



Applying The Plan-Do-Check-Action (Pdca) In The Vehicle Inventory Registration Process For Sustainable Transportation At Shasha Industries

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ABSTRACT

Purpose: To identify the causes of the Road Transport Department (JPJ) registration process at SHASHA Industries (1985) Sdn. Bhd. and implement an improvement plan by using Plan, Do, Check, and Action (PDCA) approach with the Small Group Activity (SGA) concept for sustainable transportation.

Designing/Methodology/Approach: The PDCA cycle, often known as the Deming or Shewhart cycle, is a lean manufacturing technique that was developed in 1930. It's a four-step logical approach for continuous learning and progress. The Small Group Activity (SGA) concept is a method for finding root causes, systematically fixing problems, and ultimately eliminating them.

Findings: Due to JPJ's rejection of documents, the result of these causes identifying reveals that the procedure in the Road Transport Department (JPJ) has a low service quality. As a result, there may be an increase in the number of units that require onsite re-inspection.

Research limitations/implications: The amount of time available to monitor progress throughout time is limited. The improvement plan's findings are based on a one-month measurement, making it impossible to summarise the overall issues.

Practical implication: By using the Plan, Do, Check, and Action (PDCA) approach with the Small Group Activity (SGA) concept to reduce the number of units that need to do onsite re-inspection.

Originality/value: This study paper examines the heavy equipment registration procedure at Malaysia's Road Transport Department, as well as the use of Total Quality Management (TQM) tools to improve it.

Keywords: Plan, Do, Check and Action (PDCA), Small Group Activity (SGA), Total Quality Management (TQM) tools, Road Transport Department (JPJ), Service Quality

INTRODUCTION

In order to fulfill the anticipated objectives of overcoming current problems, a continuous improvement system must have the appropriate stages. I'll use the Plan, Do, Check, Action (PDCA) method in combination with the Small Group Activity (SGA) concept. The PDCA strategy is a method of ensuring that quality is maintained to the highest level possible, as expected and intended. So that the concept can function as a systematic and dynamic driving force, steering, and facilitation tool. Plan, Do, Check, Action (PDCA) was popularized by Dr. Edwards Deming, an American quality management expert in the field in 1950.

The principle of small group activities (SGA) serves as a frame of mind in terms of continuous development, and it is utilized as a technique for identifying root causes, systematically fixing problems, and completely removing them (Annamalah et al., 2023; Ibrahim et al. 2019, 2020). The concept of SGA is a concept of a team consisting of several individuals (5-8 people) to complete the detail of the problem and conduct sustainable development. This can indirectly grow the sense of ownership attached to the individual in the organization team and help each other solve cross-functional problems.

JPJ registration is important for the heavy equipment industry. It was specified in the Road Transport Act of 1987 that no individual shall possess or use a motor vehicle unless it is registered. The company can use the concept of Small Group Activity (SGA), in which there are eight steps of improvement with a Plan Do Check Action (PDCA) approach to overcome rejection problems in the industries, to ensure that everything runs smoothly and efficiently without having to face additional problems due to rejected documents.

PROCESS IN JPJ REGISTRATION

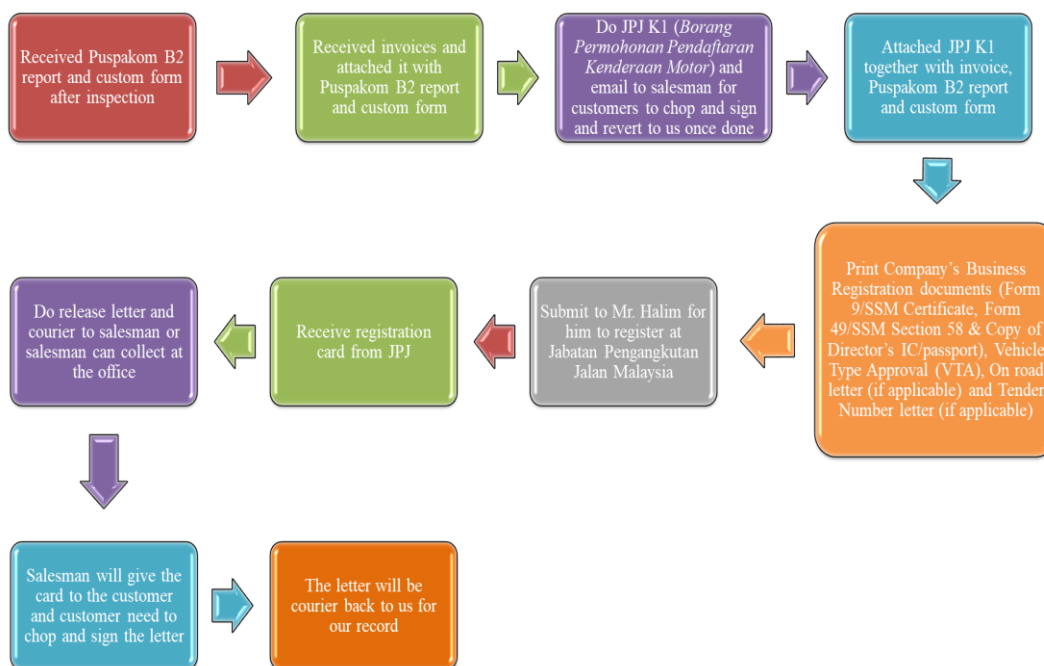


Figure 8. Process in Jabatan Pengangkutan Jalan (JPJ) Registration

Receiving the PUSPAKOM B2 report and custom form following an examination on site is the first step in the registration process. Workers need to register the forklift before the PUSPAKOM B2 report expires, which is only 60 days. Workers will receive invoices after the machines have been delivered to the customer's location, and workers will attach the invoice to the PUSPAKOM B2 report and custom form. Then workers will complete the JPJ K1 (Borang Permohonan Pendaftaran Kenderaan Motor) and email it to the salesman. Salesmen work in the Marketing Department and their job is to deal with customers. So, for anything that workers require from customers, the salesman is the person in charge to communicate with customers.

After the workers receive the original copy for JPJ K1 that has been original duly signed and chopped by the customers, workers will print out the Company's Business Registration documents (Form 9/SSM Certificate, Form 49/SSM Section 58 & Copy the of the Director's IC/passport), Vehicle Type Approval (VTA), On road letter (if the customer requests the forklift to be used on the road) and Tender Number letter (if customers purchase tender number for specific forklift). The documents will be passed to supervisor to register at the Road Transport Department (JPJ) office.

The workers will receive the registration card if the documents meet JPJ requirements and have been duly registered. After that, workers will do the Release Letter or Acknowledgement Letter and courier or can put it on the tray in the office for the salesman in charge to collect. Then, the salesman will give the Release Letter to

the customers. The customers need to chop and sign the letter to acknowledge that they have received the registration card and the salesman will give the letter back to the workers for their record.

PROBLEM STATEMENT

Customer satisfaction is critical for every manufacturing operation because it ensures that current customers will return (Sundram et al, 2019). However, achieving customer satisfaction can be difficult and might negatively impact the company's performance. As researcher discovers, SHASHA Industries has a great reputation, therefore customers will have high expectations that the company would be able to meet their needs. In this instance, the only thing that matters is that customers receive their registration cards fast, hence researcher need to speed up the JPJ registration procedure.

However, things may not go as easily as planned, since issues may arise during the procedure. If the documents researcher submit do not meet JPJ's requirements, they will be rejected and returned. For them to register again, researcher need to re-check and submit the revised documents. This can take some time because researcher have to wait for the salesman to ask the customer for the necessary documents. Some customers have stayed overseas, and as a result, the essential documents are not always available on time. Aside from that, some customers buy tender numbers for their forklifts without the knowledge of the salesperson. When researcher submit the documents to JPJ and researcher did not provide the tender number letter to JPJ, JPJ will not process to register as the letter is required by them. Thus, researcher need to print out the letter and submit it to them again.

This problem can lead to the PUSPAKOM B2 report expiring, and researcher need to do onsite re-inspection at the customer's site. Researcher need to book a date on the PUSPAKOM researcher's site for PUSPAKOM to do the inspection. This can take a long time as researcher need to book a date when both the salesman and customer are both available. For us to do the re-inspection, researcher need to pay RM253 depending on the location of the forklift. If the forklift is far from any PUSPAKOM Centre, they will charge us more. This will also lead to company expense increases.

LITERATURE REVIEW

Because of SHASHA Industries (1985) Sdn. Bhd. specializes in heavy equipment; it is critical that the equipment be registered with the Road Transport Department (JPJ) so that their customers can operate it in their everyday operations. SHASHA Industries is where most customers buy or rent forklifts. It will take time because researcher need to deal with a third party to comply with JPJ standards to register the forklift by providing hardcopy documentation to them. This can result in poor service quality during the registration procedure. Thus, the Plan, Do, Check, Action (PDCA) approach with the Small Group Activity (SGA) concept is one of the Total Quality Management (TQM) techniques that we may utilize to minimize the issues (Paraman et. al., 2023 & Zailani et al, 2013).

In the 1930s, an American statistical expert named Walter A. Stewart developed and described the Plan, Do, Check, Action (PDCA) approach. It was developed in the 1950s by W. Edwards Deming and has since become one of the most widely used approaches for directing development around the world.

The "Plan" process includes analyzing and evaluating the current situation. After all possible and root causes have been discovered, the area's prospects for improvement are identified and prioritized. Changes to the system are then proposed and planned, as researcher'll as the adoption of improvement goals. The improvements are implemented in the "Do" process, usually on a small or pilot scale to acquire data for evaluating and analysis. The "Check" process examined the effects of the modifications, deciding what lessons can be learned, and comparing the results to the goals specified to evaluate if the solutions were effective. If the adjustments result in improvements, they are implemented on a larger scale in the "Act" process (Amer et al, 2019).

RESEARCH METHODOLOGY

To further investigate the issues in the JPJ registration process and collect the data by doing some informal interviews to add information about the issues in the JPJ registration process. To gain insight into the problems with the JPJ registration process and collect data by conducting some informal interviews to supplement the information regarding the problems with the JPJ registration process. This research methodology is used to determine the root causes of the problems and to provide the best solution. According to the data, the company could take a few actions to prevent the problem from occurring. The Plan, Do, Check, and Action (PDCA) method is recommended. To identify the problem's cause, researcher will first identify the theme, then set the goals to be met, assess the current situation for abnormalities, do a root cause failure analysis, and build an improvement strategy. Following that, researcher will put the improvement strategy into action and evaluate the results. If the results are as expected and fulfill our objectives, researcher must standardize the improvements. As seen below, this technique concept can be translated into a flow diagram as below.



Figure 9. Research Methodology Chart

RESULT AND DISCUSSION

1. DETERMINE THE THEME

The first step is to find a total of machines that require onsite re-inspection due to the expiration of the PUSPAKOM B2 report.

Month	Unit	Cumulative
January	6	6
February	6	12
March	6	18
April	13	31
May	14	45
June	12	57
July	8	65
August	8	73
September	8	81
October	10	91
November	13	104
December	11	115

Table 1. Total machines that need to do onsite re-inspection

The information presented here is from January through December of 2021. From January through March, there are six machine units that require onsite inspection. There are 13 units in April, 14 units in May, 12 units in June, and 8 units from July to September. There are 10 units in October, 13 units in November, and 11 units in December.

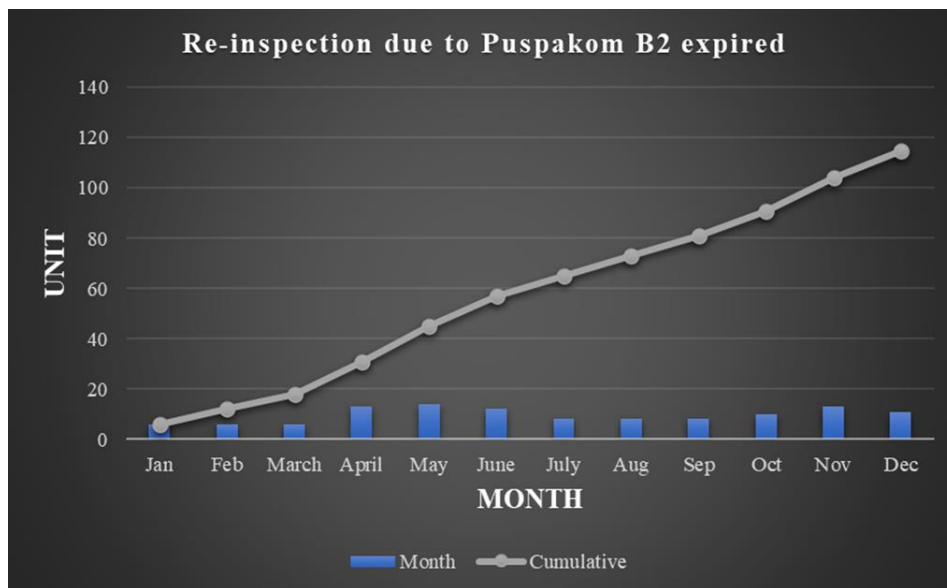


Figure 10. Re-inspection due to PUSPAKOM B2 Report expired trend

The graph above illustrates the trend for units that require onsite re-inspection due to the expiration of Puspakom B2. The total sum for the year of 2021 is 115. The research is focused on the PUSPAKOM B2 report, which has expired, therefore researcher will be able to see the trend of achievement after implementing the PDCA approach.

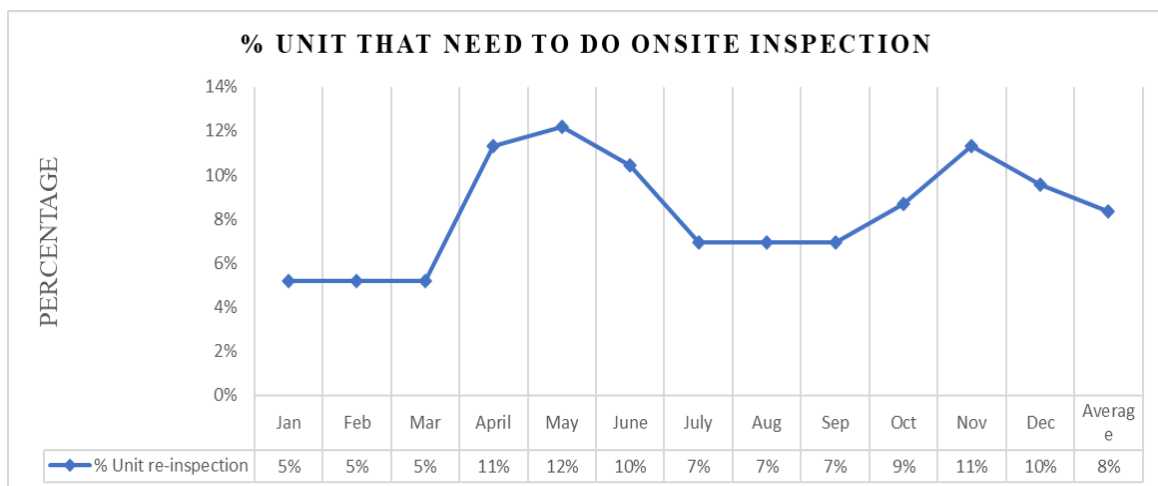


Figure 11. Percentage of units that need to do onsite re-inspection

This figure is a trend of units that need to re-inspection during 2021 and it has reached an average of 8%.

2. SET TARGET

In the second step, researcher determine the target to be achieved thus the target is set to decrease by 50%.



Figure 12. Target Improvement Graph

The figure above is a picture of the target to be achieved, from 8% to 4%.

3. EXISTING CONDITIONS ANALYSIS

The table below explains the non-standard conditions identified during JPJ registration, and there are four findings of situations that could lead to the expiration of PUSPAKOM B2.

No	What should be happened	What actually happened	4M
1	Documents submitted on time	Documents received late	Method
2	Salesmen follow and alert with instructions given by email	The salesman did not follow and alert with requirements	Method
3	Salesman aware of customers buying the tender number	The salesman did not keep up to date with customers buying the tender number	Method
4	Customer aware and carefully check JPJ K1 before signing and chop	Customers overlook the information in JPJ K1	Method

Table 2. Existing Conditions Analysis

4. ROOT CAUSE FAILURE ANALYSIS

Table 3 shows how to perform a problem analysis using the why-why technique to determine the root cause.

No	Failure Mode	Why 1	4M
1	Documents received late	Salesman not aware with the expiry date given	Method
2	Salesman did not follow and alert with requirements	Their email may be too pack and lead to overlook	Method
3	Salesman did not keep up to date with customers buying tender number	Our side did not inform salesman in advance through email about the tender number purchase	Method
4	Customers overlook the information in JPJ K1	Customers want to receive the registration card quickly	Method

Table 3. Root Cause Failure Analysis

There result identified to be four main causes for PUSPAKOM B2 to expire, all of which can result in an onsite re-inspection. The first one is late receiving documents from salesmen and customers. As the JPJ K1 (*Borang Permohonan Pendaftaran Kenderaan Motor*) needs to be originally duly chopped and signed by the customer, it will take time since there are directors that stayed overseas or have been very busy with their schedules. As salesmen need to deal with many customers, they might not be aware of the expiry date given through email. Aside from that, salesmen sometimes fail to follow up and alert on email requests. Researcher have prepared a list of documents for them to provide, but they continue to send us incorrect documents. Their email may be overloaded, causing them to neglect our requirements.

Next, customers buy tender numbers without the salesman's knowledge. When researcher submit the documents to JPJ without attaching the tender number letter, JPJ will reject and revert the documents to us as it has already stated in their system that the unit should be registered under the tender number. Thus, researcher need to print out the tender number letter and attach it together with other documents to resubmit it again.

Lastly, as customers want to receive the registration card quickly, they may be overlooking the information in JPJ K1 and signing before double check. After researcher receive the invoices and attach it with the Puspakom B2 report and custom form, researcher need to retrieve the customer's information such as address and company's registration number in our Pronto system to key in JPJ K1 in the Electronic Dealer Management System (EDMS) website. Sometimes the information in the Pronto system may be inaccurate, and it can lead to inaccurate details in JPJ K1 as well. Researcher have put it on reminder through email for customers to ensure the company name, address and company registration number are correct before signing; however, some customers may overlook the information in the form.

5. CREATE IMPROVEMENT PLAN

What	Why	How	Who	Where	When
Not aware of the expiry date given	In order to prevent expired	Remind the salesman every week	Account department	Email	1/12/2021
Email may be too packed and lead to overlook	In order to have a systematic email and make it noticeable	Create a folder in the email and add a reminder	Salesman	Email	1/12/2021
Did not inform the salesman in advance through email about the tender number purchase	In order to prevent from being rejected by JPJ due to having a tender number	Create a new list that requires customers to provide tender number receipt	Account department	Email	1/12/2021
Customers want to receive the registration card quickly	In order to give customers full satisfaction	Customers need to double-check the information before signing	Customer	Customer's place	1/12/2021

Table 4. 5W +1H Analysis

Table 4 is an improvement step after an analysis of the root causes of the problem. How to improve the problem, where to put the platform, and who will be responsible for the solution will all be determined by the root cause. In order to prevent it from expiring due to taking a long time to submit the documents to the researcher, researcher will remind the salesman every week so the salesman will be more alert with the time given and submit the documents within the time. Next, the salesman will create a folder for JPJ registration only and add a reminder for them to make the email always noticeable. After that, researcher will create a new list that requires customers to provide tender number receipts in email. This is to reduce the number of times rejected by JPJ. Then, in order for customers to receive full satisfaction with our services, they also need to give full cooperation to double-check the information before signing the documents that researcher require them to do so. This can expedite the process and customers also will be able to receive the registration card quickly.

IMPLEMENTATION & IMPROVEMENT

What	Before	After
Remind salesman every week		

Create a new list that require customer s to provide tender number receipt

Table 5. Implementation Improvement

The sixth step is the documentation of the results of the improvement for before and after. There are 2 items that are made improvements to improve the process in JPJ registration and to reduce the numbers of PUSPAKOM B2 reports to expire. Researcher have been reminding salesmen to submit required documents every week, and salesman are now more aware of the deadline, and all required documents have been provided on time (Rahmat el al 2023). Next, researcher have created a new list that requires the customer or salesman to provide a tender number receipt and the probability to get rejected and expired can be reduced as researcher can print out the receipt and submit it together with the other required documents.

6. EVALUATIONS

From the evaluation of improvements that have been implemented there is a decrease in onsite inspection trend like the graph below:

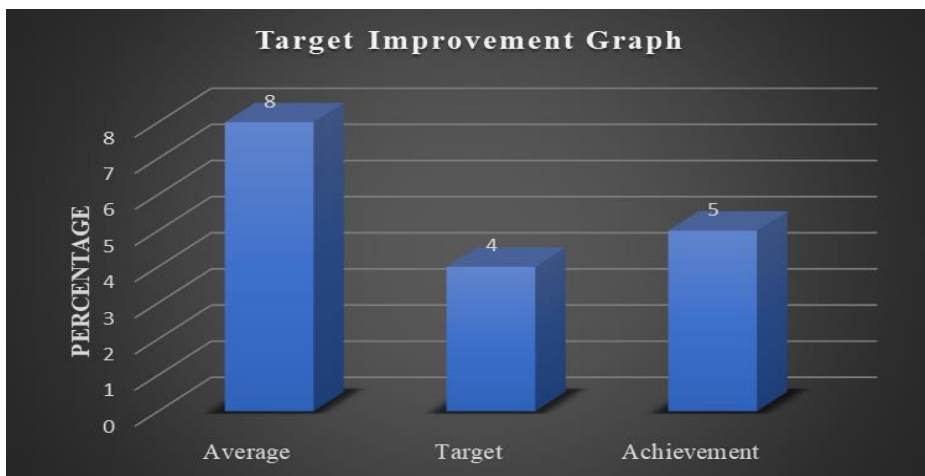


Figure 13. Achievement Diagram

There is a decrease from 8% to 5%. Even if researcher are not able to reach the target, researcher can still see a decrease in the quantity that researcher need to do onsite re-inspection.

7. STANDARDIZATION

Last step is standardization. Researcher will keep the good results of improvement, monitor changes by regularly measuring and controlling the processes to ensure uniformity. If the objective target in the goal statement has been accomplished, standardise the improvement. This includes putting in place a method for workers who are conducting the new process to measure and monitor benchmarks on a regular basis to ensure that progress is being made. Run charts and control charts are two examples of performance monitoring tools.

CONCLUSION

To summarise, this report is using one tool of Total Quality Management (TQM) which is Plan, Do, Check and Action (PDCA). As an Operations Management student, the objective of writing this report is to be able to adopt Total Quality Management (TQM) in the workplace so that the industry may become more efficient in the future, and to use our critical thinking on how to implement the improvement plan.

Not only for vehicles, but also for heavy equipment such as forklifts, JPJ registration is essential. The purpose of this article is to identify the factors that may cause the documents required to register the forklift to expire. Researcher used the Plan, Do, Check, and Action method in this report (PDCA). It is a tool for continuous improvement that can help you shorten the workflow, remove waste, and boost production. Researcher can revise the early procedure to prevent documents from expiring and reduce the number of times documents are rejected by JPJ by using this tool. This quality tool can assist in the analysis of the problem and the identification of the actions to be taken.

As a result of applying this tool, the two issues can be reduced and costs for onsite re-inspection can also be reduced. As a result, the PDCA technique combined with the Small Group Activity (SGA) Concept has effectively reduced the number of documents rejected by JPJ while also reducing the number of units that require re-inspection. Customers will be more satisfied if the process is completed quickly, hence it is critical to have an efficient procedure. Furthermore, customers rely on the forklift for their company operations, thus it is critical that they be able to operate it promptly.

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