

Determinants Influencing Implementation of Lean in Service Sector – A Conceptual Framework

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Abstract—Lean has been predominantly used to manufacturing process improvement over the past two decades. But an increasing number of service operations also employ lean principles. The adoption of Lean by service organizations is a significant development because, unlike traditional manufacturing, where years of hard work have already paid off, there may be further benefits to be generated in this industry. The awareness of implementation of lean methodology in service sector is quite low particularly in India even though the services sector account for the majority of India's GDP and it has also generated a great amount of employment, drawn substantial foreign investment, and increased exports. Within service environments, although there is engagement with the principles of lean, many of the techniques used in manufacturing context are not immediately applicable. Thus, lean concepts and methods must be reassessed before their application into service processes. The main objective of this paper is to create a conceptual framework that will help identify the different critical factors that are necessary for implementing lean in the service sector. The paper also discusses how the developed conceptual framework can be applied in future research projects.

Index Terms—Lean management, Service Sector, Conceptual Framework Factors of Lean

I. INTRODUCTION

India is ranked 5th in world's GDP rankings in 2024 with Annual GDP Growth Rate of 6.8%. India's economy is diverse and growing quickly due to the country's leading industries in manufacturing, services, information technology, and agriculture (Forbes India, 2024). In India, the service industry is expanding quickly. In addition, the services sector account for the majority of India's GDP and it has also

generated a great amount of employment, drawn substantial foreign investment, and increased exports. More than half of India's GDP is generated by the service sector, which increased by 9.1% in 2022–2023. Even though there are great opportunities in the Service sector, it still needs to improve to compete with top-tier organizations. The application of lean management is standard in many companies all over the world. Unfortunately, the awareness of implementation of lean methodology in service sector is quite low. Most of lean methodologies refer to manufacturing industry, where a tangible product exists. Within service environments, although there is engagement with the principles of lean, many of the techniques used in manufacturing context are not immediately applicable. Thus, lean concepts and methods must be reassessed before their application into service processes. The primary goal of this paper is to identify various critical success factors required in implementing lean in service sectors by developing a conceptual framework.

II. LEAN SERVICE

Although the term "Lean" being coined by Krafcik in 1988, gained worldwide prominence after the publication of Womack, Jones, and Roos' book "The machine that changed the world" in 1990. Lean is a methodology that aims to reduce or eliminate costs, defects, faults, inventory, space, lead times, waste, while also improving and increasing productivity, customer satisfaction (downstream customers, employees, suppliers), profit, on-time delivery, capacity, quality, customer responsiveness, and cash flow (Gholizadeh, L et al.,2018) & Dombrowski, U., &

Mielke, T. (2014). *Eliminating waste in all processes has been predominately accepted, however the other 3Ps, the "invisible" components of lean, are less easy to adopt but equally important for the long-term implementation of lean. A long-term implementation of lean requires the adoption of the 4P model. There are four levels: philosophy (long-term thinking), process (eliminate waste), people and partners (respect, challenge, and grow), and problem solving (CIP and learning) (Dombrowski,*

U., & Mielke, T. (2014). *The human criterion, technology criterion, management criterion, process criterion, communication criterion, and structural criterion all have a significant impact on the success of lean implementation (Gholizadeh, L et al., 2018). Lean Management is a philosophy that follows five principles (value, value stream, flow, pull, and perfection) to eliminate all sources of waste (or muda) from the production processes (Womack and Jones, 1996). Although lean approaches originated in manufacturing-related organizations, it is now generally accepted that they are equally applicable to service organizations as well because both kinds of businesses use system or process improvements as well as cost reduction and quality enhancement as inputs to meet the demands of customers. Lean Service Principle may consider the same five fundamental principles applicable to manufacturing companies (Womack and Jones, 1996):*

1. *Specify what creates value: Value can be considered in service environment as the need that the service can cover for the end-customer. Thus, it must be defined by the customer.*
2. *Identify the value stream: In service, value is primarily created by customer needs, therefore, the stream value is constituted by the activities sequence that enables their satisfaction.*
3. *Flow: It focuses on the optimization of the continuous movement through the sequence of service activities that generates value, as perceived by the customer.*
4. *Pull: In a service environment pull means to distribute the customer demand all along the value stream, delivering only what is actually demanded by the customer.*
5. *Strain for perfection: Its translation to service must be focused on the customer perspective delivering*

exactly what the customer wants, exactly when he wants it.

Boynton and Zmud (1984) define *Critical Success Factors* as "those few things that must go well to ensure success". There are two types of factors affecting lean as hard and soft factors. Soft practices of Lean such as people and customer involvement, as services are based on labor-intensive, since people manage and deliver the service in question (Suárez-Barraza et al., 2012). The technical and analytical tools introduced to a firm to improve production systems represent hard practices (e.g., statistical process control or kanban) (Bortolotti, T et al., 2015). Soft practices are crucial for achieving superior performance through LM and sustaining the performance in the long term (Badgujar, P et al., 2016). This paper considers various critical success factors necessary for the implementation of lean concept in service sectors. Such CSFs includes: Leadership involvement (Deming, 1986), Change culture and work ethics (Bortolotti, T et al., 2015), Training & Education (Badgujar, P et al., 2016), Employee involvement (Sorooshian, S., & Ali, S. A. M. (2017), Customer focus (Bonaccorsi, A et.al., 2011), Communication (Losonci, D et al., 2011) and implementing facilitation (Torp, O et al., 2018, July). Previous empirical studies also implies that the success of lean implementation in terms of CSFs, including leadership and management, communication, financial capabilities, skill and expertise, and organizational culture. Communication, abilities, and expertise did not significantly correlate with lean adoption success (Punnakitikashem, P et al., 2013, May).

III. CRITICAL SUCCESS FACTORS

A. LEADERSHIP INVOLVEMENT:

Leadership is the capacity of a person or a group to motivate and direct followers or members of a team, organization, or society. A person's seniority, title, or place in a hierarchy are frequently associated with their leadership qualities. To improve the success of implementing lean manufacturing, top management must coordinate the organization around common goals (Badgujar et al., 2016). It is the responsibility of leaders to guide, inspire, mentor, and educate their followers in the implementation of lean thinking in an organization and grasp the potential advantages that

lean principles may offer (Sorooshian, S., & Ali, S. A. M. (2017). The main benefits that senior executives envisioned from implementing the lean approach in an organization were waste reduction and increased customer satisfaction. This is followed by maintaining market share and increasing profit (Badgujar, P et al., 2016). Even though the shop floor should frequently be at the forefront of the lean transformation, senior management must take the lead during the initial phases of the process (Alefari et al., 2017). A reduction in cost is possible mainly by increasing the quality of operational activities in an organization. This does not imply that executives and managers are the only ones who exhibit and promote excellent leadership. Quality is a non-negotiable principle that forms the foundation of Lean, so everyone in the organization, from top to bottom, must place a strong emphasis on it (Deming, 1986). It is evident from the previous empirical study that the position of leadership shows a favourable association with the environmental and social aspects of implementing Lean in the service sector (Lizarelli et al., 2023) & Gholizadeh et al., 2018). Self-awareness and self-development are greatly enhanced by self-reflection, or Hansei. The executives can only guide their own personal growth as well as understand the goals set by their coaches if they recognize their existing conditions and possible shortcomings (U. Dombrowski, T. Mielke, 2014). The implementation of lean benefits in an organization is possible by providing proper training to the employees through senior executives and by following Span of Control principle. It is recommended to utilise a ratio of 1:5 at the operational level and up to 1:10 at higher levels. In general, a ratio of five to nine should be set for leaders to employees to execute proper training (U. Dombrowski, T. Mielke, 2014). The lean leadership system describes five principles for lean implementation in service sector, namely: “improvement culture”, “self-development”, “qualification”, “Gemba” and “Hoshin Kanri – policy deployment” (Alefari et al., 2017).

ORGANIZATIONAL CULTURE AND WORK ETHICS:

OC is defined as a “combination of artifacts (also called practices, expressive symbols, or forms), values and beliefs, and underlying assumptions that organizational members share about appropriate behavior” (Detert et al., 2000, page 851). A lean

culture means changing the political, emotional, and behavioural patterns of employees. Without considering culture, organizations have limited chance of implementing lean successfully (Punnakitikashem, P et al., 2013, May). organizational culture is the most important factors to the success of implementing lean project (Punnakitikashem, P et al., 2013, May). Changing an organizational culture is not done overnight (Torp, O et al., 2018, July). The first step in creating a strong lean culture among employees is commitment from all sides. A strong intellectual and theoretical foundation is also necessary, as are powerful people with executive authority who may serve as representatives (Torp, O et al., 2018, July). Employee perceptions, relationships between employees and management, and worker behaviour are all part of the organizational culture. Humans have a tendency to resist change, and this was an issue that the manufacturing organizations also still addressing it (Badgujar, P et al., 2016). It is said that Lean implementation constitutes a small portion of the entire process, with 80% of it being about acceptance of change and only 20% dealing with technical implementation (Sorooshian, S., & Ali, S. A. M. (2017). To improve LSS's visibility and culture, employees should be informed about project success stories, best practice sharing, and benchmarking (Jeyaraman.k et al., 2010). Restructuring the company is also necessary to promote the culture shift and integrate LSS into daily operations (Jeyaraman.k et al., 2010). Hierarchical culture based on control, formalization, stability and predictable outcomes is positively related with process quality improvements but not with innovation, while vice versa a developmental culture characterized by flexibility, growth, innovation and creativity is correlated with innovation but not with quality (Bortolotti, T et al., 2015). It is also the responsibility of leaders to encourage and exhibit the improvement culture (U. Dombrowski, T. Mielke, 2014).

TRAINING AND EDUCATION:

“Before we built cars, we built people.” This Toyota statement clearly demonstrates the critical significance of training for employees. Training is to help employees or subordinates acquire job-related competencies which may represent an intentional and targeted effort by the organization or by any higher authority (Sorooshian, S., & Ali, S. A. M. (2017).

Therefore, Employee development has to receive top priority in the successful implementation of lean (U. Dombrowski, T. Mielke, 2014). Training is to help employees or subordinates acquire job-related competencies which may represent an intentional and targeted effort by the organization or by any higher authority. All positions should have set standards so that a new employee may grasp their tasks even if they are unaware with them (Sorooshian, S., & Ali, S. A. M. (2017). Employees who receive training along with the opportunity to participate that the firm offers are positively motivated and more likely to engage in activities. This helps them feel like they belong, which in turn leads to a sense of job satisfaction and integration within the organization (Baides, N. R., & Moyano-Fuentes, J., 2012). Increased training makes employees more adaptable and makes it easier for them to rotate between different positions and creates multifunctional teams (Baides, N. R., & Moyano-Fuentes, J., 2012). (SAFAVI, S et al., 2021) from their empirical study deprivates that EFA of organizational policy factor variables specified "staff development and training policy" with the highest variance. So, offering employee training programmes and focusing on their growth and retraining under the supervision of organization-supportive policies are the most well-known lean facilitators. This result is also confirmed by the results of the multiple regression model showed that training employees about lean principles and fostering positive working relationships can significantly reduce the labour turnover in service organization.

EMPLOYEE INVOLVEMENT:

The employees' active involvement is essential, as they are the key component that makes the service successful and possess the most up-to-date knowledge about what is going on in the field (Bonaccorsi, A., et al., 2011). The method in which a service is provided is indicated by immaterial characteristics such the rapidity, efficiency, willingness, and friendliness of the line employees. These characteristics can have a greater impact than the actual service (Bonaccorsi, A et al., 2011). There is a notion that Lean always emphasis on cutting staff or resources but Employees need to comprehend that Lean is all about concentrating people's efforts on innovative endeavours while streamlining processes by gradually removing waste and idle time caused by paperwork

and bureaucracy (Bonaccorsi, A et al., 2011). Employee creativity and skill establishes, which they can contribute to enhance the production and management processes of the companies they work for, are valuable assets that can yield positive outcomes for the organization (Baides, N. R., & Moyano-Fuentes, J. (2012). Due to training provided and people rotating through various positions to gain new abilities, companies with higher degrees of LM adoption also have a higher number of multifunctional employees (Baides, N. R., & Moyano-Fuentes, J. (2012). A multi skilled workforce must be established when an organization is to be lean. The core of lean is that people should be able to do an assortment of activities since these increases overall process efficiency. In addition, the creation of a multi skilled workforce enhances efficiency, flexibility, and Just-in-Time manufacturing while enabling dynamic human resource deployment. The organization should have the right organizational environment, give enough training, and offer a sizable number of rewards as a motivational factor in order to establish such a workforce (Sorooshian, S., & Ali, S. A. M. (2017). Multifunctional employees can be created through Dojo training (Andrés-López, E et al., 2015). Dojo is a lean training approach that involves knowledge sharing among all the employees while strengthening their multiskilling capabilities (Andrés-López, E et al., 2015). More widespread use of the Lean concept in the service industry results in increased employee involvement and decision-making. Giving workers more autonomy and a higher level of decentralized authority could make this feasible (Baides, N. R., & Moyano-Fuentes, J. (2012). A greater degree of Decentralized authority is possible through Implementing Quality Circle in Service organizations. Quality circles is about motivating employees to enhance their service operations by making their own proposals (Andrés-López, E et al., 2015). The process of change can be significantly impacted by gender. Many businesses practice gender segregation and stereotyped gender coding in the workplace, which results in typical jobs for men and women (Losonci, D et al., 2011). So, training has to be given based on their Job framework.

CUSTOMER FOCUS:

Customer satisfaction is a metric that expresses how content customers are with the capabilities, services,

and goods provided by a business. Data on customer happiness, such as surveys and ratings, can assist a business in determining how to effectively enhance or improve its goods and services. The need-to-know what customers value and don't value, as well as the pressure from other businesses, are the market drivers (Radnor, Z., & Johnston, R., 2013). Organizations must first identify the desired outcome and the user of that output in order to be improved from a Lean perspective. Van Assen, M. F., (2021) implies that knowing precisely who the client is and what their value is essential for this since it establishes what waste is (from the customer's point of view). If the company is genuinely committed to become customer centric and empower employees to continuously improve service and processes from a consumer perspective, lean can be successfully implemented with highly personalized and innovative products in the same way as Toyota did (van Assen, M. F., 2021). Under empirical findings, it implies that Organizations utilize lean practices and adjust them in accordance with the perceived needs for standardization in the market to enhance processes (i.e., the elimination of waste, complexity, and variability); concurrently, they use and adjust lean practices in accordance with the perceived needs for satisfying customer expectations in the market to enhance customer-focused performance processes (i.e. adaptation of variability) (van Assen, M. F., 2021).

Nowadays, even manufacturing operations requires the presence of customers. Lean service integrates the consumer into the service generation process, emphasising the customer's active engagement. The customer takes involved in the manufacturing process also. A completely distinct aspect to the manufacturing method is brought by the customer's presence in the service delivery system: customers take on a partner role in the value network, helping to create value streams (Andrés-López, E et al., 2015). Understanding the requirements of customers and determining whether or not they can be satisfied with the available employees and resources are crucial steps in defining a lean, customer-focused process. The simplest method to achieve this is to assess the Takt Time (TT), which is the rate (time) at which a person, product, document, or action needs to be performed in order to meet the demand of the customers (Bonaccorsi, A et al., 2011).

COMMUNICATION:

Communication is an important external component of organizational change. Furthermore, it indirectly impacts the success of lean (Losonci, D et al., 2011). Wall charts, emails, meetings, and other formal and informal channels of communication should all be used to periodically review and convey targets and a time schedule for the improvements in order to foster commitment from all employees (Bonaccorsi, A et al., 2011). Team members will lose momentum and motivation for ongoing progress whenever assessment and communication are substandard. Employees will gain insight and guidance through the LSS journey for continual improvement with frequent communication and evaluation of the results (Jeyaraman, K., & Kee Teo, L., 2010). Torp O et al., 2018) states that around 20 percent of employees dispute that they have sufficient knowledge about the implementation process of lean when asked whether they do. A start-up meeting should be arranged in order to formally communicate the commencement of the lean project, outline the strategic concerns associated with the transformation, and introduce the value stream manager and his team (Bonaccorsi, A., et.al, 2011). The Lean steering team committee should be encouraged to hold frequent Lean meetings in order to assess the Lean outcomes and progress. Regular meetings and assessments will give an opportunity to evaluate possible areas for development and conduct gap analyses in order to identify solutions for achieving the goals (Jeyaraman, K., & Kee Teo, L., 2010). It is important that organization should make communication both in terms of vertical and horizontal communication (Punnakitikashem, P et al., 2013).

IMPLEMENTATING FACILITATION:

A crucial component of a successful LM implementation is the dedication and participation of a company's workforce (Baides, N. R., & Moyano-Fuentes, J., 2012). Proper utilization of lean tools is essential for successful implementation of lean in service sector such as 5S, Poka-Yoke, Hoshin kanri, Quality function deployment, Value stream mapping and Root cause Analysis (Lizarelli, F. L et al., 2023). Implementation should occur in a line starting with top organizational management, working down to its divisions, and ending with service companies (Torp.O et al., 2018). These five essential components must be

represented for successful implementation of lean: (1) Vision; (2) Skill; (3) Incentive; (4) Resources; and (5) Action Plan. A change in direction will be feasible if all the necessary components are present (Torp O et al., 2018). Torp O et al., (2018) states that around 20 percent of employees dispute that they have sufficient knowledge about the implementation process of lean when asked whether they do. The internal operations process gains directly from lean success. Operational performance is directly improved by the effective implementation of lean. Another metric for measuring lean implementation is organizational performance. The performance of the organization will gain from the excellent and efficient implementation of lean (Punnakitikashem, P et al., 2013).

IV. CONCLUSION

This paper has made a conceptual framework and identified seven critical success factors for implementation of Lean concept in service sector. Though most of these factors have been successfully implemented in manufacturing sector it is essential to check for their applicability in the service sector. The conceptual framework can be further applied for empirical research work by developing a questionnaire and collecting data from various stakeholders of the service organisations (i.e., Top management, Middle and Lower-level management and Customers) and also can be collected from different service industries like education, transportation, Information Technology, health care, entertainment etc. The collected data can be further studied empirically.

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