Scientific Research Publishing

Open Journal of Leadership, 2025, 14(3), 492-505
https://www.scirp.org/journal/ojl
ISSN Online: 2167-7751
ISSN Print: 2167-7743

The Role of Leadership in Continuous Improvement (CI)

Clerwey Gracindo de Deus

Veritas University College, Ipoh, Malaysia
Email: cgdeus@misi.edu.my

How to cite this paper: de Deus, C. G. (2025). The Role of Leadership in Continuous Improvement (CI). *Open Journal of Leadership, 14,* 492-505.
https://doi.org/10.4236/ojl.2025.143025

Received: March 18, 2025
Accepted: September 27, 2025
Published: September 30, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc.
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).
http://creativecommons.org/licenses/by/4.0/

Open Access

Abstract

The objective of the research is to identify the main factors that contribute to successful implementation and sustainable Continuous Improvement (CI), highlighting the role of leadership in this regard. A systematic literature review (SLR) was carried out to obtain the most relevant information from over 60 academic articles on the topic discussed. A large problem in several sectors is waste—Overproduction, Defect, Inventory, Transportation, Waiting, Motion, Over-process, and Non-utilized talent, while continuous improvement is used to reduce or eliminate waste. Finding points the main contributors to the success of continuous improvement—Leadership, Staff and Organization. Leadership will play the role of supporting, developing, engaging, and recognizing employees; managing the changes necessary for continuous improvement; and establishing and managing the system to align activities with strategic objectives to achieve sustainable, effective, and growing results for the organization.

Keywords

Continuous Improvement (CI), Leadership, Staff, Organization

1. Introduction

As a comprehensive change program that is organized, planned, and methodical, Continuous Improvement (CI) is different from project-based change approaches (Lindberg & Berger, 1997). Furthermore, it offers an integrated strategy that may be utilized by manufacturing and transactional firms to better define ways to improve processes, optimize costs, and accomplish faster adoption and development of new products or services (Van Aartsengel & Kurtoglu, 2013). Additionally, there has been a noticeable surge in interest in the topic of continuous improvement since the 1980s, with excellence serving as the primary scholarly journal in this field (Sanchez & Blanco, 2014). In this sense, continuous improvement, which

involves a company-wide process of enabling a continuous stream of focused incremental innovation, is increasingly being recognized as a significant complement to more radical, step-change kinds of innovation (Bessant et al., 1994).

Historically, the roots of Lean Six Sigma, whose approaches were merged in the 1980s, and Continuous Improvement may be traced back to the 1700s, when statistical methods were first developed. The statistical concepts of probability and the normal curve were created in 1733 by Abraham de Moivre and Pierre-Simon Laplace. At the end of the 18th century, Eli Whitney used these concepts to create muskets in large quantities (Quick, 2019). Schroeder and Robinson (1991) claim that the history of Continuous Improvement dates back to the 1800s, when management of different companies began implementing initiatives to encourage employee-driven development that was funded by incentives. During World War II, the US government implemented the "Training within Industry" (TWI) idea in an attempt to boost industry output nationally, even though scientific management had acquired popularity in the late 19th and early 20th centuries. The concept focused on educating managers about CI techniques and their importance, as well as job practices. Professionals such as Gilbreth, Juran, and Deming later implemented the same with US forces in Japan at the end of World War II (Hazarika et al., 2018).

After World War II, Japanese manufacturers had to deal with severe shortages of financial, human, and material resources. The president of Toyota Motor Company, Toyota, saw that American automakers were outproducing their Japanese counterparts at the time. By the middle of the 1940s, American companies were outperforming Japanese manufacturers. Between 1945 and 1970, Japanese leaders like Shigeo Shingo and Taiichi Ohno developed a new, methodical, process-oriented methodology that is now known as the "Toyota Production System" or "Lean Manufacturing" in order to start the process of improvement early on (Abdullah, 2003). As per Khatri, et al., 2011, in 1980s, products were being brought to the market with higher quality and lower price, and due to the competitive market, US manufacturers have come to realize that the traditional mass production concept has to be adapted to the new ideas of lean manufacturing, the Japanese developed early ideas of quality control that were first applied to manufacturing before evolving into a comprehensive management tool for ongoing improvement that encompasses the entire company at all levels (Kiran, 2016). The modern principles of CI are relevant to comprehensive and organized methodologies specific to work improvement. The new methods associated nearly entire organizations with themselves and introduced the popular Total Quality Management—TQM concepts, which were also popularized in Japan by Edward Deming (Haddas et al., 2014).

2. Methodology

A systematic literature review (SLR) was conducted to obtain the most relevant information from over 60 academic articles that addressed the topic—The Role of Leadership in Continuous Improvement. The selection criterion for the articles

included in the review was the screening of titles and abstracts to identify the main problems and critical success factors in the implementation of CI, where leadership can play a role in improving results. Leadership roles, as well as staff roles in industries, were considered as references for this analysis. All industries need to perform a continuous effort to survive in the current competitive and challenging market, and one important step to reach efficient working process is by understanding wastes occurred along the production line and try to reduce their presence (Paramawardhani & Amar, 2020). Wastes are the nonvalue-added components in any process (Harish & Selvam, 2015). **Table 1** demonstrates the 8 types of waste. Ignoring waste in the production process encourages negative development, this is a systematic discovery and elimination of waste in production processes improves processes and ensures positive development on continuous improvement (Berlec & Starbek, 2009).

Table 1. 8 types of wastes.

Waste	*Definition*	*Reference*
Overproduction	Unnecessary produce that exceeds the customer's requests, or generating it too soon before it is required	(Helmold, 2022)
Defect	Physical faults that directly increase the cost of products sold	(Owen, 2001)
Inventory	Unnecessary quantities of raw materials, work-in-process, and final products	(Akinlabi, 2021)
Transportation	Any unnecessary movement of material that does not add value to the product	(Sharma & Khatri, 2021)
Waiting	Idle time for workers or machinery caused by bottlenecks or inefficient production flow on the factory floor	(Ramasubramaniam, 2020)
Motion	Any superfluous movement of people or machinery that diverts them from processing the work to complete the product or service	(Che Ani & Abdul Azid, 2020; Hassan, 2013)
Over-process	Unintentionally performing more processing effort than the consumer needs in terms of product quality or features	(Birchit, 2021)
Non-utilized talent	It is no utilisation of people's talents, creativity, and efforts	(Brito et al., 2019)

Continuous Improvement in all aspects of the business is essential for meeting the challenge of today's turbulent environments. One increasingly popular strategy for enabling continuous improvement is through mobilising a high level of involvement of the workforce in sustained incremental problem-solving (Bessant & Caffyn, 1997). There are differences between companies in what continuous improvement actually is done when the companies are in the same industry. These results show that the simplified notion of continuous improvement is far from

simple and has a cultural foundation that the Lean tradition speaks little about. Workers' union involvement is crucial for success of improvements at the factory floor (Holtskog, 2013). An emergent theme is that success with continuous improvement requires a wide array of systems, processes, and orientations to be congruent within the organization (Michela, Noori, & Jha, 1996). A Lean transformation initiative has become a business imperative for most organizations in just about every industry sector across the globe.

There are some similarities in the study of the leadership role in continuous improvement about the main impacts which could negatively support on it—The lack of leadership support; The lack of focus of the organization (Testani & Ramakrishnan, 2012), as well the lack of engagement of the staff. To replace it, from this perspective, a successful culture of continuous improvement is a work environment in which the leader may step aside and empower employees to achieve higher quality goals through constant process improvements (Zarbo, 2012). Furthermore, an organization cannot succeed in learning unless it has a healthy culture, skilled workers, buy-in from the top management and strong leadership (Al-Najem, Dhakal, & Bennett, 2012). **Table 2** shows the three main contributors. The analysis below will elucidate how leaders can play the role of continuous improvement successfully.

Table 2. Success factors of continuous improvement (CI).

Succes Factors for CI	*Main Contributions*	*Resources for Contributions*
Leadership	Support, engage, and recognize the team Manage the changes Manage the system—Visual Management	Method PDCA—Plan, Do, Check and Act
Staff	Move out from the confront zone Propose the improvement Be a continuous improvement multiplier	Kaizens, QCC—Quality Control Circle, and LSS—Lean Six Sigma
Organization	Clear objectives and Goals Culture of continuous improvement Invest in leadership and people development	Project and Process Management

3. Development

3.1. Leadership

Discussing the relevant role of leadership in the continuous improvement implementation, it is necessary to mention that efficient initiatives for eliminating waste and satisfying customers, being widely accepted as successful implemented by the senior management are commitment with this great importance and there is the involvement of employees in daily improvements (Alefari, Salonitis, & Xu, 2017). Management commitment is ranked as most important, followed by knowledge about how to use the method, when to apply PDCA, efficient performance and

use of internal marketing activities to focus on the topic (Lodgaard et al., 2013). To have visual management (VM) has become an important lean management practice for continuous improvement and has gained increasing attention from academics and practitioners to emerge this field within the lean management literature and provide insights for practitioners on how to implement it more effectively (Kurpjuweit et al., 2019). Leaders are in charge of providing a suitable work environment for staff to play their role in continuous improvement—Continuous and reliable information, including measurements about best and current practice; engagement of everybody in all phases of the improvement work; and an infrastructure based on improvement knowledge (Cano, Viza, & Kourouklis, 2017).

Findings suggest that the most important and significant factors for the effective implementation of Lean Six Sigma are project management, leadership, selection of top talented people and financial accountability (Laureani & Antony, 2018). In addition, due to the leader is an efficient communicator, it plays a prominent role in employee's support and motivation; employee motivation increases during the implementation of Lean Six Sigma projects (Pamfilie, Petcu, & Draghici, 2012). The role of senior management in ceaselessly driving the improvement cause is emphasized together with the need to focus on stakeholder requirements, measure performance and learn from results (Kaye & Anderson, 1999). To develop continuous improvement, it is essential to have a strong commitment from top and senior management, once directors agree to commit the required resources; align activities with strategic objectives; establish systems, procedures, and policies; and, most importantly, generate a culture of continuous people development (Kaye & Anderson, 1999). Using Lean management strategies, leaders and managers shall engage, motivate, and retain their employees during any Lean or other continuous improvement initiative (Hopper, 2018). The role of continuing development of staff is crucial in helping to address most of the priorities identified through self-evaluation to bring about improvement and enhance the quality of the learning experience (Bubb & Earley, 2009). It seems that the staff skills assessment of LM still needs more effort (Shafeek, 2018).

3.2. Staff

Staff people directly involved in their management who are not occupying a management role are vital to be able to optimise human and material resources when prioritising actions and to be able to implement measures to ensure the success of continuous improvement (Arnaiz et al., 2022). Continuous improvement, based on the active participation of a company's entire workforce, has been established as a powerful tool to achieve competitive advantages. There is ample documentation of companies' successful implementation of the tools for continuous improvement and many authors have worked towards identifying all of the barriers impeding the sustainability of continuous improvement (Garcia-Sabater & Marin-Garcia, 2011). As a result, QCC activity showed prominent results in fostering long-lasting improvement in the quality of medical institutions in terms of both tangible and intangible factors (Wang et al., 2013). Implementing continuous improve-

ment (CI) systems is one of the most effective ways to increase operational excellence. Being one pillar that determines the success of a CI strategy is a climate of commitment and participation among workers (Terziovski, 2002).

Finding indicates that service quality in the past tended to depend more on the dedication of staff who were expected to be emotionally rewarded through their caring roles rather than from the pay and status associated with their work (Sims & Waniganayake, 2015). While different facets of CI have been scrutinized, the importance of employee participation stands out as pivotal for achieving enduring and meaningful progress (Yang et al., 2024). Furthermore, both technical and organizational barriers are usually present across hierarchical levels in the organization, while top managers attribute the limited success to shortcomings of information systems and improvement methods, workers primarily point to limited support and commitment from management, in addition to other organizational factors such as lack of involvement, motivation and teamwork (Lodgaard et al., 2016). Finding indicates that collaboration, consultation, ingratiation, inspirational appeals, and rational persuasion are significant and strong predictors of employee commitment to continuous improvement initiatives (Lam, O'Donnell, & Robertson, 2015). Since the implementation of continuous improvement practices necessitates frontline employees to make changes and solve problems consistently, the employees' operational improvement competence and skills and creativity can be enhanced through implementing continuous improvement practices (Yang, Lee, & Cheng, 2016). Survey data analyses support that employee involvement for continuous improvement has a significant indirect effect on organisational outcomes through continuous improvement, which is not moderated by production repetitiveness (Beraldin, Danese, & Romano, 2022). Assessing the implementation of continuous improvement in Lean Manufacturing, in particular, employees' involvement in the problem identification and in reporting improvements, as well as the way of motivating employees to involve themselves (Stadnicka & Antosz, 2015). Furthermore, because the implementation of continuous improvement practices necessitates consistent change and problem solving, research suggests that front-line employees' operational improvement competence, such as skills in implementing continuous improvement practices, can boost employee creativity (Yang et al., 2016).

3.3. Organization

The relationship between total quality management (TQM) practices and organizational performance has been widely reported in literature without consensus on its nature (Jimoh et al., 2019). In fact, in every life period of organization, special continuous improvement tools that are suitable have efficiency (Abdolshah & Jahan, 2006). The role of learning in continuous improvement programs shows how an organization may go about building a continuous improvement culture (Locke & Jain, 1995). While organizations are trying to have, not only a competitive advantage in the market, but also in sustainable development, the elements that are integrated in the process and the organization's performance analysis—objectives,

metrics, data measures, indicators and key Performance Indicators (KPIs)—support in growing organizations with a strategic focus on sustainability elements integration in the process analysis (Medne & Lapina, 2019).

Continuous improvement (CI) is still one of the strongest ways for companies to achieve process excellence in order to survive in nowadays' competitive environments, being still very difficult to implement and sustain CI systems, mainly because of the difficulty in engaging people in these activities (Jurburg et al., 2017). In developing CI capability, organisations need to move to a level of development in which strategic goals are communicated and deployed and where improvement activity is guided by a process of monitoring and measurement against these strategic objectives (Bessant & Francis, 1999). Finding indicates that organizations have embedded quality into the culture of the organization, and have developed performance measurement systems as an organizational learning mechanism to support continuous improvement initiatives (Oliver, 2009). Performance measurement techniques as the basis for the development of reward and recognition mechanisms in Total Quality Management (Chang, 2005). By analyzing the role of individuals' competence-based trust and organizational identification (OI) in employees' continuous improvement effort, results show that trust is positively related to continuous improvement efforts when employees strongly identify with the organization (Lee, 2004). The findings suggest that the learning process is characterized by measurement, detection and correction of errors, and cost reduction and in a six-sigma implementation, learning is a single-loop type of learning. It is an incremental change process that resembles a technical variant of the learning organization (Savolainen & Haikonen, 2007). Implications are that CI empowerment can be created sustainably and is an important factor in establishing CI in a company, but that it takes time until empowerment leads to changes in behaviour (Hirzel, Leyer, & Moormann, 2017). Practices utilised during different phases of the CI implementation process may contribute to sustained organisational and enhanced operational performance (Jorgensen, Hyland, & Busk Kofoed, 2008). Organizations shall identify the key enablers that could help those companies that are about to start the continuous improvement implementation process (Sanchez-Ruiz, Blanco, & Gomez-Lopez, 2019).

4. Conclusion

The literature review on leadership's role in continuous improvement yielded 18 items. Each item was duly organized in **Table 3**. Another two columns were suggested to verify the theoretical relation between the leadership role and the roles of staff and Organization. It mentions only the best option, which can relate theoretically the Leadership role with the Staff role or the Leadership role with the Organization role.

Condensing the literature review on staff roles for continuous improvement yielded a list of 16 topics. **Table 4** was organised by topic. In this sense, the expected role of staff is being demonstrated. All topics are relevant for continuous improvement and are influenced by leadership roles.

Table 3. Expected role from leadership on continuous improvement (CI).

ID	*Expected Role from Leadership*	*Theoretical Relation to*	
		Staff	Organization
1	Eliminating waste	X	
2	Satisfy customers		X
3	Involve employees (engagement) in daily improvements	X	
4	Knowledge of the method PDCA to get efficient performance	X	
5	To have a visual management (VM)	X	
6	Provide continuous and reliable information (efficient communication)		X
7	Provide infrastructure based on improved knowledge		X
8	Implement Lean Six Sigma		X
9	Exercise the leadership and selection-retaining of top talents		X
10	Support motivation	X	
11	Driving the improvement	X	
12	Focus on stakeholder requirements		X
13	Measure performance and learn from results	X	
14	Strong commitment to resources		X
15	Align activities with strategic objectives		X
16	Establish systems, procedures, and policies		X
17	Generate a culture of continuous improvement using lean management strategies		X
18	Address priorities identified through self-evaluation to enhance quality of learning experience	X	

Table 4. Expected role from staff on continuous improvement (CI).

ID	*Expected Role from Staff*
1	Optimise human and material resources when prioritising actions
2	Implement measures to ensure the success of continuous improvement
3	Active participation
4	Achieve competitive advantages
5	Implementation of the tools for continuous improvement
6	QCC activity
7	Commitment and participation among workers
8	Be emotionally rewarded through their caring roles
9	Support and commitment from management
10	Collaboration, consultation, ingratiation, inspirational and rational persuasion
11	Be frontline employees to make changes and solve problems consistently
12	Have operational improvement competence
13	Creativity
14	Carry out employee involvement
15	Assessing the implementation of continuous improvement
16	Report improvements to be motivated

Condensing the literature review on organisational accountability for continuous improvement produced a list of 18 topics. Table 5 was well-organised with each one. In this sense, the Organization's expected responsibility is displayed. All topics are relevant to continuous improvement development, and they are also influenced by leadership roles.

In conclusion, practical recommendations can be made for the three areas connected to leadership: self-capacity (leadership) development, team (staff) capability development, and product|market (organization development). Table 6 shows a practical suggestion for each of these areas. The necessary actions, how to proceed, and what to expect are proposed for application verification. A structured model is also significant for supporting parts of "best practice" in which the importance of senior management in continuously driving the improvement cause is emphasised, as well as the necessity to focus on stakeholder requirements, monitor performance, and learn from outcomes (Kaye & Anderson, 1999).

Table 5. Expected role from staff on continuous improvement (CI).

ID	*Expected Responsibility from Organization*
1	Total quality management (TQM) practices
2	Organizational performance—key Performance Indicators (KPIs) and its control
3	Special continuous improvement tools for having efficiency
4	Learning in continuous improvement programs, Developing CI capability
5	Build a continuous improvement culture
6	Sustainable development for a competitive advantage in the market
7	Strategic focus on sustainability elements integration in the process analysis and its excellence
8	Engaging people
9	Communicate and deploy strategic goals
10	Monitor and measure against these strategic objectives
11	Quality into the culture of the organization
12	Reward and recognition
13	Promote individuals' competence-based trust on effort and results,
14	Have employees strongly identify with the organization
15	Detection and correction of errors
16	Cost reduction
17	Six sigma implementation
18	Carry out Incremental change process

Table 6. Practical recommendations for continuous improvement (CI).

Self-Capability (Leadership) Development		
What to Do	How to Do	What to Expect
To gain knowledge about the PDCA method—Plan, Do, Check, Act	Establish and manage systems, procedures and policies	Get efficient performance
	Implement tools for continuous improvement	Improving efficiency

Continued

To have a VM—Visual Management	Provide continuous and reliable information (efficient communication)	Report improvements by demonstrating collaboration, consultation, integration, inspirational and rational persuasion
	Align activities with strategic objectives	Strategic focus on integrating sustainability elements into process analysis
Team's Capability Development		
What to Do	How to Do	What to Expect
Involve employees (engagement) in daily improvements	Support motivation for employee participation, involvement and commitment	Make employees identify strongly with the organization
Providing infrastructure based on improving knowledge	Implement Lean Six Sigma and QCC—Quality Control Circle activities	Generate a culture of continuous improvement using lean management strategies and monitor/measure the results of strategic objectives
Provide learning in continuous improvement programs	Provide investment in the ongoing development of people and resources to support continuous improvement initiatives	Develop continuous improvement capability (front-line employees to make changes and solve problems consistently and creatively) through building building organizational culture
Develop team leadership skills and select and retain top talent	Improving operational competence by being emotionally rewarded for their caring roles	Rewarding, recognizing and fostering individuals' confidence in effort and results based on competence
Products|Market		
What to Do	How to Do	What to Expect
Total quality management (TQM) practices implemented	Optimize human and material resources in prioritizing actions	Waste elimination
Satisfy customers by focusing on stakeholder requirements	Implement measures to ensure the success of continuous improvement	Organizational performance and sustainable development for a competitive advantage in the market and cost reduction
KPI's—Key Performance Indicators (KPIs) and their control	Measure performance and learn from the results	Get competitive advantages
Address priorities identified through self-assessment to improve the quality of the learning experience	Evaluating the implementation of continuous improvement	Error detection and correction and execution of incremental change process

Research Limitations/Implications

Although the researchers made several steps to lessen this constraint, the SLR methodology does not ensure that every publication pertaining to a certain research field will be recognized. Furthermore, due to space constraints, not all pertinent information from the publication set could be incorporated in this work.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

Abdolshah, M., & Jahan, A. (2006). How to Use Continuous Improvement Tools in Different Life Periods of Organization. In *2006 IEEE International Conference on Management of Innovation and Technology* (pp. 772-777). IEEE. https://doi.org/10.1109/icmit.2006.262325

Abdullah, F. (2003). *Lean Manufacturing Tools and Techniques in the Process Industry with a Focus on Steel*. University of Pittsburgh.

Akinlabi, B. H. (2021). Effect of Inventory Management Practices on Operational Performance of Flour Milling Companies in Nigeria. *International Academy Journal of Management, Marketing and Entrepreneurial Studies, 8,* 137-174.

Alefari, M., Salonitis, K., & Xu, Y. (2017). The Role of Leadership in Implementing Lean Manufacturing. *Procedia CIRP, 63,* 756-761. https://doi.org/10.1016/j.procir.2017.03.169

Al-Najem, M., Dhakal, H., & Bennett, N. (2012). The Role of Culture and Leadership in Lean Transformation: A Review and Assessment Model. *International Journal of Lean Thinking, 3,* 119-138.

Arnaiz, F. D., Alvarez, V., Montequin, V. R., & Cousillas, S. M. (2022). Identifying Critical Success Factors in Continuous Improvement Projects in a Steel Company. *Procedia Computer Science, 196,* 832-839. https://doi.org/10.1016/j.procs.2021.12.082

Beraldin, A. R., Danese, P., & Romano, P. (2022). Employee Involvement for Continuous Improvement and Production Repetitiveness: A Contingency Perspective for Achieving Organisational Outcomes. *Production Planning & Control, 33,* 323-339. https://doi.org/10.1080/09537287.2020.1823024

Berlec, T., & Starbek, M. (2009). Eliminating Waste in Companies. In *10th International Conference of the Slovenian Society for Non-Destructive Testing: Application of Contemporary Non-Destructive Testing in Engineering* (pp. 187-196).

Bessant, J., & Caffyn, S. (1997). High-Involvement Innovation through Continuous Improvement. *International Journal of Technology Management, 14,* 7-28. https://doi.org/10.1504/ijtm.1997.001705

Bessant, J., & Francis, D. (1999). Developing Strategic Continuous Improvement Capability. *International Journal of Operations & Production Management, 19,* 1106-1119. https://doi.org/10.1108/01443579910291032

Bessant, J., Caffyn, S., Gilbert, J., Harding, R., & Webb, S. (1994). Rediscovering Continuous Improvement. *Technovation, 14,* 17-29. https://doi.org/10.1016/0166-4972(94)90067-1

Birchit, D. (2021). *Analyzing the Manufacturing Process in the Perspectives of Lean Production: A Case in Geosynthetics Industrial Works PLC*. Doctoral Dissertation, St. Mary's University.

Brito, M., Ramos, A. L., Carneiro, P., & Gonçalves, M. A. (2019). The Eighth Waste: Non-utilized Talent. In F. J. G. Silva, & L. C. P. Ferreira (Eds.), *Lean Manufacturing: Implementation, Opportunities and Challenges* (pp.151-163). Nova Science Pub. Inc.

Bubb, S., & Earley, P. (2009). Leading Staff Development for School Improvement. *School Leadership & Management, 29,* 23-37. https://doi.org/10.1080/13632430802646370

Cano, M., Viza, E., & Kourouklis, A. (2017). Critical Success Factors for Implementing Continuous Improvement Approaches within Public Sector Organisations. In *Proceedings of the 20th Excellence in Services International Conference* (pp. 7-8).

Chang, H. H. (2005). The Influence of Continuous Improvement and Performance Factors in Total Quality Organization. *Total Quality Management & Business Excellence, 16,*

413-437. https://doi.org/10.1080/14783360500053790

Che Ani, M. N., & Abdul Azid, I. (2020). Solving the Production Bottleneck through Minimizing the Waste of Motion for Manual Assembly Processes. In M. H. A. Bakar, F. A. Zamri, & A. Öchsner (Eds.), *Progress in Engineering Technology II* (pp. 185-197). Springer International Publishing. https://doi.org/10.1007/978-3-030-46036-5_17

Garcia-Sabater, J. J., & Marin-Garcia, J. A. (2011). Can We Still Talk about Continuous Improvement? Rethinking Enablers and Inhibitors for Successful Implementation. *International Journal of Technology Management, 55,* 28-42. https://doi.org/10.1504/ijtm.2011.041678

Haddas, M. A., Asiri, M. H., Mukhalid, R. F., Alahmari, S. S., Al-Qathtani, S. A., & Hasan, S. H. (2014). Continuous Improvement-Development with Time. *International Journal of Computer Applications, 975,* 8887.

Harish, K. A., & Selvam, M. (2015). Lean Wastes: A Study of Classification from Different Categories and Industry Perspectives. *The Asian Review of Civil Engineering, 4,* 7-12. https://doi.org/10.51983/tarce-2015.4.2.2220

Hassan, M.K. (2013). *Applying Lean Six Sigma for Waste Reduction in a Manufacturing Environment.*

Hazarika, M., Dixit, U. S., & Davim, J. P. (2018). History of Production and Industrial Engineering through Contributions of Stalwarts. In *Manufacturing Engineering Education* (pp. 1-29). Elsevier. https://doi.org/10.1016/b978-0-08-101247-5.00001-0

Helmold, M., Küçük Yılmaz, A., Dathe, T., & Flouris, T. G. (2022). Lean Supply Chains and Lean Production. In M. Helmold, *et al.* (Eds.), *Supply Chain Risk Management: Cases and Industry Insights* (pp. 105-127). Springer International Publishing. https://doi.org/10.1007/978-3-030-90800-3_6

Hirzel, A., Leyer, M., & Moormann, J. (2017). The Role of Employee Empowerment in the Implementation of Continuous Improvement: Evidence from a Case Study of a Financial Services Provider. *International Journal of Operations & Production Management, 37,* 1563-1579. https://doi.org/10.1108/ijopm-12-2015-0780

Holtskog, H. (2013). Continuous Improvement Beyond the Lean Understanding. *Procedia CIRP, 7,* 575-579. https://doi.org/10.1016/j.procir.2013.06.035

Hopper, A. M. (2018). *Continuous Improvement Strategies: How to Manage, Motivate, and Retain Staff.* CRC Press.

Jimoh, R., Oyewobi, L., Isa, R., & Waziri, I. (2019). Total Quality Management Practices and Organizational Performance: The Mediating Roles of Strategies for Continuous Improvement. *International Journal of Construction Management, 19,* 162-177. https://doi.org/10.1080/15623599.2017.1411456

Jorgensen, F., Hyland, P., & Kofoed, L. B. (2008). Examining the Role of Human Resource Management in Continuous Improvement. *International Journal of Technology Management, 42,* 127-142. https://doi.org/10.1504/ijtm.2008.018064

Jurburg, D., Viles, E., Tanco, M., & Mateo, R. (2017). What Motivates Employees to Participate in Continuous Improvement Activities? *Total Quality Management & Business Excellence, 28,* 1469-1488. https://doi.org/10.1080/14783363.2016.1150170

Kaye, M., & Anderson, R. (1999). Continuous Improvement: The Ten Essential Criteria. *International Journal of Quality & Reliability Management, 16,* 485-509. https://doi.org/10.1108/02656719910249801

Kiran, D. R. (2016). *Total Quality Management: Key Concepts and Case Studies.* Butterworth-Heinemann.

Kurpjuweit, S., Reinerth, D., Schmidt, C. G., & Wagner, S. M. (2019). Implementing Visual

Management for Continuous Improvement: Barriers, Success Factors and Best Practices. *International Journal of Production Research, 57,* 5574-5588. https://doi.org/10.1080/00207543.2018.1553315

Lam, M., O'Donnell, M., & Robertson, D. (2015). Achieving Employee Commitment for Continuous Improvement Initiatives. *International Journal of Operations & Production Management, 35,* 201-215. https://doi.org/10.1108/ijopm-03-2013-0134

Laureani, A., & Antony, J. (2018). Leadership—A Critical Success Factor for the Effective Implementation of Lean Six Sigma. *Total Quality Management & Business Excellence, 29,* 502-523. https://doi.org/10.1080/14783363.2016.1211480

Lee, H. (2004). The Role of Competence-Based Trust and Organizational Identification in Continuous Improvement. *Journal of Managerial Psychology, 19,* 623-639. https://doi.org/10.1108/02683940410551525

Lindberg, P., & Berger, A. (1997). Continuous Improvement: Design, Organisation and Management. *International Journal of Technology Management, 14,* 86-101. https://doi.org/10.1504/ijtm.1997.001710

Locke, E. A., & Jain, V. K. (1995). Organizational Learning and Continuous Improvement. *The International Journal of Organizational Analysis, 3,* 45-68. https://doi.org/10.1108/eb028823

Lodgaard, E., Gamme, I., & Aasland, K. E. (2013). Success Factors for PDCA as Continuous Improvement Method in Product Development. In C. Emmanouilidis, M. Taisch, & D. Kiritsis (Eds.), *Advances in Production Management Systems. Competitive Manufacturing for Innovative Products and Services* (pp. 645-652). Springer. https://doi.org/10.1007/978-3-642-40352-1_81

Lodgaard, E., Ingvaldsen, J. A., Aschehoug, S., & Gamme, I. (2016). Barriers to Continuous Improvement: Perceptions of Top Managers, Middle Managers and Workers. *Procedia CIRP, 41,* 1119-1124. https://doi.org/10.1016/j.procir.2016.01.012

Medne, A., & Lapina, I. (2019). Sustainability and Continuous Improvement of Organization: Review of Process-Oriented Performance Indicators. *Journal of Open Innovation: Technology, Market, and Complexity, 5,* Article No. 49. https://doi.org/10.3390/joitmc5030049

Michela, J. L., Noori, H., & Jha, S. (1996). The Dynamics of Continuous Improvement. *International Journal of Quality Science, 1,* 19-47. https://doi.org/10.1108/13598539610117975

Oliver, J. (2009). Continuous Improvement: Role of Organisational Learning Mechanisms. *International Journal of Quality & Reliability Management, 26,* 546-563. https://doi.org/10.1108/02656710910966129

Owen, D. G. (2001). Manufacturing Defects. *South Carolina Law Review, 53,* 851.

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

Paramawardhani, H., & Amar, K. (2020). Waste Identification in Production Process Using Lean Manufacturing: A Case Study. *Journal of Industrial Engineering and Halal Industries, 1,* 39-46. https://doi.org/10.14421/jiehis.1827

Quick, T. (2019). Brief History of Continuous Improvement. *The Journal for Quality and Participation, 42,* 1-2.

Ramasubramaniam, P. (2020). Productivity Improvement by Reducing Waiting Time and over Production Using Lean Manufacturing Technique. *International Journal of Recent Engineering Science, 7,* 20-26. https://doi.org/10.14445/23497157/ijres-v7i4p104

Sanchez, L., & Blanco, B. (2014). Three Decades of Continuous Improvement. *Total Quality Management & Business Excellence, 25,* 986-1001. https://doi.org/10.1080/14783363.2013.856547

Sanchez-Ruiz, L., Blanco, B., & Gomez-Lopez, R. (2019). Continuous Improvement Enablers: Defining a New Construct. *Journal of Industrial Engineering and Management, 12,* 51-69. https://doi.org/10.3926/jiem.2743

Savolainen, T., & Haikonen, A. (2007). Dynamics of Organizational Learning and Continuous Improvement in Six Sigma Implementation. *The TQM Magazine, 19,* 6-17. https://doi.org/10.1108/09544780710720808

Shafeek, H. (2018). The Role of Staff Skills in Lean Maintenance. *Journal of Computational and Theoretical Nanoscience, 15,* 1332-1339. https://doi.org/10.1166/jctn.2018.7311

Sharma, S. S., & Khatri, R. (2021). Introduction to Lean Waste and Lean Tools. In *Lean Manufacturing* (p. 5). IntechOpen.

Sims, M., & Waniganayake, M. (2015). The Role of Staff in Quality Improvement in Early Childhood. *Journal of Education and Training Studies, 3,* 187-194. https://doi.org/10.11114/jets.v3i5.942

Stadnicka, D., & Antosz, K. (2015). Continuous Improvement Practice in Large Enterprises: Study Results. *International Journal for Quality Research, 9,* 9.

Terziovski, M. (2002). Achieving Performance Excellence through an Integrated Strategy of Radical Innovation and Continuous Improvement. *Measuring Business Excellence, 6,* 5-14. https://doi.org/10.1108/13683040210431419

Testani, M. V., & Ramakrishnan, S. (2012). Lean Leadership Readiness for Change: A Methodology for Lean Change Readiness and Continuous Improvement. In *IIE Annual Conference. Proceedings* (p. 1). Institute of Industrial and Systems Engineers (IISE).

Van Aartsengel, A., & Kurtoglu, S. (2013). *Handbook on Continuous Improvement Transformation*. Springer Books.

Wang, L., Wang, Y., Lou, Y., Li, Y., & Zhang, X. (2013). The Role of Quality Control Circles in Sustained Improvement of Medical Quality. *SpringerPlus, 2,* 1-5. https://doi.org/10.1186/2193-1801-2-141

Yang, Y., Lee, P. K. C., & Cheng, T. C. E. (2016). Continuous Improvement Competence, Employee Creativity, and New Service Development Performance: A Frontline Employee Perspective. *International Journal of Production Economics, 171,* 275-288. https://doi.org/10.1016/j.ijpe.2015.08.006

Yang, Y., Yang, B., Onofrei, G., Nguyen, H., & Hlaciuc, E. (2024). The Role of Employees in Continuous Improvement: A Study on Employee Participation. *European Journal of Training and Development, 49,* 493-515. https://doi.org/10.1108/ejtd-10-2023-0167

Zarbo, R. J. (2012). Creating and Sustaining a Lean Culture of Continuous Process Improvement. *American Journal of Clinical Pathology, 138,* 321-326. https://doi.org/10.1309/ajcp2qy1xgktsnqf