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Lean Transformation Success: The Role of Management and Employee Engagement

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Abstract:

Research Question: This study investigates which management and employee engagements enhance the fulfilment of Lean transformation goals and whether there is any difference in opinion among management and employees about Lean transformation success. **Motivation:** Our motivation was to explore different stakeholder roles within the company for Lean transformation. **Idea:** The main idea of this study was to examine the role of Lean from two perspectives, based on the level of engagement and role in the company – management and employee roles, and how they influence the company's success. **Data:** An online survey was conducted, where the respondents pointed to various aspects of the company, such as company size, industry they operate in, ownership structure, etc. Data processing was carried out in the SPSS 25 package on 82 responses. **Tools:** As the initial step of the research, using Cronbach's alpha, it was concluded that obtained set of items in the group are closely related and measure a particular aspect. Mann-Whitney U test and Spearman-rho correlation test were used for the data analysis. **Findings:** The findings present a comparison of engagements and recommendations for engagements to follow in order for the company to be more successful in Lean transformation. **Contribution:** This research can help in reducing the research gap on the lack of comparisons of the engagement in these stakeholder roles. It provides practitioners with guidance on what steps they should take to be more successful in Lean transformation so that they can focus more on overcoming them and less on identifying them.

Keywords: Lean transformation, success, goals fulfilment, engagement

JEL Classification: L21, L25, C10

1. Introduction

Since Lean represents one of the most notable methods for managing processes (Kirin et al., 2022; Tomasevic et al., 2020), many companies strive for a successful Lean implementation. For the vast majority of companies, Lean transformation projects have become a commercial necessity. In order to stay competitive, companies constantly seek ways to add additional value to their customers, reduce costs and increase efficiency. It is important to develop and implement innovative solutions in businesses, which will enable the differentiation and competitiveness of companies (Gosnik & Stubelj, 2022). Some authors argue that Lean often does not yield positive results due to poor management and/or neglect of cultural aspects (Cadden et al., 2020; Losonci et al., 2017). According to Netland's (2016) research "management commitment and involvement" is a doubtlessly crucial aspect of the Lean implementation. It is not a rare situation for managers to be confident about their solutions to problems, nonetheless, their employees often don't feel the same way and are discouraged to participate in problem-solving (Reynders et al., 2020). Huo and Boxal (2018) indicate the importance of the way the management create space for the involvement of

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workers in Lean production for decision making, targeting resources to specific job requirements and adjusting the level of resources to the degree of these requirements. Kim and Na (2022) recognize that overconfidence of management could lead to increase non-fulfilment of Lean goals. They suggested that company should reconsider their business processes from a different perspective, rather than leaving decisions to management alone. Also, Mohamed (2016) issued that differences in the opinions among different roles in the company could lead to misunderstandings and conflicts, regarding the ways in which the tasks should be done. Yadav and Al Owad (2022) indicate a lack of studies about the viewpoints of management, employees, and other stakeholders for Lean transformation. Huo and Boxal (2018) state that different stakeholders (top management, employees and consultants) in Lean implementation may prefer different performance measures and that they could have different perspective about its impact on overall performance, but it is not reported in any study. Marshall (2014) only recognized that there is the degree to which employee evaluation is integrated into Lean transformation goals, initiatives, and activities in the performance improvement process.

The structure of the paper is as follows. A summary of literature is provided in Section 2. A systematic methodological framework is developed in Section 3. Results are given in Section 4, following by the discussion and conclusion in the Section 5.

2. Theoretical Background

Lean is a management approach rooted in the continuous improvement concept. The term 'Lean' originated from Krafcik (1988) but it became widespread after the book *The Machine that Changed the World* by Womack et al. (1990) was issued (Danese et al., 2017). The goal of Lean is to increase value, reduce variation and waste and resolve poor working conditions by continuously improving processes. Removing the undesirable activities in the processes can help companies in enhancing value, improving stakeholder value, reducing cost and making the company increase their competitive advantage (Emiliani & Stec, 2005; Womack, 2006). By focusing on value-adding activities that consumers are willing to pay for, organizations ensure competitive financial as well as non-financial results. Lean transformation (LT) combines operational techniques and tools, management and the company's policies, procedures, philosophies, and HR performance system, which combined should properly support the Lean transformation strategy (Marshall, 2014). Lean has grown into an important area of academic research (Danese et al., 2017), but even though Lean tools and principles are widely known, companies still struggle with the implementation (Alefari et al., 2020). Now perceived as a holistic management approach (Holweg et al. 2018), Lean has come a long way from being viewed as a simple tool (Alefari et al., 2020).

The researchers (Kim & Na, 2022; Minh et al., 2018; Yadav & Al Owad, 2022) recognized two critical success factors for Lean success: top management commitment and employee involvement. When Lean is introduced in a company, top management is facing the challenge of sustaining it (Sahoo, 2019). Employees are viewed as vital assets throughout an LT journey, yet somehow, employees' satisfaction is neglected (Minh et al., 2018). Resistance to change and lack of trained staff usually gets in the way of LT (Ramadas & Satish, 2018). Intensified work and sizable workloads constrain employees' participation in continuous improvement and leave them with a negative perception of personal efficacy (Neirotti, 2018). However, Losonci et al. (2011) suggested that employees' feeling of success is crucial to LT. Employee involvement and interest are perceived as the crucial part of Lean transformation success (Chay et al., 2015). In pursuance of employee engagement, a company must provide sufficient training, management support and a chance for employees to participate in problem-solving practices and let them have an influence over decision-making (Huo & Boxal, 2018). The Lean program should be integral to the long-term strategy, and Lean practices must be present on every managerial level in order to achieve the goal of LT (Netland et al., 2019). Top management must actively participate thorough LT; it is not satisfactory for them to just highlight their commitment to the program (Camuffo & Gerli, 2018; Netland, 2016; Netland et al., 2019). It is important that managers can inspire employees to embrace continuous improvement culture through their interactions and behavior towards them (Netland et al., 2019). Emiliani and Stec (2005) state that managers usually define Lean principles and practices as a "manufacturing matter", which can be applied for waste elimination only in a company's activities such as operations, and not as a whole integrated management system. Also, managers frequently instruct their workers to eliminate waste, while at the same time, they reveal wasteful behaviours. According to Marshall (2014), the human factor is a key resource of successful Lean

transformation, which will influence the goals of Lean transformation. All employees should prioritize the goals and targets which are aligned with the company's strategy.

According to similar practical research in this field, Lean project failure is a widespread issue for every company, and it happens when stakeholder perspectives are not aligned, so one group of stakeholders can blame others for failures (Yadav & Al Owad, 2022). The authors captured different aspects of LT success among shareholders and compared if the opinions of the three groups can be in agreement with one another, observing 62 cases. On the other hand, Minh et al. (2018) analyzed the data from a survey of 206 employees in Lean manufacturing companies using statistical tools, contributing to the progression of knowledge on job satisfaction through Lean practices. Despite that, there are a small number of studies available that capture the perceptions of various stakeholders, predominantly including individual perceptions, without fully capturing and comparing the important aspects essential to a common Lean goal. Therefore, this research should help in reducing the research gap on the lack of comparisons of the engagement of multiple stakeholder groups. Lean project success should originate from trusting the system or process and support from everyone involved in Lean activities. Based on that, this paper aims to capture the engagements of stakeholders in more detail, which could enhance Lean success, prevent project failures, and encourage better fulfilment of short-term and long-term goals. The focus of this paper will be on comparisons of the two stakeholder groups – management and non-management group, and their roles in the company.

3. Methodology

The purpose of this research is to explore the role of management and employee engagements in the Lean transformation success (LTS), whether the LT met their expectations (LTE) and what are their viewpoints about LTS. A set of relevant indicators can ensure that companies can achieve desired results and can contribute to the fulfilment of LT goals. It leads to establishing two research questions: Which management and employee engagements enhance the fulfilment of LT goals? Is there any difference in opinion among management and employees about LT success? An online survey was conducted to answer the research questions. Participation in this survey was anonymous and the data was collected only for research purposes. The model is given in Figure 1.

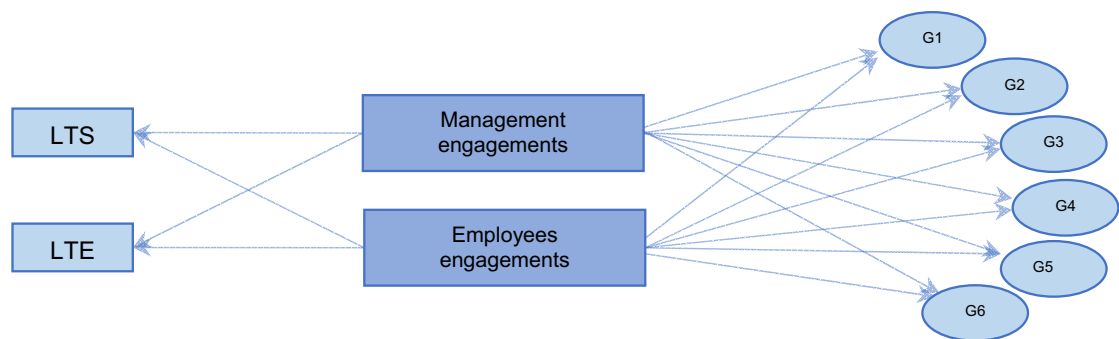


Figure 1: Proposed model for LT

Lean transformation engagements. In this part of the research, it was investigated how committed managers and employees are in making the LT successful and whether their combined engagements impact Lean goals. For that purpose, the participants indicated the extent of their agreement with various statements about LT practice in their company, process improvement practice, etc. In this research, we wanted to observe the role of Lean within two perspectives, based on the scope and level of engagement – management and employee perspective. The statements about LT in Table 1 were modified according to the research of Wolf & Harmon (2012), according to similar research (Jae et al., 2012; Yadav & Al Owad, 2022).

Table 1: The statements about Lean engagements

| Engagements | Items n ^o | Description |
|-------------------|----------------------|---|
| Management | MAN1 | Management provides visible support in activities and budget to LT |
| | MAN2 | Management respect the organizational strategies, priorities and LT goals |
| | MAN3 | Roadblocks of LT have been identified |
| | MAN4 | Roadblocks of LT are being overcome |
| | MAN5 | The short-term and long-term goals of LT are defined |
| | MAN6 | LT plan is put in writing |
| | MAN7 | LT plan tends to become fully developed |
| Employees | EMP1 | Employees are conscious of the mission and vision of LT |
| | EMP2 | Employees have support from management in LT |
| | EMP3 | Employees are conscious of the need for LT |
| | EMP4 | Employees are conscious of their role in LT |
| | EMP5 | Each employee's role in the LT is well communicated |
| | EMP6 | Lean culture within the company has been successfully developed |

Source: Adapted from Wolf & Harmon (2012)

Fulfilment of Lean transformation goals. The respondents were asked to indicate the extent to which their company fulfilled various goals. It is necessary for a company to identify a set of targets and goals that it hopes to achieve by adopting a Lean transformation strategy. Lean goals were adapted from Marshall (2014) and they are identified as measurements of success for: elimination of waste (G1), cost reduction (G2), capabilities improvement (G3), increasing of competitive advantage (G4), financial performance improvement (G5) and operational performance improvement (G6).

Lean transformation success and expectations. As a part of the research, it was interesting to explore how the common influence of management and employee engagement increases the success of the programs and projects within the company. Therefore, the respondents were asked to express their opinion on how successful the Lean program is in their company. Also, the respondents assessed the extent to which LT fulfilled their expectations.

The Likert five-point rating scale was used for the mentioned variables, which is in accordance with similar research in the field (Jae et al., 2012; Yadav & Al Owad, 2022). Data processing was carried out in the SPSS 25 package, and in addition to descriptive statistics, the Mann-Whitney U test and Spearman-rho correlation test, which is appropriate for ordinal variables (Pallant, 2011). The research population consisted of experts from companies working on Lean improvement and business process management. The questionnaire was sent to 600 experts in this field via LinkedIn and email addresses. Overall, 82 responses were received. The response rate is 11.71%, which is adequate with the average response rate for similar studies (Wong et al., 2014). Further, the data from the questionnaire was analyzed. Among respondents, 43% are operating in the service field, 43% of respondents work in manufacturing companies, while 14% are working both in the production and services fields. 47.5% of the respondents were engaged in LT improvements for more than two years. The results give comparisons of engagements and their influence on the fulfilment of Lean goals, success and expectations.

4. Results

The initial step of the research was to consider the reliability of the set of items using Cronbach's alpha (Cronbach, 1951). The internal consistency of the first group of items related to Goals is 0.861. The internal consistency in a group of Management is 0.913, and it increases for a dataset for Employees up to 0.931. The total internal consistency of the proposed model is 0.947. All metrics are above 0.7, which reveals that the obtained set of items in the group are closely related and measure a particular aspect.

Questions about LT were divided into two groups based on the scope and level of the engagements. Table 2 and Figure 2 show the results of the Spearman-rho correlation coefficients between engagements and fulfilment of goals. Based on the results, all observed engagements are statistically significant for the fulfilment of goals.

Table 2: Spearman-rho correlations coefficients between LT engagements and goals fulfilment

| Items n0 | G1 | G2 | G3 | G4 | G5 | G6 |
|----------|--------|--------|--------|-------|--------|--------|
| MAN1 | .290** | .478** | .490** | .206 | .405** | .498** |
| MAN2 | .314** | .466** | .374** | .166 | .309** | .399** |
| MAN3 | .309** | .450** | .396** | .185 | .402** | .491** |
| MAN4 | .310** | .477** | .402** | .255* | .474** | .509** |
| MAN5 | .230* | .412** | .264* | .248* | .288** | .436** |
| MAN6 | .264* | .443** | .320** | .155 | .248* | .387** |
| MAN7 | .381** | .262* | .187 | .153 | .252* | .259* |
| EMP1 | .232* | .391** | .294** | .252* | .246* | .394** |
| EMP2 | .343** | .329** | .164 | .158 | .237* | .321** |
| EMP3 | .095 | .311** | .156 | .183 | .221* | .368** |
| EMP4 | .132 | .305** | .157 | .227* | .219* | .404** |
| EMP5 | .217 | .453** | .295** | .278* | .282* | .467** |
| EMP6 | .341** | .383** | .264* | .159 | .348** | .447** |

** . Correlation is significant at the 0.01 level (2-tailed).
 * . Correlation is significant at the 0.05 level (2-tailed).

It was recognized that the participants consider two goals to be the most important: improvement of operational performance in the company and cost reduction. For operational performance improvement, it is important to focus on overcoming the roadblocks of LT. On the other hand, cost reduction stood out the importance of management, which provides visible support in activities and budget. For both goals, it is important that each employee's role is well communicated. To be more successful in waste elimination, it is important for a company to focus on the full development of plans and to successfully provide support to employees for Lean engagements. According to the results, the engagements don't have such a high statistical significance on the increase of competitive advantage as on the other goals.

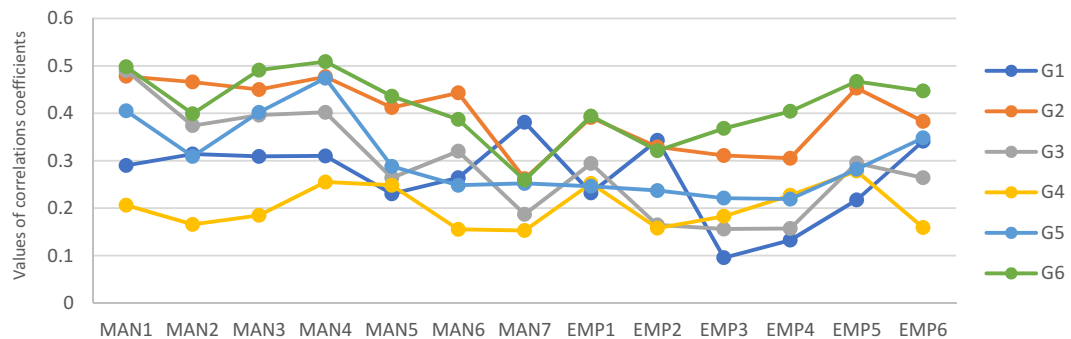


Figure 2: Spearman-rho correlations coefficients between engagements and goals fulfilment

Observing the values of the coefficients, the engagements that influence the most on the company's expectations are the respect of management for the organizational strategies, priorities, and goals, so as that employees should be conscious of their role in Lean projects. For Lean success, the highest value of the correlation coefficients has management engagement (Figure 3), meaning if a company wants to increase its success, it should prioritize:

- (1) providing visible support in activities and budget from management,
- (2) overcoming the roadblocks, and
- (3) defining the short-term and long-term goals.

None of the employee engagement stood out as the most significant. But it is important to build a corporate culture where both, management and people's involvement and dedication, will lead to successful transformation.

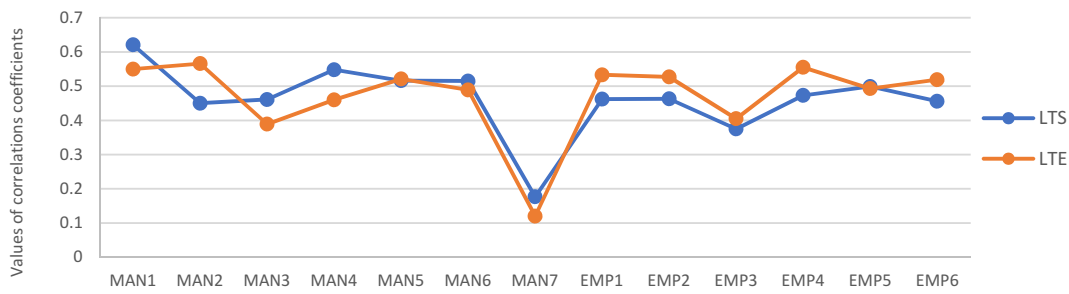


Figure 3: Spearman-rho correlations coefficients between engagements and the LTS / LTE

Based on the Spearman-rho correlation test, it was concluded that all correlations are significant and positive for these two scales with goals. The highest value of the correlation coefficients has G2 and G6, meaning that the set of management and employee engagements affect most on the elimination of waste and operational performance in the company (Figure 4).

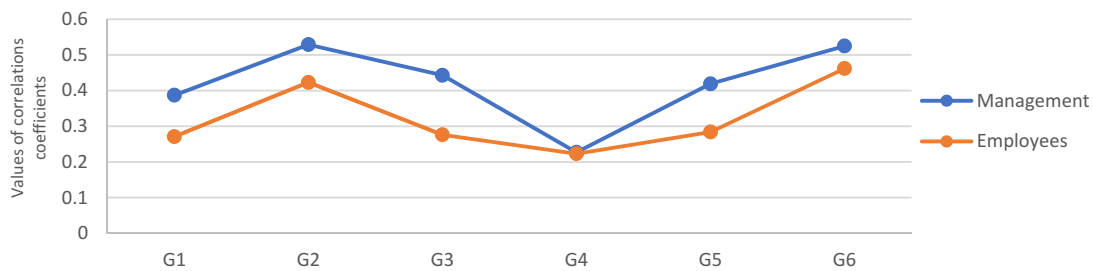


Figure 4: Spearman-rho correlation coefficients between the engagements and goals fulfilment

The results indicate that there is a lack of engagements for goal G4, meaning that the company should pay more attention to Lean engagements for increasing the competitive advantage of the company. It would be useful to multiple organizations to enhance the experience through employee involvement in different aspects of Lean projects, to give them time to practice, and include them in defining short-term and long-term goals, so as the defining budget for some Lean activities. Also, management can encourage everyone to give opinions when defining organizational strategies, priorities, and goals. Therefore, employees could be conscious of their role in Lean projects and overcome possible frustration, which turned out to be significant in this research.

Discussion and Conclusion

As the level of competitiveness is rising on the market, the company should prioritize improvement strategies that will show immediate results. The set of efficient indicators and its common influence can lead to a successful Lean transformation within a company, better results and higher competitive advantage in the industry. According to that, the research explores the role of management and employee engagement in a company’s waste elimination, cost reduction, improving capabilities, increasing competitive advantage, financial and operational performance improvement. The results were considered through the degree of fulfilment of the goals and improvement of the organization’s success and expectations, and were answers evaluated on a scale from 1 to 5.

This paper investigated the engagement of the two stakeholder groups – management and non-management group. It captures the engagements of employees and management engagements, in order to enhance the Lean transformation success, encourage better fulfilment of goals and be helpful in preventing Lean failures. In addition to descriptive statistics, the Mann-Whitney U test and Spearman-rho correlation test indicate which engagements should be considered with a higher priority, in order to achieve better results in a shorter period of time. This research observes the Lean role from two perspectives, based on the scope and level of the engagements. The results showed that management engagements have a higher influence on the achievement of company goals. It is important for a company to have an adequate management system, but also changing corporate culture to have people’s involvement is essential to a successful Lean transformation. Employees should be given enough time to practice, to overcome possible frustration, followed by poor results and overall discontent.

The results recognize that the priority goal related to LT is the improvement of operational performance in the company, so as the cost reduction. This research identifies which engagements a company should take to be more successful in LT. A company should prioritize:

- (1) providing visible support in activities and budget from management,
- (2) overcoming the roadblocks, and
- (3) defining the short-term and long-term goals.

If the company wants to be more successful in operational performance improvement, it is important to focus on overcoming the roadblocks of Lean transformation. For cost reduction, it is important that management provide visible support in activities and budgets. Also, for both goals, it is important that each employee's role is well communicated. If a company wants to be more successful in waste elimination, it should prioritize the full development of Lean transformation plans and successfully support employees' engagements. In this research, it was noticed is a lack of engagement for competitive advantage from two sides, meaning that the company should proactively encourage employees to make an effort so that the company can become better at achieving competitive advantage. The results can contribute to practitioners' understanding of how companies use their material and human resources for LT to effectively improve their performance and be more successful.

The findings present a comparison of engagements and recommendations for engagements that should be monitored in order for the company to be more successful in Lean transformation. The contribution is that the key engagements for success are recognized, so the company should only work on their improvement, not on their identification. This research help in reducing the research gap on the lack of comparisons of the engagement in these two stakeholder groups. The limitation is the lack of the different points of view of other stakeholder groups, like business owners, leaders, consultants, etc. The findings are reflected only at a specific point in the relationship between the two groups. Also, this research used a survey sample limited to 82 cases. Further extension of the research is possible by using different statistical tools and comparisons between the industry in which the company is operating. By creating, for example, a Data envelopment analysis model, it would be interesting to explore which companies are more efficient, to give insights on which critical success factors the company should encourage or reduce in order to stay competitive. This would give a broader picture and fresh perspective on Lean transformation.

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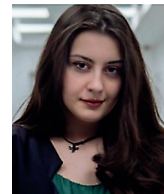
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