



# Revitalizing Quality Control Circle Program In A Hibernate Line Production PT.Toyota Boshoku Indonesia

Ismatulloh Ismatulloh<sup>1</sup>, Fathurohman Fathurohman<sup>2</sup>  
<sup>1,2</sup>Universitas Pelita Bangsa, Indonesia

## Abstract

In an effort to increase customer trust PT TBINA regularly conducts QCC activities to analyze problems that exist in the field. However, in its application, this activity is not easy to carry out in each department, for the example is the Seat Assembly which sends an average of 1 group to represent 145 employees in the TBINA internal competition for the 2017-2019 period. The number is the same as the Needle Punch line but only consisting of 12 members, different with the Welding line which can send 12 groups of 122 members.. This study aims to increase QCC activity in the Seat Assembly line. The method used in this study is the QCC analysis method. Revitalization is carried out through a leadership approach by conducting guidance and training both for employees and for leaders, grouping employees based on age and years of service, setting activity targets, making repair and improvement plans as well as evaluating and standardizing. After the QCC activity was carried out, there was an increase in operator knowledge of QCC, this encouraged active activities which can be seen in the QCC competition in 2023 where the line seat assembly can send 9 groups to represent 100 employees. QCC also has a positive impact on the achievement of work quality and productivity in the seat assembly production line.

**Keywords:** Quality Control Circle, Leadership, Quality Control

## INTRODUCTION

In uncertain global and national economic conditions, the industry is required to continue to compete in order to survive and continue to grow. Every business person who wants to win the competition in the industrial world must pay full attention to quality." Full attention to quality will have a positive impact on the business in two ways, namely the impact on production costs and the impact on revenue. (Gaspersz, 2001). Through high consistency of quality products, it will increase consumer confidence." The success and sustainability of productivity and quality management depends on the contribution, cooperation and commitment of employees and their management (Oliver and Wilkinson, 1992; Wilkinson et al., 1998).

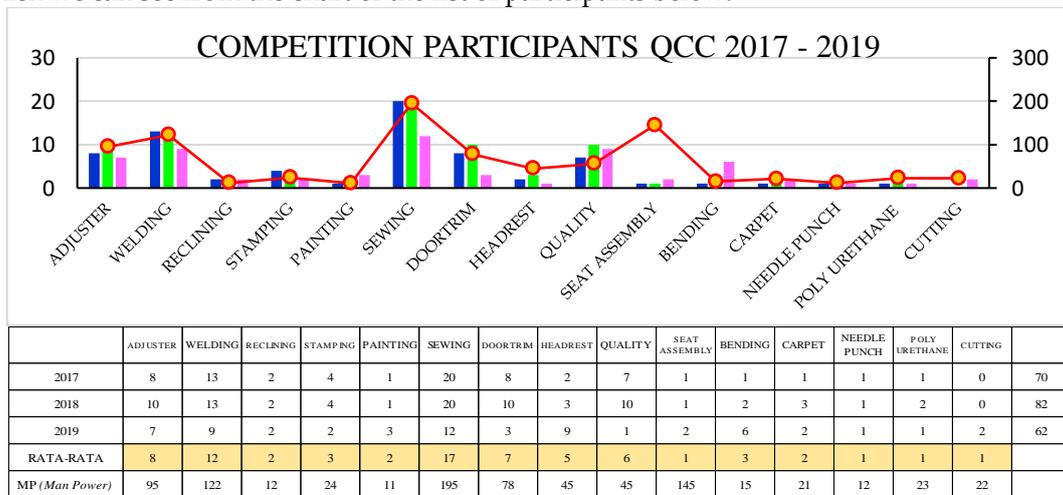
PT Toyota Boshoku Indonesia (TBINA) as a company engaged in the automotive industry is very concerned about the quality of its products. For the sake of quality and quantity of good products, PT TBINA routinely conducts QCC activities to analyze problems in the field. Quality Control Circle (QCC) provides benefits for companies and employees such as fostering quality awareness in all parts of the company, increasing employee self-belonging to the company, fostering cooperation between employees and between departments (departments), growing process efficiency, fostering employee work motivation and fostering customer satisfaction (Baisalim & Soediantono, 2022). (David Andriatna Kusuma<sup>1</sup>), Tita Talitha<sup>2</sup>), 1957) examined that QCC is needed in recognizing the triggers of a case and obtaining solutions in solving cases. This research shows that the Quality Control Circle procedures focus more on product quality control in implementing revisions with the PDCA cycle and Seven tools.

The difference between this research and previous research lies in the process of planning and implementing QCC activities which not only focuses on solving the quality problems faced but also how to mobilize QCC activities on production lines that were inactive can run well using

the CLMA (Circle Leader Managing Activities) method which aims to improve cooperation and vitality in the workplace and can grow in the expected direction.

The influence of Leadership is needed in order to increase motivation and activeness in carrying out QCC activities on the production line, (Rijanti et al., 2020) argues that transformational leadership has a positive impact in increasing the influence of self-efficacy, namely one's confidence in one's ability to master the situation and produce something beneficial to performance or motivation in carrying out a job. According to (Pamfilie et al., 2012) Leadership applied by an organization has a significant effect on employee perception and involvement in making continuous improvements. The more a leader is able to communicate and articulate meaning to his employees in a good way, the more innovative employees will be in the face of difficulties.

In its application, QCC activities are not easy to run by every department in PT. TBINA, one indication that can be used as a parameter is participation in the annual QCC competition which we can see from the chart of the list of participants below:



Picture 1 Graph of QCC 2017 - 2019 Competition Participants

From the data above, it can be concluded that the Seat Assembly line is one of the lines that is still not actively participating in the annual QCC competition activities with an average of sending 1 group to represent 145 employees in the line seat assembly in the period 2017 - 2019. This is different from other lines on average, which is 1 group to represent 11-12 people. The passivity of QCC activities in the line seat assembly also has a negative impact on line achievement performance based on Safety, Quality, Cost, Delivery, Moral (SQCDM). In the 2017-2019 period there were three factors that did not reach the target including: first is Quality where the average standard defect (NG product) is 2% of total production, while the actual obtained is 2.56%. The second is Productivity Efficiency during production, where the standard is 95% actually 94.13. And the last is Morale with employee attendance indicators, where the standard is 95% actual attendance in that period which is 94.43%.

## RESEARCH METHOD

This type of research carried out includes a qualitative approach, namely research that describes the natural state of the object under study at the time of the research. Data collection techniques were triangulated (a combination of direct observations on the seat assembly production line, interviews with related members, and documentation in the form of daily production reports and QCC convention group reports at TBINA), the results of the study can be



both potential and problem finding. In this case, the natural state in question is the problem of the line Seat Assembly being passive in carrying out QCC activities.

The method of data collection is by making direct observations at PT. Toyota Boshoku Indonesia Seat Assembly Production line with data collection techniques carried out as follows:

- Observation by making direct observations on the seat assembly production line by observing every course of the production process, production methods, production systems, production environment and activity activities.
- Interviews with various parties related to the object of the research, by asking questions to operators, team leaders, line leaders and area leaders.
- Literature Study by studying and reading books, literature, and books related to the object of research with the aim of obtaining research theories or concepts.
- Pre-test and post-test by asking questions regarding QCC knowledge that are submitted to all operators on the seat assembly production line.

The analysis method used is the QCC (Quality Control Circle) method with the following steps:

- Determining the theme aims to determine the problems raised to be solved / overcome.
- Analysis of existing conditions aims to find the data needed to support the theme or problem to be solved.
- Set targets and make work plans that will be carried out by referring to the targets set by the company, then make work plans that will be carried out.
- Cause and effect analysis aims to find the main cause / dominant cause which is the main cause of passive line Seat Assembly problems in carrying out QCC activities.
- Countermeasures Plan, the purpose of this step is to find solutions to problems, by means of discussion and submission of ideas from employees and organizers in the line Seat Assembly.
- Implement countermeasures.
- Evaluation of results that aims to find out how well the problem can be overcome / overcome.
- Standardization is needed to prevent the same problem from recurring.

## RESULTS AND DISCUSSIONS

Based on observations on the production process in November – December 2022, the number of production and performance of line seat assemblies can be seen from the achievements of SQCDM (Safety, Quality, Cost, Delivery, Moral) as follows:

Data SQCDM line seat assembly bulan November - Desember 2022													
		Bulan →	November					Desember					Evaluasi
		Minggu →	I	II	III	IV	V	I	II	III	IV	V	
Faktor	Indikator												
Produksi (Pcs)	Total produksi	Standar	1095	1230	1170	1176	1176	471	1518	1560	1527	1194	Tercapai
		Aktual	1095	1230	1170	1176	1176	471	1518	1560	1527	1194	
Safety (Cases)	Kecelakaan ditempat kerja	Standar	0	0	0	0	0	0	0	0	0	0	Tercapai
		Aktual	0	0	0	0	0	0	0	0	0	0	
Quality (Pcs)	Defect/ part NG	Standar	44	49	47	47	47	19	61	62	61	48	Tidak Tercapai
		Aktual	148	185	146	106	109	60	129	145	107	109	
Efficiency (%)	Waktu proses produksi	Standar	95	95	95	95	95	95	95	95	95	95	Tidak Tercapai
		Aktual	94.2	94.5	94.1	94.6	94.7	94.5	94.5	94.4	94.6	94.6	
Cost (Pcs)	Penggunaan sarung tangan	Standar	210	210	210	210	210	210	210	210	210	210	Tercapai
		Aktual	200	200	210	200	200	200	200	200	200	200	
Delivery (Pcs)	Pengiriman ke customer	Standar	100	100	100	100	100	100	100	100	100	100	Tercapai
		Aktual	100	100	100	100	100	100	100	100	100	100	
Moral (Operator)	Kehadiran	Standar	95	95	95	95	95	95	95	95	95	95	Tercapai
		Aktual	100	100	100	96	100	100	100	100	100	100	
QCC	Pertemuan kegiatan QCC	Standar	1	1	1	1	1	1	1	1	1	1	Tidak Tercapai
		Aktual	0	0	1	1	0	0	1	0	0	1	

Picture 2. SQCDM line seat assembly data Before QCC

From the table above, there are three factors that did not reach the target line in the November - December 2022 period, including: Product Quality Achievement, Production Time Efficiency, and QCC activities. To facilitate the analysis process, data collection is first carried out related to worker status, age and length of service, the following is data on seat assembly production operators in November 2022. From the results of the study, it was found that the average age of employees in the seat assembly production line was 24.45 years with an average employee service life of 3.25 years.

Then a pre-test is carried out to all operators on the seat assembly production line regarding knowledge of QCC which aims to find out the extent of operator knowledge of QCC. The steps in carrying out the QCC pre-test are as follows: a. The test is divided into 6 groups according to their respective lines and shifts. b. The test is carried out by asking yes and no questions to operators around QCC by the group head directly one by one with the following division:

Table 1. Operator Pre-test schedule

No	Line	Shift	Assessor	Pre-test date	Total Operators
1	Front	Red	Triono	16 January 2023	14 Operators
2	Rear 1	Red	Ace Roni	14 December 2022	16 Operators
3	Rear 2	Red	Hamdani	12 January 2023	14 Operators
4	Front	White	Arianto	22 November 2022	14 Operators
5	Rear 1	White	Alwan akbar	16 January 2023	16 Operators
6	Rear 2	P White	Yudi Setiawan	13 January 2023	14 Operators

In the discussion, steps were taken to apply the QCC method to solve problems in research. (1) Theme Selection This stage is the first step in the QCC method which aims to determine the theme of the problem that occurs. Based on the SQCDM data described earlier,

there are three factors that do not reach the target, including: Product quality, production time efficiency, and QCC activities. Of these three factors, the theme that will be raised is Quality Control Circle Activities with the hope that active QCC activities can improve product quality and production time efficiency in the seat assembly production line. In accordance with research conducted by Irhamna, Ofila (2018) that Quality Control Circle is an important and effective method to solve problems in a company and is able to improve company performance. (2) Analysis of Existing Conditions, The first analysis is the operator's knowledge in the line seat assembly regarding QCC which is still low. 89.4% of operators still need training and guidance in carrying out QCC activities. In line with research conducted by Nur Ainar Karim, et al (2018) that partial training has a positive and significant effect on work productivity, this shows that the more often training is held, the higher the work productivity of employees. (3) Setting targets, the formation of QCC groups is targeted to form 6 active groups that can take part in the TBINA internal QCC competition which will be held from May to June 2023. (4) Determine cause and effect by conducting a forum discussion group (FDG) with regulators on the seat assembly production line attended by researchers, group heads and line heads with the theme of brainstorming from the passive problem of QCC activities in the line seat assembly, it can be known that the causes of passive QCC are: a. Production operator ; Operator knowledge of QCC is low because operators are not given regular training. b. Line Manager / Group Head ; Line regulators have not been able to guide operators to carry out QCC activities because line regulator knowledge related to QCC is still low. c. Operator difficulties in making QCC papers caused by the operator's computer usage ability is still low. (5) Countermeasures Plan, at the planning stage the method used is 5W+1H (What, Why, When, Where, Who, and How)

Table 2. Carry out a repair plan with the 5W+1H method

Factor	What		Why	Where	When	Who	How
	Cause	Plan Improvement					
1. Leader (Man)	Group head knowledge related to QCC is still low	Set up a training schedule for QCC mentors	QCC skill upgrade and mentoring	Line Seat Assembly	04-13 Jan 2023	Group head	Creating training schedules for mentors
2. Operator (Man)	Operators are not given regular training	Set up training schedules for production operators	Upgrade QCC skills and work motivation	Line Seat Assembly	Jan - Apr 2023	Production operators	Running QCC activities with the guidance of mentors
3. Methode	Computer capabilities are still low	Set up the creation of a computer training schedule	Upgrade minutes and computer skills	Line Seat Assembly	Apr 2023	Production operators	Making computer training schedules

(6) Countermeasures, a. The first improvement is that maximizing the role of leaders in a company is very necessary so that the company can achieve the goals that have been set. To overcome the low knowledge of group heads in QCC activities, training is carried out on group heads who will guide operators in QCC activities carried out on January 4-13, 2023. b. After training the group head, then the group head becomes a guide for QCC activities in each line. QCC activities will be carried out from January to April 2023. c. The latest improvement is computerized training to facilitate the preparation of QCC papers. The operators trained are representatives assigned by each group head. (7) Evaluation of results is a step that contains a comparison between the conditions before and after which aims to find out the results or achievements obtained from the application of QCC. After the activity was carried out, operator knowledge of QCC increased, there were no more operators with 25% understanding, operators with 50% understanding increased from 48 people to 54 people, operators with 75% understanding increased from 10 people to 29 people while operators with 100% understanding from none to 11 people.

In addition, there is progress in QCC activities at the line seat assembly which can be seen from the participants of the 2022-2023 QCC internal judging held on May 15 – June 9, 2023 where the line seat assembly can complete 9 themes at the event. QCC activities also have a positive impact on the achievement of Quality and Productivity of seat assembly production lines which can be seen in the achievement of SQCDM in April – May 2023.

Data SQCDM line seat assembly bulan April - Mei 2023												
		Bulan →	April			Mei					Evaluasi	
		Minggu →	I	II	III	I	II	III	IV	V		
Faktor	Indikator											
Produksi (Pcs)	Total produksi	Standar	2841	2739	1896	1824	2787	2028	3165	1368	Tercapai	
		Aktual	2841	2739	1896	1824	2787	2028	3165	1368		
Safety (Cases)	Kecelakaan ditempat kerja	Standar	0	0	0	0	0	0	0	0	Tercapai	
		Aktual	0	0	0	0	0	0	0	0		
Quality (Pcs)	Defect/part NG	Standar	57	55	38	36	56	41	63	27	Tercapai	
		Aktual	26	29	44	37	51	41	62	22		
Efficiency (%)	Waktu proses produksi	Standar	95	95	95	95	95	95	95	95	Tercapai	
		Aktual	96.9	96.5	96.1	95	96.1	96.6	96.7	97.2		
Cost (Pcs)	Penggunaan sarung tangan	Standar	210	210	210	210	210	210	210	210	Tercapai	
		Aktual	200	200	205	200	190	190	200	200		
Delivery (Pcs)	Pengiriman ke customer	Standar	100	100	100	100	100	100	100	100	Tercapai	
		Aktual	100	100	100	100	100	100	100	100		
Moral (Operator)	Kehadiran	Standar	95	95	95	95	95	95	95	95	Tercapai	
		Aktual	96	96	96	100	100	96	100	100		
QCC	Pertemuan kegiatan QCC	Standar	1	1	1	1	1	1	1	1	Tercapai	
		Aktual	1	1	1	1	1	1	1	1		

Picture 3. Data SQCDM line seat assembly After QCC

(8) Standardization, In order for this improvement to continue to run well, standardization is carried out as follows:

Table 3. Standardization of QCC Improvements on the production line



No	Activity	Time	Goal	Place
1	Creation of re-training schedules for production line organizers	1 time/ year	Group head or coordinator	Line seat assembly
2	QCC activity schedule creation	Every Wednesday of the week	All operators	Line seat assembly
3	Creation of monthly control sheet QCC activities	1 time/ month	All operators	Line seat assembly
4	Making computer training schedules for members	1 time/ month	Representatives of each line	Line seat assembly

## CONCLUSION

Based on the results of observations and analysis in the field, conclusions can be drawn as follows:

- 1) Factors causing passive QCC activities in the seat assembly production line before revitalization can be mapped as follows:
  - a. The human factor is that the operator's knowledge of QCC activities is still low, which is caused by the operator not given regular training.
  - b. Second is the lack of knowledge of the regulator / group head so that they cannot guide operators to carry out QCC activities in their respective lines.
  - c. The method factor is one of the factors that causes the passivity of QCC activities caused by the operator's lack of understanding of the preparation of QCC papers.
- 2) From the three causes above, then a forum discussion group (FDG) was carried out with the production line manager to then make improvements as follows:
  - a. Retraining is carried out or re-training for all organizers on the production line.
  - b. QCC knowledge training is conducted for all operators on a regular basis.
  - c. Computer-based QCC paper making training was conducted for representatives of each line.
  - d. Results after QCC revitalization activities are carried out there are no more operators with an understanding of 25%, operators with an understanding of 50% increased from 48 people to 54 people, operators with an understanding of 75% increased from 10 people to 29 people while operators with an understanding of 100% from none to 11 people.
  - e. In addition, there is progress in QCC activities in the line seat assembly which can be seen from the participants of the 2022-2023 QCC internal judging held on May 15 - June 9, 2023 where the line seat assembly can complete 9 themes at the event.
- 3) Factors that support the success of QCC revitalization in line seat assembly are as follows:
  - a. The first factor is the role of the leader in driving passive activities by increasing knowledge about QCC, so that it can mobilize and guide its members.
  - b. The second factor is the training carried out on members related to QCC knowledge, when member knowledge increases QCC activities will be easy to do.
  - c. The third factor is training of members related to computerization or QCC paper making methods, computer skills are very important in terms of QCC because the activities that have been carried out will be reported.



## REFERENCES

- Andre, O., & Riyanto, W. (2015). *IMPLEMENTASI METODE QUALITY CONTROL CIRCLE UNTUK MENURUNKAN TINGKAT CACAT PADA PRODUK ALLOY WHEEL*. 3(2), 104–110.
- Baisalim, M. F., & Soediantono, D. (2022). *Literature Review of Quality Control Circle ( QCC ) and Implementation Recommendation to the Defense Industries Literature Review Quality Control Circle ( QCC ) dan Usulan Penerapannya Pada Industri Pertahanan*. 3(2), 61–72.
- Bramantia, P. N. (2018). *Analisis Pengecekan Part Stamping Untuk Mengurangi Produk Defect Guna Mencapai Customer Satisfaction*.
- David Andriatna Kusuma<sup>1</sup>, Tita Talitha<sup>2</sup>, R. S. (1957). *CACAT PRODUK DENGAN METODE QUALITY CONTROL CIRCLE SEMARANG Program Studi Teknik Industri Fakultas Teknik Universitas Dian Nuswantoro Semarang Di dalam era globalisasi , sektor industri memegang peran yang sangat penting dalam kehidupan manusia . Kualitas*.
- Fahmi, irawan. (20118). *Pengantar Ilmu Kepemimpinan* (1st ed.). RAJAGRAFINDO PERSADA.
- Faiesal, Z., Mohamad, B., Hamzah, A., Abdul, B., & Ishak, Y. Bin. (2019). *Short Review of QCC ( Quality Control Circle ) Implementation toward Productivity Improvement : Case Study*. December. <https://doi.org/10.17577/IJERTV7IS110047>
- Gaspersz, V. (2001). *Desain Sistem Manufaktur Menggunakan ERP System: Suatu Pendekatan Praktis*. *Jurnal Siasat Bisnis*, 1(6), 77–88. <https://doi.org/10.20885/jsb.vol1.iss6.art6>
- Junaedi, W. (2020). *MENINGKATKAN KAPABILITAS & MENCIPTAKAN TEMPAT KERJA YANG MENYENANGKAN*. 1–128.
- Khan, M. R., & Wajidi, A. (2019). *Role of Leadership and Team Building in Employee Motivation at Workplace*. *Gmjacs*, 9(1), 11–11. <http://gmjacs.bahria.edu.pk/index.php/ojs/article/view/77>
- Magar, V. M., & Shinde, V. B. (2014). *Application of 7 Quality Control ( 7 QC ) Tools for Continuous Improvement of Manufacturing Processes*. *International Journal of Engineering Research and General Science*, 2(4), 364–371.
- Pamfilie, R., (Draghici), A. J. P., & Draghici, M. (2012). *The Importance of Leadership in Driving a Strategic Lean Six Sigma Management*. *Procedia - Social and Behavioral Sciences*, 58, 187–196. <https://doi.org/10.1016/j.sbspro.2012.09.992>
- Panthi, K., Candidate, P. D., Ahmed, S. M., & Ph, D. (2006). *Application of Quality Tools to Improve Quality : A Case Study of a Building Remediation Contractor*. 1–9.
- Rahmawati, S. (2012). *ANALISIS PENGENDALIAN KUALITAS GULA DI PG TASIKMADU KABUPATEN KARANGANYAR*.
- Realyv, A., Arredondo-soto, K. C., Carrillo-guti, T., & Ravelo, G. (2018). *applied sciences Applying the Plan-Do-Check-Act ( PDCA ) Cycle to Reduce the Defects in the Manufacturing Industry . A Case Study*. <https://doi.org/10.3390/app8112181>
- Rijanti, T., Indriyaningrum, K., Yuniyanto, A., & Yusuf, I. (2020). *Peran Kepemimpinan Transformasional dalam Memperkuat Pengaruh Efikasi diri dan Motivasi pada Kinerja Pegawai*. *Jurnal Bisnis Dan Ekonomi*, 27(2), 111–122. <https://www.unisbank.ac.id/ojs/index.php/fe3/article/view/8193>
- Santi, Joice Touris. (2016). *Perubahan Tiada Henti* (Joice Tauris Santi (ed.); 1st ed.). Kompas Media Nusantara.
- Wirawan. (2017). *Kepemimpinan: Teori, Psikologi, Perilaku Organisasi, Aplikasi dan Penelitian* (dua). RAJAGRAFINDO PERSADA.