



# Building an Operational Excellence Program

## Technical Report 24-01

Report on the CI/OpEx Round Table  
meeting held at the  
Auburn University Samuel Ginn College of Engineering  
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## **I. Executive Summary**

In the ever-evolving manufacturing landscape, Operational Excellence (OpEx) has emerged as more than just a buzzword—it's a crucial strategy. At the center of this concept is continuous improvement, which enables companies to enhance productivity, reduce costs, and deliver greater value to customers. As industries navigate through rapid changes and increasing global competition, the quest for operational excellence has become synonymous with an organization's survival and success. This report summarizes the discussions of experts in continuous improvement and operational excellence, along with a review of academic and industry literature to identify the key characteristics of successful OpEx programs within the manufacturing sector, highlighting their transformative power. By harnessing the essence of continuous improvement methodologies and OpEx principles, this report aims to equip manufacturing enterprises with the insights and strategies needed to build an OpEx program and drive long-term growth.

A roundtable discussion was organized focused on best practices for establishing an OpEx organization and culture. Participants shared experiences, identified successful strategies, and discussed challenges in developing an OpEx program in their respective organizations. Prepared questions were sent to participants ahead of the roundtable to guide discussions, ensuring a productive and insightful dialogue. An AI-assisted analysis of the resulting roundtable transcript was then used to identify the key characteristics of OpEx programs based on the dialogue of the industry experts. The remainder of this report follows the following outline: Section II presents background information on continuous improvement and OpEx and the roundtable discussion event. Section III presents relevant academic literature and how the results compare to the roundtable dialogue. Section IV presents a systematic approach for building an OpEx program based on the results of Section III. Section V presents the Round Table Event and Section VI then presents the AI-assisted analysis of the roundtable transcript that identified the key characteristics and systematic approach for building OpEx programs based on industry experts. Concluding thoughts are then presented in Section VII.

## **II. Background: Understanding Continuous Improvement and Operational Excellence**

Understanding continuous improvement's significance and influence in the manufacturing industry is fundamental to achieving overall excellence in operations. The existing continuous improvement methodologies, traditionally focusing on reducing waste and variation, and improving efficiency, provide organizations with valuable insight into key performance metrics to evaluate the holistic flow of the system. Leveraging these ideologies to analyze operations and implement targeted improvements, manufacturing companies can optimize productivity, reduce costs, enhance product quality, and improve competitiveness. Moreover, continuous improvement initiatives empower employees at all levels to contribute ideas, address challenges, and drive positive change within the organization [1].

The concept of OpEx entails strategically directing efforts toward maximizing the value delivered and the efficiency maintained within organizations. This is achieved by collaboration of the elements: people, processes, and technology [2]. By prioritizing OpEx, organizations aim to consistently provide high-quality, cost-effective services and capabilities, ultimately offering exceptional value to their customers. In the simplest terms, OpEx embodies the pursuit of exceptional performance across all organizational functions [3]. Although OpEx is often associated with methodologies utilized by the Toyota Production System approach of Plan-Do-Check-Act (PDCA, Lean) and the identification and elimination of wastes and/or the reduction of variation (6-Sigma, DMAIC), it transcends mere tools and activities [4]. Sustainable change can only be achieved when the timeless principles of OpEx become ingrained within organizational culture. Initially popularized by the Shingo Institute at Utah State University, OpEx distinguishes itself from Lean concepts by encompassing a comprehensive collection of improvement methodologies. Implementing OpEx requires an organization's relentless pursuit of improvement and understanding to gain a competitive advantage while concurrently meeting the needs of customers and stakeholders [5]. Furthermore, the effectiveness of continuous improvement initiatives hinges on establishing a systematic approach that establishes clear objectives, defined processes, and active engagement from all levels of the organization [3].

### **III. Systematic Approach for Building a Continuous Improvement Program for Operational Excellence Literature Review**

Before the roundtable event with industry, the authors determined key characteristics of successful continuous improvement and operational excellence programs through the review of academic literature concerning continuous improvement and operational excellence. Many of the articles analyzed featured literature reviews of continuous improvement or operational excellence programs and case studies. This allowed the review to be informed by a wider body of research. The key elements of a successful operational excellence program from the literature were determined to be the following: leadership, employee involvement, performance assessment, organizational communication/structure, proper training/learning, standardization, integration of technology, focus on customer satisfaction, and longevity/sustainment. The key elements for a successful operational excellence program and their corresponding success factors are shown in Figure 1. All results from the literature analysis, including the key elements, critical success factors, implementation barriers, and key insights for each element, are presented in Table 1. These results were used to inform the systematic approach for building a continuous improvement program for operational excellence.

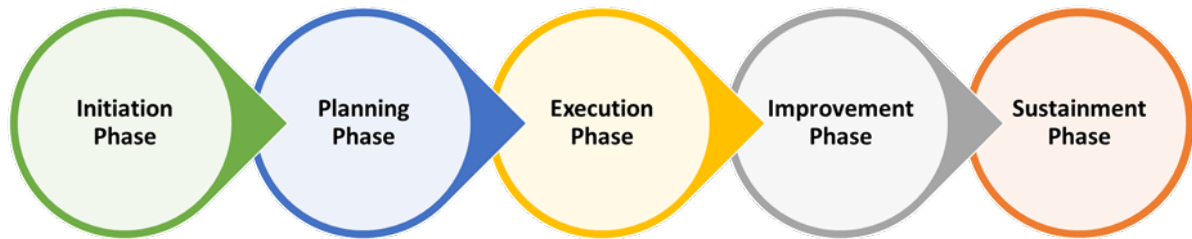
Organizations aiming to establish or enhance their continuous improvement programs can draw several lessons from the key elements of successful OpEx initiatives presented in Table 1. First, leadership commitment and active involvement are paramount for setting clear objectives and providing consistent support throughout the implementation process. Secondly,

prioritizing employee involvement and fostering a culture of trust and transparency encourages ownership and commitment to improvement efforts. Additionally, integrating technology strategically and aligning performance measures with customer satisfaction goals enhance program effectiveness. Finally, sustaining operational excellence requires adapting to changing demands, considering social and economic factors, and a commitment to promoting employee well-being and interests. Looking at the results, a striking commonality emerges when examining the key enablers of operational excellence: culture. The results show that culture is pivotal in driving success across all facets of organizational structure, communication, training, and technology integration. Therefore, integrating an organization’s core values into each element is essential for fostering an environment conducive to continuous improvement and operational excellence.



**Figure 1: Key Characteristics of Successful Continuous Improvement Programs with Success Factors**

The systematic approach outlined in this section offers a roadmap for building a continuous improvement/operational excellence program within an organization. This approach is based on the results from the literature review and is structured into distinct phases, each vital for the program's success. The framework comprises five phases: Initiation, Planning, Execution, Improvement, and Sustainment for Long-Term Success (Figure 2).



*Figure 2: The Five Phases of a Systematic Approach for Building a Continuous Improvement Program for Operational Excellence based on Academia Literature*

The following are descriptions of the five phases of the systematic approach:

1. *Initiation Phase:*

a. Leadership Commitment:

- Gain commitment from top leadership by communicating the importance of operational excellence for the organization's success.
- Establish a committee or leadership team to oversee the initiative and provide guidance.

b. Assessment and Goal Setting:

- Conduct a comprehensive assessment of current processes, identifying strengths, weaknesses, opportunities, and threats.
- Define clear, measurable goals and objectives for the operational excellence program, aligning them with the organization's strategic priorities.

2. *Planning Phase:*

a. Employee Involvement:

- Foster a culture of employee involvement and empowerment by soliciting input and participation from all levels of the organization.
- Establish cross-functional teams or improvement groups to drive specific initiatives and projects.

b. Data Collection and Analysis:

- Implement systems for collecting relevant data and metrics related to key performance indicators (KPIs) and process efficiency.
- Analyze the data to identify trends, patterns, and areas for improvement, using continuous improvement methodologies.

### 3. Execution Phase:

#### a. Training and Development:

- Provide comprehensive training programs to equip employees with the skills and knowledge needed to support operational excellence initiatives.
- Offer ongoing support to ensure that employees can apply their training effectively in their daily work.
- Assess employees annually to make sure employees understand the principles and applications of continuous improvement.

#### b. Process Standardization Document and standardize key processes and procedures to reduce variability and ensure consistency in operations.

- Implement visual media tools and techniques to make standardized processes easy to understand and follow.

#### c. Technology Integration

- Identify and implement technology solutions that support automation, data analysis, and process optimization.
- Ensure that technology investments are aligned with the organization's goals and provide tangible benefits in terms of efficiency and productivity.

### 4. Improvement Phase:

#### a. Continuous Improvement Culture:

- Foster a culture of continuous improvement by encouraging employees to identify and implement opportunities for innovation and optimization.
- Establish regular forums or meetings for sharing best practices, lessons learned, and success stories.
- Celebrate the successes publicly.

#### b. Performance Measurement and Feedback:

- Establish performance metrics and key performance indicators (KPIs) to monitor progress towards operational excellence goals.
- Provide regular feedback to employees and teams on their performance and the impact of their contributions to the overall success of the initiative.

### 5. Sustainment Phase for Long-Term Success:

#### a. Leadership Engagement:

- Maintain ongoing leadership engagement and support for the operational excellence program, ensuring that it remains a top priority for the organization.
- Celebrate successes and recognize individuals and teams for their contributions to sustaining and improving operational excellence.

#### b. Organizational Learning:

- Encourage a culture of organizational learning and knowledge sharing, where lessons learned from past experiences are used to inform future initiatives.
- Invest in developing capabilities to ensure that the organization remains adaptable and resilient in the face of changing market conditions and challenges.

Each phase of this approach reflects key principles and elements found in the literature, tailored to address the specific needs and context of the manufacturing industry. Both the Shingo Model and the systematic approach presented in this report emphasize the importance of leadership commitment, the culture of continuous improvement, employee involvement, and cultural transformation in driving operational excellence. While the Shingo Model outlines key principles, it does not provide a specific step-by-step approach for implementation [6]. The framework presented in this report provides more practical guidance on implementation within an organizational context while incorporating key principles from the Shingo Model. The LESAT approach to assessing enterprise capabilities, developed at MIT's Lean Advancement Initiative (LAI), shares some similarities with this approach, particularly the Planning Phase. Both approaches clearly emphasize the importance of leadership commitment and goal setting in the planning process for enterprise transformation or operational excellence initiatives. LESAT's assessment process involves specific roles for participants, including facilitators, enterprise leaders, and respondents, and follows a structured five-phase approach [7]. In contrast, the systematic approach presented in this report does not explicitly outline roles for participants or follow a predefined assessment process, focusing more on the practical implementation aspects of operational excellence initiatives for participants of every level in the organization.

#### **IV. The Round Table Event**

On April 24, 2024, the Auburn University Department of Industrial and Systems Engineering (ISE) hosted a roundtable with various industry participants. The purpose of this roundtable was to foster discussion to identify best practices for establishing an operational excellence organization and culture. Those in attendance included continuous improvement and operational excellence experts from companies such as Great Southern Wood Preserving, Brose, Continental Motors, Holcim, Honda, Navistar, Inalfa Roof Systems, and the University of Alabama in Huntsville's Center for Management and Economic Research. Additional ISE faculty and students were also in attendance. The operational excellence roundtable discussion brought various professionals with OpEx experience within their companies to share their journeys and strategies of their respective continuous improvement best practices and principles in the workplace. Key themes emphasized by the participants were the need for a holistic approach to lean principles, encompassing not only tools but, more importantly, people, leadership, quality, customer satisfaction, and sustainability.

Participants shared their company-specific practices and successes, collectively underscoring the need for a comprehensive system that integrates people, processes, and sustainability to prevent the re-emergence of past failures. The experts also emphasized the value of cross-company visits and learning from the experiences of others to cultivate continuous improvement. Overall, the discussion emphasized the importance of a structured yet adaptable approach to operational excellence, considering both the technical and human aspects of organizational improvement. The insights and shared experiences aimed to build a foundation for more effective and sustainable lean implementation across different organizations. This report summarizes and identifies the best practices identified from both the academic literature and the roundtable discussions for implementing a continuous improvement program, specifically for a manufacturing-based organization, to ensure their facilities maintain a competitive and high performance.

**V. Round Table Alignment with Literature**

With the permission of all roundtable attendees, a transcript was recorded and transcribed of the discussion at the April 24<sup>th</sup> roundtable. After removing all identifying information from the transcript, the authors presented the transcript to the AI tool, ChatGPT, and asked the tool to determine common themes and emphasis. The ChatGPT summary identified the places in the transcript where the key elements, critical success factors, implementation barriers, and synonyms to each were referenced in the roundtable discussion. The AI tool calculated the tally for each count, and the results are shown in the Times Referenced column of Table 1. The authors reviewed the quotes that the AI tool identified to validate their relevance. As needed, the authors removed irrelevant quotes from the AI tool output. Overall, the AI tool output was mostly accurate, removing minimal irrelevant quotes.

**Table 1: Full Results of the Literature Review and Round Table References**

Key Elements of an Op Ex Program	Critical Success Factors	Implementation Barriers	Key Insights from the Literature	Refs	# Ref
Leadership	Respect for individuals, active involvement, clear objectives	Inconsistent direction, lack of support	The research shows that senior management's efforts to foster motivation and teamwork through effective leadership are essential to creating a culture of trust for long-term organizational success.	4,5, 6,8, 9,10 ,12 ,13 ,14 ,15	119



Employee Involvement	Individual ownership; accountability; commitment	Lack of trust, fear of change, perceived threat to job security, resistance to change, lack of motivation	The organization's main contributors to operational excellence are the employees, so there must be a community where concerns and ideas can be voiced. Cultivating participation and engagement from employees allows the success of these initiatives.	4,6,9,13,14	197
Performance Assessment	Use of analytical tools to analyze key data trends for improvement; determination of maturity levels; application of benchmarking	Lack of necessary skills to use analytics tools	Leveraging data-driven approaches enables organizations to identify improvement opportunities, benchmark performance, and drive informed decision-making. By embracing these technologies and fostering a culture of continuous learning, organizations can overcome barriers to performance assessment and drive operational excellence	5,7,11,13	112
Organizational Communication / Structure	Alignment in tools, methods, and culture, cross-functional collaboration, transparency concerning changes	Poor communication channels, hierarchical and formal communication structure	Transparent communication and cross-functional collaboration are vital for driving change and ensuring effective implementation. Organizations must prioritize creating open communication channels, fostering a culture of transparency, and breaking down silos to facilitate collaboration and drive operational excellence.	4,5,10,13,15	21

Proper Training / Learning	Standardized training programs; continuous assessment of training	Deficiencies in education and training systems	Investing in ongoing training and development is essential for fostering a learning and continuous improvement culture. Organizations must address deficiencies in education and training systems to ensure that employees have the skills and knowledge needed to drive operational excellence initiatives forward.	4,9, 11, 13, 14, 15	54
Standardization	Clear, visual, documented standards for all processes; the application of continuous improvement to standardization processes; consistent approaches for driving improvements; single approach/ terminology leveling	Rigid organizational arrangements and procedures, varying organizational behaviors, understanding, and practices	Standardization involves creating clear standards and fostering a culture that embraces continuous improvement. Organizations must address rigid structures and varying behaviors to ensure successful implementation of standardized processes and practices	9,10, 11, 13, 14, 7	160
Integration of Technology	Value-added technologies; readiness for connectivity	Lack of infrastructure cost restrictions, data security concerns, lack of technical expertise, complexity of integration into existing technologies	Integrating technology is imperative in an organization's ability to improve efficiency, foster collaboration, and enable data-driven decision-making. Companies can build resilient and transformative OpEx programs by utilizing the power of technologies.	4,9, 13, 16	34

Focus on Customer Satisfaction	Performance measures based on strategic objectives; understanding customer expectations; cost-effective services	Over-emphasis on internal metrics, poor communication/lack of feedback with customers, disjointed efforts from siloed departments, lack of customer understanding	Prioritizing customer satisfaction drives value creation and enhances organizational competitiveness. Organizations must focus on understanding and meeting customer expectations to drive customer satisfaction and loyalty.	4,9,10,13,15	31
Longevity and Sustainment	Development of capabilities to quickly adapt and respond to changes in demand; the consideration of social and economic environments; promotion of employees' interests	Difficult to sustain initial gains from new program, misalignment of long-term objectives from different branches of the organization	Sustaining an OpEx program ensures that organizations remain competitive, adaptable, and focused on continuous improvement, ultimately driving long-term success and organizational excellence.	5,10	5

Of the 733 total references from the roundtable transcript to the key elements shown in Table 1, employee involvement was the most referenced by far at 197 (26.9%), with standardization close behind at 160 (21.8%). Leadership was next at 119 (16.2%), and performance assessment at 112 (15.3%). Proper training/learning was referenced 54 times (7.4%). Integration of technology, focus on customer satisfaction, and organizational communication & structure were referenced minimally at 34 (4.6%), 31 (4.2%), and 21 (2.9%), respectively. Surprisingly, longevity and sustainment of an OpEx program were mentioned in less than one percent of the references 5 times (0.7%). Representative quotes from the roundtable that were relevant to each of the key elements are presented in Table 2.

**Table 2: Key Quotes from the April 24<sup>th</sup> Roundtable**

<b>Key Element of OpEx Program</b>	<b>Quotes from the Roundtable Transcript</b>
Leadership	"Leadership should replace supervision. Leadership is to help people to do a better job."
Employee Involvement	"We found that we weren't listening to the people who did the work. Once we reversed that and really went in eyes wide open and listened to the team and utilized their ideas, the atrophy was a lot less because it was truly their solution."
Performance Assessment	"You have to look at your thinking models to really solve a problem that we have as we go through it."
Organizational Communication/ Structure	"The communication between leadership and the floor has to be tight because if you're not tight, nothing's going to work."
Proper Training/Learning	"We made a training line, hired three people to train on this line. There is no pressure to get productivity; it's all about skill-building and comfort level."
Standardization	"Even though we have these standards in place, we also have to create standards on how to evaluate the standards."
Integration of Technology	"We're going to pilot this with standardization focusing on fact monitoring, standard work, and visual information."
Focus on Customer Satisfaction	"It starts with the core values, and our core values [are] customer first, respect, team spirit, responsibility, [and] elimination of waste."
Longevity and Sustainment	"We're not looking back; we're going to burn the boats and go. It's going to be a big transformation because it's not just a poster on the wall; this is real and meaningful."

Building on these valuable insights, we employed AI technology to further analyze the extensive transcript of the roundtable discussion on continuous improvement and operational excellence. Given the detailed and complex nature of the conversation, AI was utilized to extract and summarize key findings, allowing us to extract critical elements, success factors, and barriers discussed by industry leaders from the transcript.

**Table 3: Key Elements of Continuous Improvement and Operational Excellence - AI-Enhanced Transcript Analysis**

Key Elements of Op Ex Program	Success Factors	Implementation Barriers	Key Quote
Culture and Standardization	A strong culture of respect and trust; continuous reinforcement; integration into daily operations.	Resistance to change; inconsistent application; misalignment with goals.	"The foundation is your culture and standardization. You have to have that culture in place... It's about having initiative, equality, and trust, expecting everyone to take initiative, and trusting that they will do their job."
Leadership Commitment	Active leader involvement; supportive leadership; alignment with organizational objectives.	Reverting to old habits; inconsistency in leadership styles; sustaining commitment.	"Leadership should replace supervision. Leadership is to help people to do a better job."
Employee Engagement and Involvement	Empowering employees; fostering cross-functional teams; recognizing contributions.	Reluctance to take on new roles; poor communication; inconsistent practices.	"We knew that building that foundation, that core of lean leaders who create value for us, was going to be the catalyst of continuous improvement."
Problem-Solving and Process Improvement	Structured methods (5-Whys), continuous monitoring; cross-functional collaboration.	Overcomplication; lack of ownership; inconsistent application.	"What we implemented is a problem-solving method that tries to find the largest contributing factor first; let's get that fixed."
Sustainability and Continuous Improvement	Long-term focus; integration with strategy; regular audits.	Misalignment of goals; difficulty maintaining improvements; resource constraints.	"Sustainability to them means all things environmentally friendly... for us, it means avoiding atrophy and ensuring that improvements last."
Strategy Deployment and KPI Alignment	Clear strategy; alignment with KPIs; continuous review.	The disconnect between strategy and operations; misaligned KPIs; unclear communication.	"If you have a good strategy deployment process and it's not tied to your KPIs, it doesn't matter. So all these things have to work in concert and be connected."
Data-Driven Decision Making	Accurate data collection; strong analysis capabilities; regular validation.	Poor data quality; lack of skilled analysts; over-reliance on data.	"You have to assess your current capabilities, knowledge base, and lean skills... verify your measurement systems first to ensure you know what you're talking about."

The main prompt used to produce the summary and key findings from the transcript was:

*"Hey AI, please read the entire document—63 pages in total—analyze it and memorize it. This document is a complete transcript of a roundtable discussion with industry leaders from various sectors on continuous improvement and operational excellence. We explored their efforts and methods for implementing C.I./Op Ex within their organizations. I would like you to summarize*

*the key elements of C.I./Op Ex and, for each key element, identify the following: a key quote from the transcript, critical success factors, and implementation barriers.”*

## **VI. Proposed Framework for Building a Continuous Improvement Program for Operational Excellence**

The final proposed framework for the approach was constructed using insights directly extracted from the roundtable transcript. The resulting framework outlines a step-by-step process that aligns with industry practices discussed by the experts.

### **Phase 1: Foundation Building**

#### ***Step 1: Establish a Strong Cultural Foundation***

- 1.1 Define Core Values:** Identify and define the core values of the organization, emphasizing respect, trust, equality, and standardization.
- 1.2 Promote Standardization:** Develop and implement standardized processes across the organization. Train employees on the importance of standardization as a basis for continuous improvement.

#### ***Step 2: Secure Leadership Commitment***

- 2.1 Engage Leadership:** Ensure that leaders at all levels are actively involved in the C.I. program. Their commitment is crucial for driving the initiative.
- 2.2 Provide Resources and Support:** Leaders should offer employees the necessary resources, support, and guidance to help them align their efforts with organizational goals.

### **Phase 2: Employee Engagement and Involvement**

#### ***Step 3: Empower Employees***

- 3.1 Foster a Culture of Empowerment:** Create an environment where employees are encouraged to take ownership of processes and improvements. Empower them to propose and implement changes.
- 3.2 Encourage Cross-Functional Collaboration:** Establish cross-functional teams to leverage diverse skills and perspectives in problem-solving and process improvement.

### Phase 3: Process Implementation

#### *Step 4: Implement Structured Problem-Solving Methods*

- 4.1 Adopt Problem-Solving Techniques:** Introduce structured problem-solving methods such as root cause analysis, the 5 Whys, and PDCA (Plan-Do-Check-Act) cycles.
- 4.2 Continuous Monitoring:** Regularly monitor processes to ensure sustained improvements. Adjust and refine processes as necessary to maintain progress.

#### *Step 5: Align Strategy with KPIs*

- 5.1 Develop a Clear Strategy:** Formulate a clear strategy for the C.I. program, ensuring it is aligned with the organization's overall goals.
- 5.2 Integrate with KPIs:** Link the strategy with key performance indicators (KPIs) to track progress and measure the effectiveness of the C.I. efforts.

### Phase 4: Sustainability and Continuous Improvement

#### *Step 6: Focus on Sustainability*

- 6.1 Integrate Sustainability into Strategy:** Ensure that sustainability is a key component of the C.I. strategy, focusing on long-term improvements.
- 6.2 Conduct Regular Audits:** Implement regular audits and reviews to assess the effectiveness of improvements and identify new areas for enhancement.

#### *Step 7: Data-Driven Decision Making*

- 7.1 Ensure Accurate Data Collection:** Establish reliable data collection systems to support informed decision-making.
- 7.2 Build Analytical Capabilities:** Develop strong data analysis capabilities within the organization to interpret data effectively and drive continuous improvement.

### Phase 5: Leadership and Change Management

#### *Step 8: Continuous Leadership Development*

- 8.1 Implement Ongoing Leadership Training:** Develop and execute continuous leadership training programs to build and maintain leadership capabilities.

**8.2 Encourage Self-Assessment:** Promote regular self-assessment among leaders to identify gaps and areas for improvement.

### ***Step 9: Manage Change Effectively***

**9.1 Engage All Levels:** Involve employees at all levels in the change process to ensure buy-in and minimize resistance.

**9.2 Maintain Momentum:** Keep the momentum going by communicating progress, celebrating small wins, and making necessary adjustments to sustain the transformation.

## **VI. Conclusion**

This report provides valuable insights from both the roundtable discussion with industry experts and an academic literature review. Both the roundtable and the literature review successfully identified the essential elements, critical success factors, implementation barriers, and key insights crucial for successful continuous improvement and operational excellence (OpEx) programs in the manufacturing sector. The results underscore the pivotal role of leadership commitment, employee involvement, performance assessment, organizational communication/structure, proper training/learning, standardization, integration of technology, focus on customer satisfaction, and longevity/sustainment in driving operational excellence. Furthermore, the systematic approach outlined in this report offers a practical framework for organizations to implement continuous improvement programs tailored to their specific needs and context, drawing from foundational principles of OpEx programs found in the literature review, including methodologies such as the Shingo Model and LESAT. Overall, the results from the roundtable and the literature were similar, but the roundtable focused less than the literature on organizational communication/structure and longevity/sustainment. Both the literature and the roundtable discussion aligned with their strong focus on leadership, culture, and employee engagement as critical success factors for a successful CI/OpEx program.

The approach to this research allowed for extracting key principles and developing a structured step-by-step process. The results offer detailed guidance on implementation, with a strong focus on leadership commitment, cultural foundations, employee empowerment, and data-driven decision-making. This approach emphasizes practical application at all levels of the organization, reflecting the real-world experiences of industry leaders. It is recommended that organizations prioritize fostering a culture of continuous improvement, invest in employee training and development, strategically leverage technology, and sustain OpEx initiatives for long-term success. By embracing these recommendations and adopting a systematic approach to operational excellence, manufacturing enterprises can drive long-term growth, enhance competitiveness, and deliver exceptional value to stakeholders.



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