establishes which problems are most visible, but frequency alone does not explain why they occur. Studies on plastic manufacturing quality have demonstrated that corrective action becomes more effective when quantitative defect information is followed by systematic examination of process causes (Ismail et al., 2023). For this reason, the baseline defect profile in the present study was used as the entry point for further analysis rather than as the final basis for corrective decisions.

The findings of this first stage establish that quality inconsistency in the production of plastic-woven bojak was concentrated primarily in insufficiently dense weaving. The 84 occurrences of this defect represented 80.77% of the 104 total defects and therefore justified its position as the principal improvement priority. The concentration of defects also supports the need for structured process control in a production setting characterized by manual operations and variation in working practices. Such conditions are comparable to other labor-intensive manufacturing contexts in which standardization and controlled improvement are necessary to reduce recurring quality problems (Robertson et al., 2022).

Root-Cause Analysis and Implementation of Corrective Actions

The identification of insufficiently dense weaving as the dominant defect was followed by an analysis of its potential causes using a fishbone diagram. The analysis classified the contributing factors into man, method, material, machine, and environment categories, reflecting the structure used in the original study. This classification was necessary because quality problems in manufacturing generally arise from interactions among several process elements rather than from a single source of failure. Chiarini and Cherrafi (2023) emphasized the value of PDCA-based analysis in linking operational problems with specific process-control dimensions that can subsequently be standardized.

The man factor was associated with differences in worker attentiveness and insufficient pulling force during the weaving process. In a manually operated production system, variations in hand pressure and attention can directly affect the compactness and uniformity of the woven structure. Similar findings have been reported in manufacturing quality studies in which operator consistency becomes a critical determinant of process performance when automation remains limited (Rangel-Sánchez et al., 2024). The worker-related findings in this study therefore indicate that production quality depended strongly on the stability of individual operating practices.

The method factor concerned differences in weaving techniques based on individual habits and the absence of inspection during the production process. Quality inspection was generally performed after weaving had been completed, which meant that deviations could remain undetected until the final stage. This condition reduced the opportunity for immediate correction and increased the possibility that defects would continue throughout the same production cycle. Quality-improvement research has similarly shown that late-stage inspection is less effective than process-based control because defects are detected only after additional production resources have already been consumed (Escobar et al., 2022).

Material-related causes were associated with variations in plastic-rope thickness and flexibility. Differences in material characteristics can influence the ease with which the rope is tightened and positioned during weaving, thereby affecting the density of the final product. Studies in polymer and plastic manufacturing have demonstrated that material consistency is an important determinant of process stability and final-product quality (Braga et al., 2022). The observations at CV Karya Abadi therefore support the need to control raw-material characteristics before they enter the production process.

The machine factor referred to the limited effectiveness of the existing tightening tool. The tool was not always able to reach or compact the spaces between the woven strands, which reduced the worker's ability to produce a consistently dense structure. In manually dominated production, even simple tools can substantially influence output quality because their effectiveness directly affects the execution of repetitive tasks. Research on process improvement has likewise shown that inadequate equipment capability can become a significant source of variation when production relies on operator-tool interaction (Purushothaman & Ahmad, 2022).

The environmental factor involved workplace noise that could interfere with worker concentration during weaving. Although this factor did not directly alter the material or weaving method, it influenced the conditions under which the production task was performed. The fishbone analysis therefore treated the working environment as part of the overall process rather than as an

unrelated external condition. Studies on lean implementation have similarly identified workplace conditions as an operational factor that can influence discipline, concentration, and process consistency in labor-intensive production systems (Robertson et al., 2022).

The causal analysis provided the basis for formulating corrective measures through the 5W+1H approach. Each identified cause was translated into a specific action by defining what should be improved, why the improvement was required, where and when it should be implemented, who was responsible, and how the action should be carried out. Table 2 summarizes the principal corrective measures implemented in the production process.

Table 2. Root Causes of Weaving Defects and Corrective Actions Implemented

Factor	Identified Cause	Corrective Action Implemented
Man	Lack of worker attentiveness	Written weaving instructions and pre-production guidance
Man	Insufficient pulling force	Periodic checking of weaving results; formal training remained proposed
Method	Different weaving techniques among workers	Standardized work instructions
Method	Inspection conducted only after completion	In-process checkpoint inspection
Material	Inconsistent plastic-rope thickness	Raw-material inspection before use
Material	Differences in rope flexibility	Sorting plastic rope according to flexibility
Machine	Existing tightening tool not optimal	Use of a new tightening tool
Environment	Workplace noise	Adjustment of working position away from the noise source

The corrective actions in Table 2 show that the improvement program addressed both technical and procedural causes. Written work instructions and process checkpoints were introduced to reduce variation in working methods, while material inspection and sorting were intended to improve input consistency. A new tightening tool was introduced to improve physical control over weaving density, and work positions were adjusted to reduce environmental disturbance. This multidimensional approach is consistent with PDCA-Kaizen applications in manufacturing, where process improvement is achieved through coordinated modifications to methods, equipment, and working conditions rather than through a single intervention (Makwana et al., 2023).

The implementation stage also revealed an important distinction between measures that could be introduced immediately and measures that remained planned. The original study records indicate that formal training in weaving-pull techniques had not yet been conducted during the research period and remained a proposed improvement for the company. This distinction is methodologically important because only implemented measures should be considered when interpreting the subsequent reduction in defects. Studies of continuous-improvement systems similarly emphasize that evaluation must be based on interventions that were actually applied rather than on recommended actions that had not yet entered operational practice (Rajić et al., 2024).

The corrective program also reflects the importance of standardization in small-scale manufacturing. Without common operating procedures, differences among workers may persist even when the principal causes of defects are known. Kurniawanti et al. (2025) noted that PDCA-based improvement in SMEs requires clear managerial roles and structured implementation mechanisms to sustain operational changes. In the present study, written instructions, material checks, process checkpoints, and equipment adjustments provided practical forms of standardization that could be integrated into routine production.

The combined Plan and Do stages established a direct relationship between identified causes and corrective action. Worker-related, procedural, material, equipment, and environmental issues were not treated independently but were translated into a coordinated improvement package based on the actual conditions of CV Karya Abadi. Such an approach corresponds with contemporary quality-

management research that emphasizes systematic defect prevention rather than reliance on final inspection alone (Khakpour et al., 2025). The effectiveness of these measures therefore required further evaluation through a comparison of defect performance before and after implementation, which formed the basis of the subsequent Check and Action stages.

Evaluation of Improvement Results and Process Standardization

The Check stage was conducted to determine whether the corrective measures implemented during the Do stage produced measurable changes in production quality. Post-improvement observations were carried out for ten days from 10 to 19 August 2026 using the same defect categories applied during the baseline assessment. The recorded results showed 38 defect occurrences, consisting of 27 cases of insufficiently dense weaving, seven cases of loose weaving, and four cases of series weaving. This evaluation approach is consistent with manufacturing improvement studies that assess intervention effectiveness through comparable process-performance indicators before and after corrective action (Amaral et al., 2022).

Comparison with the baseline data indicates a substantial decrease in the overall number of recorded defects. Before improvement, 104 defect occurrences were recorded from a production basis of 150 units, whereas the post-improvement observation recorded 38 occurrences using the same comparable production quantity. The reduction of 66 defect occurrences corresponds to a decrease of 63.46% relative to the initial condition. Similar before-and-after evaluations are commonly used in manufacturing quality studies to determine whether structured process interventions have resulted in observable operational improvement (Araman & Saleh, 2023).

The dominant defect, insufficiently dense weaving, decreased from 84 to 27 occurrences. This change represents a reduction of approximately 67.86%, making it the largest absolute improvement among the three defect categories. The result is important because this defect had previously accounted for 80.77% of all baseline defects and was therefore the principal focus of the improvement program. Studies of quality improvement in plastic manufacturing likewise show that prioritizing the most influential source of nonconformity can produce substantial gains in process performance when corrective measures address the underlying production conditions (Abd Elnaby et al., 2024).

Loose weaving decreased from 10 to seven occurrences, equivalent to a 30.00% reduction, while series weaving decreased from 10 to four occurrences, equivalent to a 60.00% reduction. The different magnitudes of reduction indicate that the implemented measures did not affect all defect categories to the same extent. Such variation is expected because individual defects may originate from different combinations of process, material, operator, and equipment factors. Failure-analysis research emphasizes that corrective actions should therefore be interpreted according to the specific mechanisms associated with each type of nonconformity rather than by assuming uniform effects across all defects (Cardiel-Ortega & Baeza-Serrato, 2024; Lian et al., 2022).

The reported defect percentage also decreased from 69.33% before improvement to 25.33% after improvement. This measure was calculated in the original study by comparing the number of recorded defect occurrences with the production quantity of 150 units in each observation period. The indicator should therefore be interpreted as a comparative defect-occurrence ratio rather than necessarily as the percentage of individually rejected products. Maintaining the same calculation basis is nevertheless appropriate for evaluating change between the two observation periods because it preserves measurement consistency (Patel & Desai, 2025).

Table 3 presents the comparative quality performance before and after implementation. The results confirm that all three defect categories decreased and that the overall defect-occurrence ratio was substantially lower after corrective measures were introduced.

Table 3. Comparison of Weaving Defect Frequencies and Quality Performance Before and After Improvement

Quality Indicator		Before Improvement	After Improvement	Change
Production basis	comparison	150 units	150 units	—
Insufficiently	dense	84 occurrences	27 occurrences	−67.86%

weaving				
Loose weaving	10 occurrences	7 occurrences	–30.00%	
Series weaving	10 occurrences	4 occurrences	–60.00%	
Total defect occurrences	104	38	–63.46%	
Reported defect percentage	69.33%	25.33%	–44.00	percentage points

The comparative results in Table 3 indicate that the corrective measures were associated with improved process quality during the post-intervention observation period. The greatest contribution came from the reduction in insufficiently dense weaving, which had been established as the main priority during the Plan stage. Similar quality-improvement studies have shown that combining process control, material management, operating guidance, and equipment-related interventions can reduce manufacturing variation when corrective actions are directed toward identified causes (Fitriana et al., 2025). The findings therefore support the operational relevance of the corrective measures implemented at CV Karya Abadi.

The decline in defect occurrence should also be interpreted in relation to the specific interventions introduced during production. Written work instructions reduced differences in operating practices, process checkpoints enabled earlier identification of nonconformities, and raw-material inspection and sorting improved control over plastic-rope characteristics. The use of a new tightening tool addressed limitations in achieving weaving density, while adjustment of the working position reduced exposure to workplace noise. Research on manufacturing performance similarly indicates that quality gains are more sustainable when process control integrates operator practices, material conditions, equipment capability, and monitoring rather than relying solely on final inspection (Ren et al., 2022; Hussein & Taifa, 2024).

The Action stage was carried out by establishing the effective improvement measures as references for subsequent production activities. Standardization included the continued use of work instructions, raw-material inspection, in-process checkpoints, the improved tightening tool, and appropriate work-position arrangements. This step is important because short-term defect reduction does not automatically ensure that improved performance will be maintained over time. Manufacturing studies increasingly emphasize that sustained quality performance requires the institutionalization of corrective practices through routine control, documentation, and continuous monitoring (Mansour et al., 2025).

The results also indicate that process standardization should remain subject to periodic evaluation. The post-improvement period covered ten production days, which is sufficient to provide an initial comparison but does not establish long-term process stability. Changes in worker behavior, material characteristics, production volume, or tool condition may alter quality performance in subsequent periods. Research on improvement implementation in small and medium-sized manufacturing enterprises similarly highlights the importance of continued managerial support and repeated evaluation when maintaining quality initiatives beyond their initial implementation phase (Mishra et al., 2025).

The overall findings demonstrate that the PDCA cycle provided a structured sequence for identifying the dominant defect, analyzing its causes, implementing targeted corrective measures, evaluating their outcomes, and establishing effective practices as working standards. Total defect occurrences decreased from 104 to 38, while the reported defect percentage declined from 69.33% to 25.33% on the same production comparison basis. These results indicate a measurable improvement in the quality performance of the plastic-woven bojok production process during the observed post-intervention period. The findings are consistent with contemporary manufacturing research showing that systematic quality improvement is strengthened when corrective action is supported by measurable evaluation and followed by operational standardization (Mansour et al., 2025; Fitriana et al., 2025).

CONCLUSION

The implementation of the Plan–Do–Check–Action (PDCA) cycle at CV Karya Abadi identified three principal defects in the production of plastic-woven bojok, namely insufficiently dense weaving, loose weaving, and series weaving. Initial observations covering 150 units recorded

104 defect occurrences, with insufficiently dense weaving accounting for 84 occurrences or 80.77% of the total and therefore becoming the primary improvement priority. Root-cause analysis showed that the defects were associated with man, method, material, machine, and environment factors. The corrective measures implemented included standardized work instructions, in-process checkpoints, raw-material inspection, plastic-rope sorting based on flexibility, the use of a new tightening tool, and adjustment of working positions.

The post-improvement evaluation recorded 38 defect occurrences, consisting of 27 cases of insufficiently dense weaving, seven loose-weaving defects, and four series-weaving defects. Based on the same production comparison quantity of 150 units, the reported defect percentage decreased from 69.33% to 25.33%, while the total number of defect occurrences declined by 63.46%. These findings demonstrate that the implemented corrective measures improved the quality performance of the production process during the observation period. The effective measures were subsequently established as working standards, while periodic evaluation remains necessary to maintain process consistency and identify further opportunities for quality improvement.

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