Efficiency of Inspection Process in the Quality Department at X Company using Business Process Improvement Approach

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Abstract. The inspection process plays an important role in ensuring the quality of oil and gas equipment manufacturing products. However, observations show that the inspection process is still carried out manually and has not been integrated. As a result, lead time often exceeds the standard time of two days. This study aims to analyze the causes of inspection delays and design process improvements using the Business Process Improvement (BPI) approach. The methods used include process mapping (flowchart), waste identification based on the 8Waste concept , and root cause analysis with RCA, 5- Why Analysis , and Fishbone Diagram . The results of the analysis indicate that waiting , motion , and extra processing activities are the main causes of delays. Process improvements are designed through inspection digitalization, a priority-based queuing system, recording results directly to the system, and an automated mechanism for re-inspection . Implementation of this design has the potential to reduce lead time to ≤ 2 days, reduce non-value added activities , and increase the efficiency and effectiveness of the QC team. The study recommends the implementation of an integrated digital system, improvement of the WIP layout, and the principle of continuous improvement on an ongoing basis.

Keywords: Inspection Process , Quality, Business Process Improvement, Continuous Improvement.

1 Introduction

Oil and gas industry equipment manufacturers, such as Christmas trees and wellheads, play a strategic role in supporting the smooth operation of the upstream oil and gas sector. The products they produce are not merely technical components, but vital devices directly related to safety and production continuity. Therefore, product quality must be consistently maintained, as even the slightest failure can have a fatal impact on the company's operations and reputation. One crucial step in ensuring this quality is the inspection process carried out by the Quality Department . This process aims to ensure that each product meets established technical and design standards, while also detecting non-conformities early to prevent defective products from reaching customers.

Quality inspection typically involves a series of activities, from dimensional inspections and visual inspections to document validation and technical testing for product characteristics. Ideally, these stages are efficient, well-documented, and produce a clear output in the form of an item status: accepted , reworked , or rejected . However, actual conditions in the field indicate serious problems. Delays in recording incoming goods, unstructured inspection queues, and the absence of a real-time product status monitoring system often mean that the inspection process is not completed within the targeted timeframe. This directly impacts delays in production and distribution.

Based on internal data obtained QC Inspection Turn Around Time from Department Quality Company X, on average there are 400–500 Work Orders (WO) coming in every month For done inspections . However, approximately 65–75% of these experienced delays of more than two days. The trend chart from March 2024 to March 2025 shows a consistent pattern, where the number of incoming WOs remained relatively stable, but delays remained high, ranging from 300–350 WOs per month. This indicates that the problem is not caused by workload fluctuations, but rather a systemic issue within the business process. In other words, the delay issue is not incidental, but reflects a mismatch between process capacity and actual work volume.

If this situation continues without intervention, it will have a significant impact on the company's performance. First, repeated delays will reduce the achievement of the Quality Department's KPIs , particularly those related to inspection timeliness. Second, the accumulation of goods in the inspection area can disrupt the smooth flow of production and potentially create new problems. Third, delays in product delivery to customers will reduce customer satisfaction levels and risk damaging the company's reputation in the highly competitive oil and gas industry. Furthermore, the lack of a clear prioritization system leads to wasted labor, while the lack of real-time information complicates management's strategic decision-making.

To address these issues, this study uses the Business Process Improvement (BPI) approach. According to Dumas et al. (2018), BPI is a systematic method for improving the efficiency and effectiveness of business processes through the analysis and redesign of existing processes. With this framework, companies can identify non -value-added activities and restructure processes to be more efficient and measurable. This approach also aligns with lean management principles, which focus on eliminating waste and increasing customer value[1].

Several previous studies have shown that implementing BPI and lean management in inspection systems can produce significant results. Alotaibi and Liu (2021) found that BPI-based inspection process improvements can drastically reduce cycle times, improve recording accuracy, and ultimately support increased customer satisfaction.[2] Meanwhile, Harrington (2020) emphasized the importance of integrated documentation and monitoring as a key foundation for creating continuous improvement.[3]

Business Process Improvement approach to the goods inspection process in the Quality Department is expected to provide concrete solutions to the ongoing delays. By designing a better recording and monitoring system, the inspection process can be completed on time and improve the Quality Department's Key Performance Indicator

(KPI) performance . However, to date, no comprehensive analysis using the BPI approach has been conducted to address the problem of inspection delays. This indicates a research gap that needs to be addressed through this study.

Thus, this study aims to analyze the efficiency of the goods inspection process in the Quality Department of Company X using the Business Process Improvement approach . This analysis is expected to produce proposals for process improvements that are more effective, efficient, and measurable. Practically, the results of the study can be a reference for management in formulating strategic policies, starting from optimizing the inspection system, improving work time management, to utilizing more productive resources. In addition to providing practical contributions, this study also fills a research gap because until now there has never been a comprehensive study conducted using the BPI approach in the context of inspection delays in oil and gas equipment manufacturing companies.

2 Literature Study

2.1 Business Process Improvement

Business Process Improvement (BPI) is a systematic approach to increasing the efficiency and effectiveness of business processes through the analysis and redesign of existing processes. The main objectives of BPI are to identify non -value-added activities , reduce waste, and improve the overall quality and speed of processes [4]. In general, the objectives of BPI are as follows.

1. Improve the efficiency and effectiveness of business processes.
2. Reduce wasted time, costs and labor.
3. Improve output quality and customer satisfaction.
4. Increase transparency and measurability of processes.
5. BPI also enables organizations to detect processes that hinder performance through a data-driven approach and direct observation.

The general stages in implementing BPI refer to the following process approach.

1. Process Identification (as-is)
   The process begins by mapping the current process, either through a flowchart , Business Process Model and Notation (BPMN), or activity diagram. The goal is to gain a comprehensive understanding of the workflow and who is involved.
2. Process Analysis
   The mapped processes are analyzed to identify non-value-added activities, bottlenecks , inefficient manual processes, and role duplication. Tools such as Root Cause Analysis (RCA), 5W+1H, and Fishbone Diagram are commonly used in this stage[5].
3. New Process Design (to-be)
   New process designed For simplify channel work , reduce waste , as well as speed up time completion . Design may also include digital system integration or process automation.

4. Implementation and Evaluation
   New process design implemented and evaluated For see change performance . Measurement effectiveness done with compare metric before and after repairs , such as cycle time , number delay , or level productivity [6].
5. Repair Sustainable
   After implementation beginning , the process needs to be monitored and improved in a way continosly use PDCA (Plan-Do-Check-Act) approach or method continuous improvement like Kaizen.

The implementation of Business Process Improvement (BPI) has been proven to increase the efficiency of the inspection process through workflow redesign, reduction of non-value-added activities, and utilization of supporting technology. Recent research conducted by AstraTech (2024) shows that optimizing the inspection process with a BPI approach can simplify procedures, complementing SOPs and more structured supporting documents, thereby increasing efficiency levels and significantly reducing the potential for defects to reach customers [7]. Meanwhile, a study in Sustainability (2023) also confirmed that remodeling the quality inspection process with process improvement principles—although placing greater emphasis on technology integration—can accelerate inspection stages and increase the accuracy of inspection results [8]. Overall, both studies emphasize that the application of BPI to the inspection process not only simplifies procedures but also contributes to improving the quality of results and sustainable resource savings.

2.2 Flow chart

A flowchart is a graphical representation that depicts the sequence of steps or procedures in a program. With a flowchart , analysts and programmers can more easily break down problems into smaller parts and consider various alternatives in the operational process. Furthermore, a flowchart also functions to facilitate problem solving, especially those requiring more in-depth study and evaluation. It takes the form of a diagram or chart with sequential one-way or two-way flow, which is used as a means to represent and design a program[9].

In this study, flowcharts are used not only as a visualization tool, but also as an instrument to identify and map the business process flow in the Quality Department . With this graphical representation, the activities that take place in the quality process can be seen more clearly, making it easier to find points of inefficiency and opportunities for process improvement. The use of flowcharts in this context is also in line with the general practice of modern business analysis, where the representation of process flow is needed as a basis for designing improvements and increasing operational effectiveness.

2.3 Waste Identification

Each type of waste has a different definition. Within the Toyota Production System (TPS) concept , there are eight main forms of waste that don't add value.

Table 1. Eight Waste Identification

Waste	Definition
Defect	Damaged or out-of-spec products resulting in additional inspections, as well as potential consumer complaints.
Overproduction	Happen when amount production exceed need or done more beginning from specified schedule .
Waiting	Waiting time for the next process due to delays
Non-Utilized Talent	Suboptimal utilization of workers' abilities, for example not placing workers according to their competencies or not involving them enough in the production process.
Transportation	Transfer of material or work in process (WIP) between work stations
Inventory	Excessive raw material inventory or WIP
Motion	Unnecessary operator activities or movements that do not add value and extend lead times.
Extra Processing	Use of less efficient work methods or sequences

In Business Process Improvement (BPI), the concept of 8 Wastes (overproduction, waiting, transport, overprocessing, inventory, motion, defects, unused talent) is used to identify activities that do not provide added value and waste resources. By mapping the process and identifying waste , the BPI team can determine the most critical areas for improvement, redesign the workflow to be more efficient, and reduce errors or defects. The use of flowcharts helps visualize the process, makes it easier to identify waste, and becomes the main focus of improvement in BPI implementation [10].

2.4 Root Cause Analysis (RCA)

Root Cause Analysis (RCA) is methods used For finish problem or mismatch with objective find root reason main from something Problems . The application of RCA has been widely used because this approach relies on logical thinking techniques that produce a systematic, measurable, and documented process. The main stages in RCA include:

1. Identifying the problem,
2. Defining the problem,
3. Understanding the problem,
4. Determine the root cause,
5. Designing corrective actions, and
6. Monitor the system.

In practice, Root Cause Analysis (RCA) doesn't stop at the problem identification stage; it also requires supporting methods to explore the root causes in more depth. One technique frequently used within the RCA framework is the 5-Why Analysis , in which the question "why" is repeatedly asked to uncover the root cause of a problem. The results of the 5-Why analysis can then be strengthened and visualized through a

Fishbone Diagram , which presents the relationships between various causal factors in a more systematic and structured manner.

The 5 Whys Analysis method is a structured approach that involves repeatedly asking "why" questions to identify the root cause of a problem. The goal is to generate effective corrective actions to minimize similar incidents and prevent future occurrences. The results of this stage are typically used as the basis for further analysis using a Fishbone Diagram .

Fishbone Diagram or fishbone diagram is a visual tool that helps identify, trace, and describe various factors causing a problem in detail. According to Scarvada (2004), the basic principle of this diagram is to place the core of the problem in the "head of the fish" on the right side of the diagram, while the causal factors are depicted in the "bones and fins." Generally, the categories of problem causes that are used as initial references include six main aspects known as 6M, namely: materials (raw materials), machines/equipment (machines and equipment), manpower (labor), methods (methods), Mother Nature/environment (environment), and measurement (measurement). If necessary, other factors outside the 6M can also be added. To explore the causes further, brainstorming techniques are often used in this process [11].

2.5 Power Platform

Microsoft Power Platform , which consists of from Power Apps, Power Automate, Power BI, and Power Virtual Agents , enable organization For automate channel work , build application custom , analyze data, and create intelligent chatbot with skills minimal coding or without coding The same This reduces manual intervention and increases overall productivity. For example, Accelleron uses Power Platform to support various business applications and simplify processes for service agents and employees, resulting in a new agent onboarding process of 30 minutes, compared to two days for other solutions [12].

The integration of artificial intelligence into the Power Platform enables significant transformation in Office 365 workflow automation. Power Apps, Power Automate, and Power BI leverage the power of AI to simplify business processes with minimal coding requirements. Through pre-built models in AI Builder and the synergy between Power Automate and Power Virtual Agents , organizations can automate routine tasks, reduce human error, and improve operational efficiency[13].

According to a study by Microsoft , organizations using Power Platform have seen an average reduction of 25% in the time required to complete key improved processes, translating to total time savings of USD 44.4 million over three years. These efficiencies not only drive operational improvements but also empower teams to focus on innovation and value creation[14]. Overall, Microsoft Power Platform serves as a powerful tool for increasing efficiency and simplifying business processes. By enabling workflow automation, custom application development, and data analysis, organizations can reduce manual intervention, increase productivity, and achieve significant cost savings.

3 Research methods

3.1 Research Method

This research is descriptive with a qualitative approach. This approach was chosen because the research focuses on an in-depth understanding of the ongoing goods inspection process (as-is), identifying the causes of delays, and redesigning the process (to-be) using the Business Process Improvement (BPI) method.

Qualitative research is research that aims to understand the phenomena experienced by research subjects holistically, by describing them in words and language in a specific, natural context. This research does not intend to test statistical hypotheses, but rather explore problems and provide solutions to suboptimal business process efficiency, particularly in the inspection process in the Quality Department [15]. The descriptive nature of this research is aimed at systematically describing the current condition of the inspection process, revealing the factors causing inspection delays, and designing a new, more efficient and measurable process.

This research was conducted in the Quality Department of a manufacturing company that produces oil and gas industry equipment , such as Christmas trees and wellheads . The company is located in Batam, Riau Islands. The object of the research is the goods inspection process carried out in the Quality Department , which includes the activities of recording incoming goods, inspection queues, inspection implementation, as well as recording inspection results and moving goods. This research focuses on the efficiency of the current inspection process flow and the design of a more optimal process using the Business Process Improvement (BPI) approach.

The subjects in this study consist of parties directly involved in the implementation of the goods inspection process, including:

1. Quality Control Inspector
2. Quality Admin (section recording QC documents)
3. Quality Department Supervisor
4. Production or warehouse personnel (related to the handover of goods)

The selection of informants was carried out using purposive sampling techniques, namely based on the consideration that the informants have knowledge and direct involvement in the process being studied[16].

For data collection, this study employed three main techniques. Direct observation was conducted to map all stages of the inspection process, from receipt of goods to completion, and documented in the form of field notes and an " as-is " process flowchart , which was also used to calculate the duration of each inspection stage [17]. Semi-structured interviews were conducted with research subjects, using a main question guide that still allowed respondents to explain operational obstacles, process inefficiencies, and proposed improvements from their perspective [18]. Documentation study focused on supporting documents, such as Work Orders (WO), inspection reports, SOPs, delay statistics, and departmental performance reports, with particular attention to the monthly QC Turn Around Time Inspection as a basis for identifying problem patterns. By combining these three methods, the study aimed to produce a comprehensive picture of the inspection process, identify inefficiencies, and serve as a basis for designing process improvements in the Quality department [19].

3.2 Research Flow

This research flow begins with the identification of problems that occur in the field, namely delays in the goods inspection process. After that, a literature study was conducted to strengthen the theoretical foundation and identify research gaps . Next, data was collected through observation, interviews, and documentation to understand the current inspection process (as-is). The data obtained was then analyzed using the Business Process Improvement (BPI) approach, through process mapping and identification of non-value-added activities . After that, a more efficient process redesign (to-be) was carried out and strategic recommendations were prepared for the company. This study concludes with the drawing of conclusions based on the results of the analysis conducted.

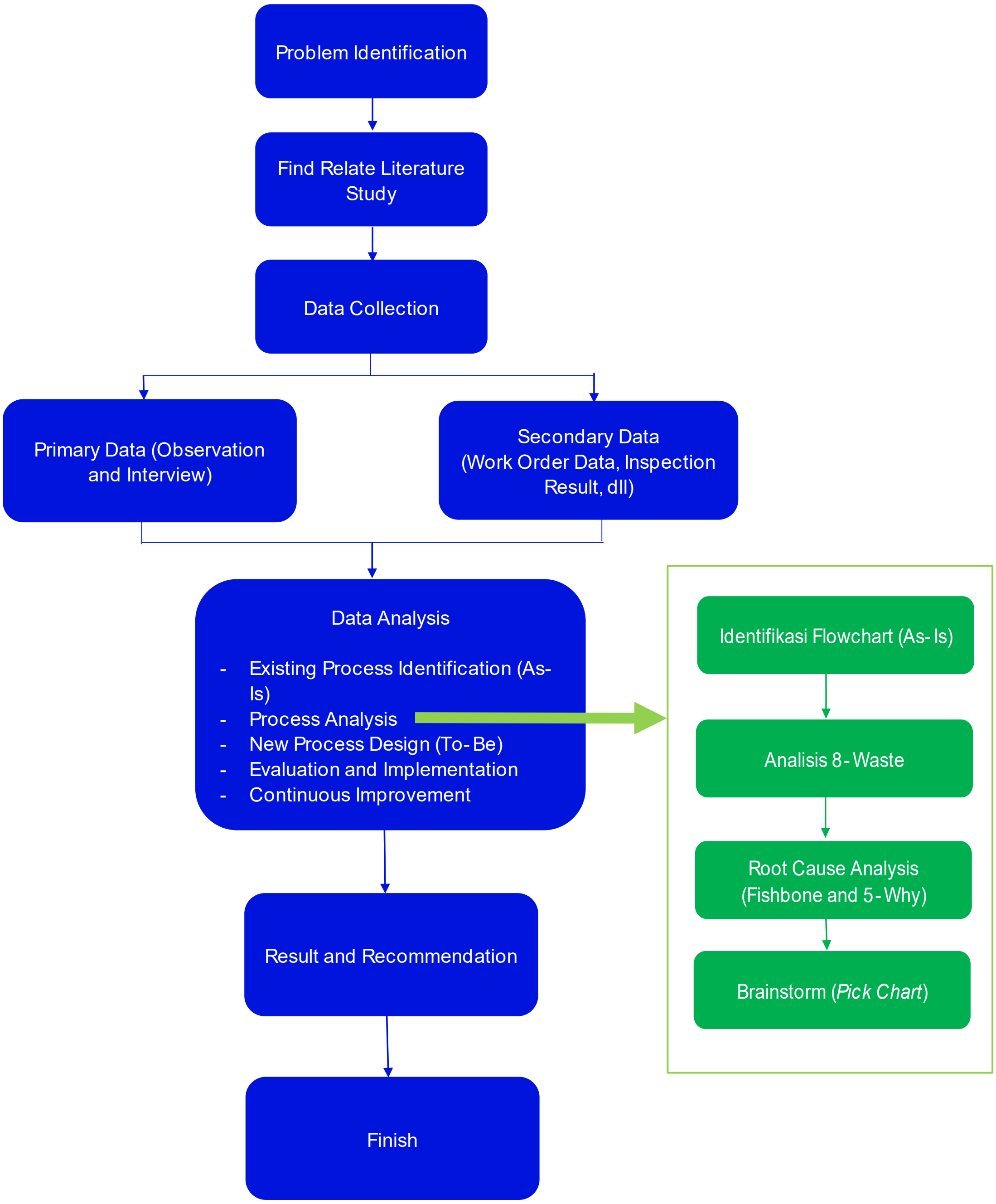

Figure 2. Research Flow and Flow Data analysis

4 Results and Discussion

4.1 Identification of Existing Processes (as-is)

Stage This is step important in implementation Business Process Improvement (BPI), at the stage This company prepare structure , source power , as well as mechanism supportive work implementation process improvement effective . improvement team was formed , consisting of representatives from various relevant departments, both at the managerial and operational levels. This team played a key role in identifying problems, analyzing root causes, and designing improvement solutions. Furthermore, the presence of top management as a sponsor or key supporter was crucial in providing strategic direction and ensuring the sustainability of improvement initiatives.

Figure 3. Formation of the Improvement Team

Based on observation and interviews , inspection process goods moment This is in the Quality Department Still done manually . Process flow visualized in flow chart following .

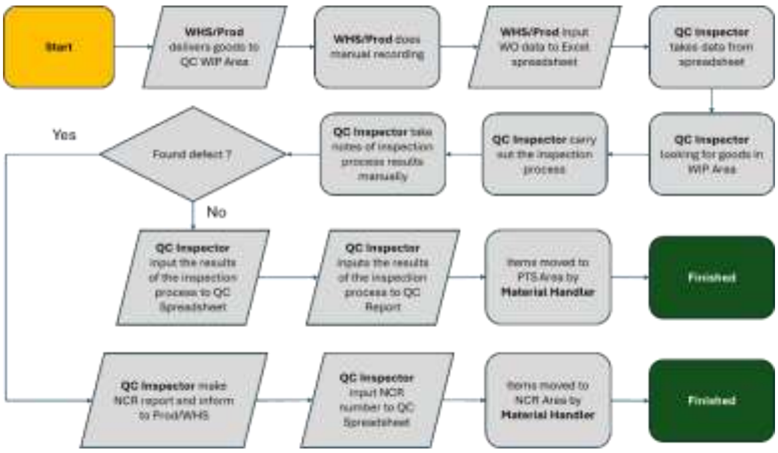

Figure 4. As-Is Flowchart

4.2 Process Analysis

Recording goods entry and registration inspection done manually on the form paper , then transferred to excel , then input to SAP. Coordination between departments (Quality, Warehouse, Production) still using email or Manual communication . Identifying non-value-added items that cause delays in the inspection process exceeding the target of 2 days in the flowchart is marked with a red symbol. This process can be improved or eliminated to streamline inspection activities.

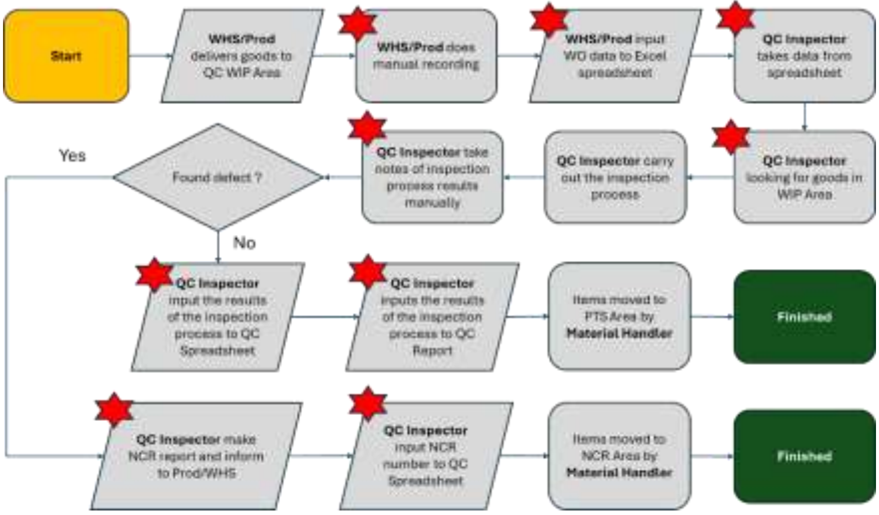

Figure 5. Non Value Added Process

Non-Value Added Activities marked with a red symbol have several categories that can be broken down into 8 Waste Identifications . The following is a breakdown of non-value added activities per category.

Table 2. Waste Identification Process (as-is)

Waste	Existing Process	Impact
Defect	Items that fail inspection are not immediately followed up, waiting for manual re-input.	Aging the longer
Overproduction	Inspection is not prioritized according to production needs	Bottleneck in the QC area
Waiting	Goods wait a long time in the WIP area before being pulled to QC	Lead time > 2 days
Non-Utilized Talent	QC only focuses on inspection, not empowered for improvement analysis	Repair slow
Transportation	Goods move from area to area without clear tracking	Hard to find moment needed
Inventory	Accumulation items in the WIP area	Cause aging and space waste
Motion	QC looking for items in the WIP area manually	Add non-value added time
Extra Processing	Manual recording on paper & Excel , double entry data	Add time administration

Based on results identification eight type waste (8 Waste) in the inspection process in the Quality Department , carried out analysis more carry on use Fishbone Diagram and 5-Why Analysis approaches . Through the Fishbone Diagram, the causes emergence waste can grouped to in six category main , namely Man, Method, Machine, Material, Environment, and Measurement .

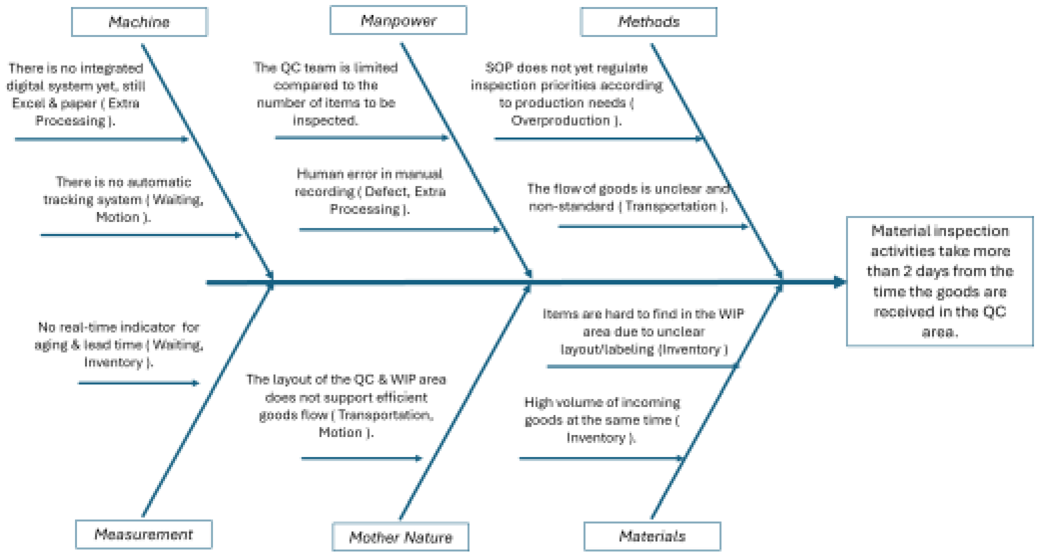

Figure 6. Fishbone Diagram Analysis

Furthermore, the 5 -Whys method can be used to trace the root causes underlying inspection delays, so that improvement strategies can be focused on the most influential factors.

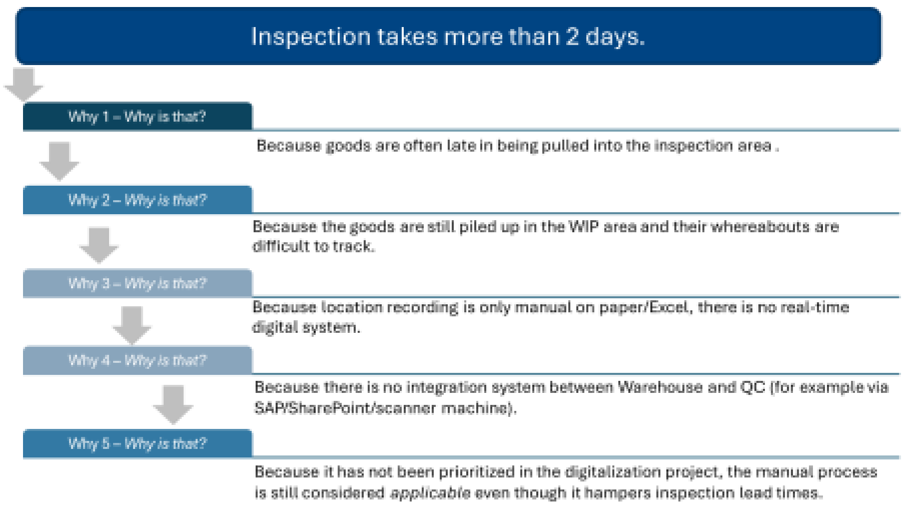

Figure 7. 5- Why Analysis

After the root cause is identified through the Fishbone Diagram and analyzed in more depth using the 5-Why approach, the next step is to formulate alternative improvement solutions. However, not all solutions generated have the same level of effectiveness and feasibility of implementation. Therefore, a method is needed to map solutions based on the impact they cause and the level of effort required to implement them. In this study, the PICK Chart is used as an analysis tool to group improvement solutions into four categories: Possible, Implement, Challenge, and Kill . With this approach, improvement recommendations not only focus on effectiveness in reducing waste, but also consider resource efficiency, ease of implementation, and the sustainability of the improvement process in the Quality Department .

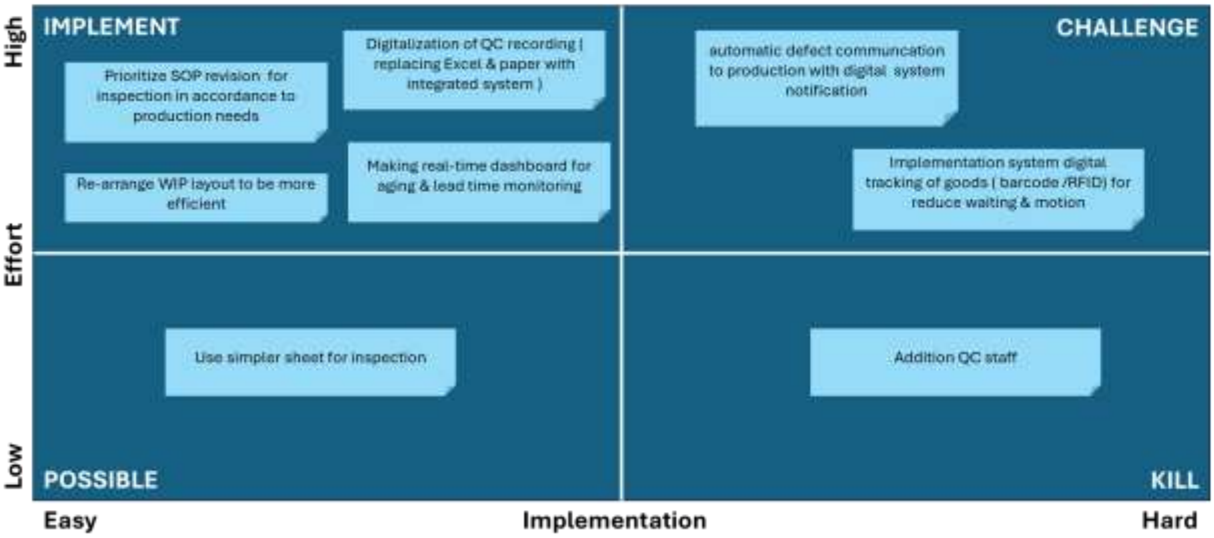

Figure 8. PICK Chart

the PICK Chart analysis , several recommended solutions are in the Implement quadrant , namely digitalization of QC recording, revision of inspection priority SOPs, WIP layout arrangement , QC training for improvement analysis, and the creation of a real-time dashboard . These solutions are relatively easy to implement with a commensurate level of effort and have a significant impact on reducing waste. Meanwhile, solutions that fall into the Challenge category are the implementation of a digital tracking system (barcode /RFID) and automatic communication of defects with production, because although they have a high impact, these solutions require large investments, system integration, and organizational readiness. Several other alternatives are categorized as Possible or Kill, such as simplifying manual inspection sheets (Possible) or adding QC personnel without system changes (Kill), because they are considered to have a low impact on long-term efficiency. Thus, the improvement strategy can be focused on Implement quadrant solutions while preparing a medium-long term roadmap for Challenge category solutions .

4.3 New Process Design (to-be)

Analysis results with PICK Chart show that new process design focused on solutions category Implement , namely improvements that have impact tall However relatively easy implemented . The design This designed For reduce waste at a time increase efficiency , data accuracy , and speed up taking decisions in the Department Quality . Some proposed process design includes :

1. Digitalization QC Recording
   All inspection results are recorded directly through an integrated system application, replacing manual recording on paper or Excel . Automatic data entry saved and can be withdrawn in form report real-time .
2. Priority SOP Revision Inspection
   Inspection process prioritized in accordance need production with track fast track For goods of a nature urgent , so that bottleneck in the QC area can reduced .
3. Re-arrange WIP and QC Area Layout
   WIP area layout designed repeat so that the flow goods more concise and efficient . Items are placed in the correct location with access direct to QC, as well as track movement made One direction (one-way flow) for reduce motion and transportation excessive .
4. Real-Time Monitoring Dashboard
   The digital dashboard displays indicator main like aging , lead time inspection , number WIP items , and levels defect , which can accessed by QC Supervisors and management For support taking decision fast and data -driven .

By implementing these principles, the QC inspection process is not only faster and more efficient, but also more accurate and well-documented, aligning with BPI's goal of minimizing waste and increasing added value for the company. Based on the results of the goods inspection process design in the Quality Department with improved digitalization, the process flow is visualized in the following flowchart .

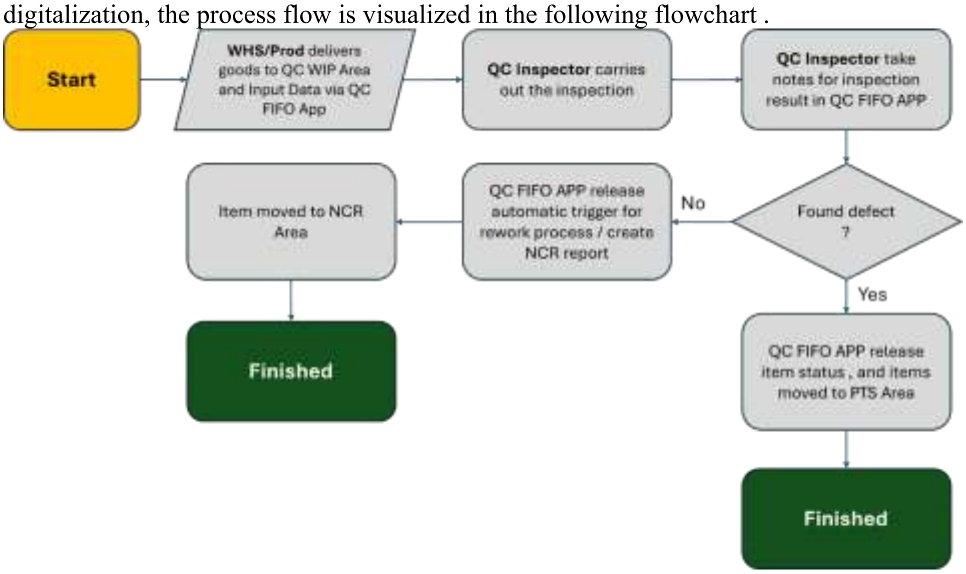

Figure 9. To-Be Flowchart

4.4 Implementation and Evaluation

Identification waste through Fishbone Diagram and in-depth root problem use 5-Why Analysis , some factor main cause inefficiency in the Department Quality revealed , including manual recording , time Wait goods in WIP, movement items that are not efficient , and limitations QC involvement in analysis defect . For overcome problem said , the solution repair formulated use PICK Chart , where the solution category Implement , digitalization QC recording , priority SOP revision inspection , arrangement repeat WIP layout , and real-time monitoring dashboard chosen Because own impact high and relative easy applied .

Implementation solution This Then evaluated with count Process Cycle Efficiency (PCE) before and after repair . For describe impact implementation process improvement more concrete , study case done on one item with relative cycle time length , namely goods T/L Assy X-Mas Tree . Here is comparison process efficiency .

Table 3. Comparison of QC Process Efficiency Before and After Implementation

Metric	**Before Implementation**	**After Implementation**	**Information**
Total Lead Time (hours)	8	6	Total time from receipt to completion of inspection
Value-Added Time (hours)	3	4.28	Time that truly adds value (inspection, defect analysis)
Efficiency (%)	37.5%	71.4%	PCE = (VA / TLT) × 100%

Improvement efficiency from 37.5% to 71.4% shows that implementation " Implement " solution from PICK Chart succeed reduce activity non-value-added like waiting , manual search , and logging double . In addition , the time used For real activity give mark plus increase in a way significant , so that cycle time more short , late reduced , and QC Inspector productivity increase .

The implementation of digital systems in quality inspection processes offers significant potential benefits, but also carries risks that must be carefully managed. Risk analysis can be conducted using a systematic approach that includes risk identification, quantification, management, and evaluation. This approach has been applied in various fields, including information technology, to mitigate risks such as application or infrastructure issues, misuse of application access, and data loss.

In the context of implementing a digitalization system in the Quality Department, some risks that need to be considered include:

1. Digital System Implementation Costs: Procurement of software, hardware, and system integration costs can require a significant initial investment.
2. Employee Training: Employees need to be trained to operate the new system, which requires time and resources.

3. Information Technology Infrastructure: The availability and reliability of IT infrastructure is crucial to support the operation of digitalization systems.

To manage these risks, careful planning is needed in the form of continuous improvement, which can include a budget for initial investment, effective training programs, and periodic evaluation of the existing IT infrastructure.

4.5 Continuous Improvement

The T/L Assy X-Mas Tree case shows that implementation solution category Implement from the PICK Chart , such as digitalization QC recording , priority SOP revision inspection , arrangement repeat WIP layout , QC training for analysis defects , and real-time monitoring dashboard succeed increase Process efficiency increased from 37.5% to 71.4%. However, this initial success is not the end point, but rather the beginning of a continuous improvement cycle. To ensure optimal efficiency, the inspection process needs to be continuously monitored and improved through the PDCA (Plan-Do-Check-Act) approach. The Plan step involves identifying areas of waste or potential improvement, while the Do step involves implementing updated solutions. The Check step is carried out by monitoring performance metrics such as cycle time, lateness rate, and defect rate. Finally, the Act step involves taking corrective actions or adjusting SOPs based on the evaluation findings.

In addition to PDCA, the Kaizen method can also be applied to involve the entire QC team in incremental process improvement. With this approach, every team member is encouraged to contribute improvement ideas, thereby continuously refining the inspection process, minimizing waste, and maintaining productivity and output quality. This continuous improvement approach ensures that the changes made are not stagnant but are constantly updated to address new operational challenges and dynamic production needs.

Figure 10. Project Documentation Tools

5 Conclusion

This study shows that the manual and unintegrated inspection process in an oil and gas equipment manufacturing company often results in lead times exceeding the standard two days. Analysis using Eight Wastes, RCA, 5-Why, and Fishbone Diagrams identified waiting, motion, and extra processing as the main causes of delays. By implementing a Business Process Improvement (BPI) approach, a to-be process was designed that included digitalized inspection recording, a priority-based queuing system, and an automated mechanism for re-inspection. The evaluation results showed that the new process was able to reduce inspection lead times to ≤ 2 days, reduce non-value-added activities, increase QC team efficiency, and improve the overall effectiveness of the inspection process. Scientifically, this study contributes to the literature by presenting a BPI-based inspection process improvement model specifically for the oil and gas equipment manufacturing sector, which can be used as a reference for similar research or implementation in similar industries.

6 Suggestion

To ensure optimal implementation of inspection process improvement plans, companies need to take both immediate and ongoing strategic actions. These steps are designed to ensure that the inspection process becomes more efficient, measurable, and adaptable to changing production needs and customer quality requirements.

1. Term Short
   a). Implement integrated digital system based barcode between Warehouse and QC for make things easier monitoring goods in a way real-time .
   b). Set a maximum target of two days For settlement inspection , supported by a monitoring dashboard that monitors aging item .
   c). Rearrange WIP area layout with principle First In First Out (FIFO) for reduce accumulation goods and speed up channel inspection .

2. Long- term
   a). Apply principle continuous improvement in a way consistent so that the inspection process Keep going updated and adaptive to changes in production volume and need customer .
   b). multi-skill training for QC teams so that they are able to handle inspections more flexibly and actively in defect data analysis , improving HR capabilities in a sustainable manner.

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