

# The Impact of Lean Organization to Employee Cost in Indonesia Largest Heavy Equipment Distributor Company

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**Abstract**—Lean organization is an initiative to increase productivity in challenging business condition by evaluating ineffective processes and strengthening internal collaboration to increase value and impact, which able to reduce organizational costs. This research is assessing Lean Organization by analyzing the data using fuzzy logic. While, the correlation between lean organization with employee cost was assessed through internal company data analysis, FGD and Root Cause Analysis (RCA) in order to obtain pareto causes in Employee costs. It revealed that current level is Very Lean and the company's productivity is also increased. However, internal company data analysis also found that the causes of employee costs tend to increase due to Internal variable cost factors (linear with increasing company business performance) and fixed costs based on changes in the employee composition. This study provides recommendation for an organization to measure lean level of a company in order to identify room for improvement, that has meaningful benefits in controlling employee cost, increase value creation and gaining productivity, as a key to the competitiveness and profitability in a long term.

**Keywords**—company productivity, employee cost, fuzzy logic, lean organization, root cause analysis.

## I. INTRODUCTION

Due to being the distributor of heavy equipment to many industries, the revenue in PT ABC is fluctuating, which depends on industry trends. This caused the profit and operational expense to be fluctuated, where employee cost tends to increase every year.

According to Abreu, et al. [1], lean concept has been widely used by many companies in order to ensure productivity gains and competitive advantage. PT ABC has

implemented Lean Organization initiatives since 2017: (1) Mapping the company business process (2) Downsizing the organization level / function, departments through mergers, semi-matrixes and matrixes (3) Controlling number of manpower strictly and selectively with a policy of zero growth and naturally negative growth.

Within five years numbers of positions (Division Head below) and number of manpower has declined following organization redesign policy. Based on the efforts above, it is expected that the initiatives towards lean organization will negatively impact the employee cost. Where redesigning organization, mapping the business process, downsizing the organization level and function, along with controlling the number of manpower will have an influence towards the decreasing number of manpower, which is the multiplier of employee cost. However, the employee cost is still increasing, while productivity is still impacted mainly by recurring profit. In conclusion, PT ABC still need improvement in implementing lean organization in order to decrease employee cost. In order to improve the implementation of lean organization, PT ABC needs to have measurement to determine the desired lean level that is aligned with company strategy. According to Bäckström, et al. [2], developing a measurement is a starting point for improving operational performance.

Therefore, the first aim of this study is to develop a measurement for lean level in PT ABC, that will be performed in PT ABC to measure its lean organization level. Furthermore, this research is using employee cost as the dependent variable, due to the fact that implementation of lean organization will impacts business process,

organization structure, and manpower number, hence impacting the employee cost.

## II. LITERATURE REVIEW

### A. Lean Organization

To measure Lean Organization there are two Aspect that can be used which is Organization and People Perspective [3-4].

Organization aspect consists of five criteria, which are (1) Continuous Improvement [5]. (2) Value Process and Management. (3) Standardized Work [5]. (4) Vision and Leadership [4-5]. (5) Organization Structure [4].

People Aspect consists of five criteria, which are (1) Employee Involvement [4]. (2) Expansion of Autonomy [4-5] (3) Training and Development [5] (4) Adaptation to Change [3]. (5) Cross-Function Employee [4].

### B. Employee Cost

In general, based on the Corporate Finance Institute (CFI) 2020 [6], cost composition is divided into two: Fix Cost (routine costs every time) and Variable Cost (costs that come out depend on production results). Included in fixed costs are overhead costs and direct labor costs, while variable costs include: indirect labor costs, bonuses, commissions and production of materials.

### C. Root Cause Analysis

To identify and eliminate of the root cause a problem and remove the problem its entirety is application of Root Cause Analysis [7].

### D. Lean Organization Assessment Variables

Abreu, et al. [1] measured lean level of organization by using qualitative survey followed by fuzzy logic analysis, where the aspects are customer, organization, and supplier. While Urban [8] constructed self-assessment tool for measuring Lean Management Maturity, where the measured aspects are Lean organization (Organization Culture) and Lean Result (Impact to Organization internal and external). Moreover, Pakdil, et al. [9] developed Assessment tool for effectiveness and efficiency of the lean implementation throughout entire organization using fuzzy logic method, where the aspects are people, process, cost, and customer supplier.

### E. Lean Organization Assessment Tool with Fuzzy Logic

Fuzzy Logic is able to change qualitative data question to differentiable values and it can transform form neglect ambiguity (related to individuals) to be a number [10]. Linguistic variable for quantifying qualitative data by assigning numerical value to difference reference point on a datum [11].

- Use the linguistic variables for performance and importance weight of enablers measurement.
- Integrate the fuzzy importance Weights and performance to achieve FLI (fuzzy lean Index).
- Fuzzy Leanness index matching with a linguistic level.

### F. Lean Organization to Decrease Employee Cost

In organization, lean management can be implemented in organization aspect and people aspect [3-5]. In terms of organization aspect, lean management have several impacts towards organization structure, such as transforming hierarchical and functional organization structures into process-based or value-based organization structure, which caused declining headcount [12]. In terms of people aspect, lean management focuses on source of manpower that delivers value [12]. Therefore, lean management influences employee cost due to declining number of headcounts, where salary package has contribution to employee cost.

## III. RESEARCH METHODOLOGY

### A. Research Framework

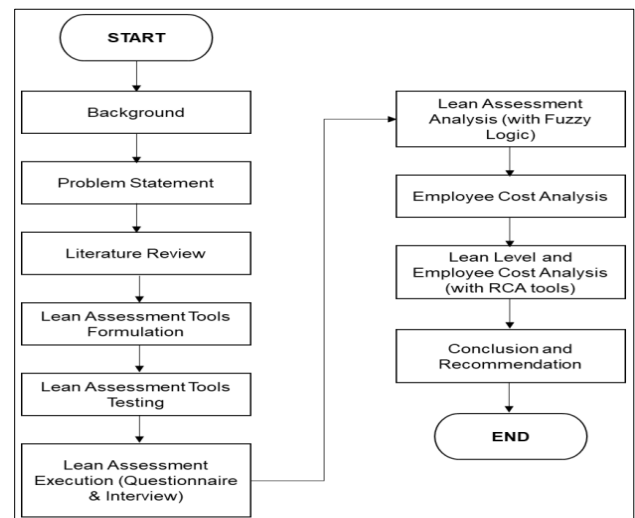


Fig. 1. Research framework

### B. Data Collection

- **Primary Data**  
The methods of collecting primary data were Online Questionnaire with Likert scale and In-Depth Interview to obtain deeper meaning and explanation of the current condition.
- **Secondary Data**  
Secondary data is the data that has already collected and analysed that can be utilized to support the research. In addition, the secondary data is used to help the analysis of the relationship between lean level and employee cost.

### C. Sampling Method

Population of this research are employees of PT ABC from six operational divisions as shown in Table 1. It's chosen because the number of manpower 62.8% of total Head Office (HO) manpower. The levels that are going to be assessed and depth-interview are General Manager, Department Head, Section Head, and Team-Member Associate level 4-up (excluding specialists). Furthermore, Slovin Test was conducted to determine the minimum samples that are needed.

TABLE I  
 MINIMUM SAMPLE SIZE

Position	Population	Sample	Percentage
General Manager	6	6	100%
Department Head	60	33	55%
Section Head	23	13	57%
Team Member Associate	309	76	25%
Total	398	128	32%

Once the minimum sample (Table 2) was obtained, the next step was to determine the sample based on divisions.

 TABLE II  
 MINIMUM SAMPLE SIZE IN OPERATION DIVISION

Division	General Manager	Department Head	Section Head	Team Member Associate	Specialist
MKT	1	6	4	61	15
TMO	1	3	0	10	0
SOD	1	6	0	36	22
TSO	1	7	0	22	13
SVC	1	20	11	129	120
PRT	1	18	8	51	22
Total	6	60	23	309	192

While for the in-depth interview, the number of respondents that are going to be interviewed are 6 General Managers (100% of total sample), 8 Department Heads (25% of total sample), and 3 Section Heads (25% of total sample), where the total of respondents that are going to be interviewed are 17 respondents.

#### D. Data Collection Method

In data collection, primary data will be collected by using online questionnaire with Likert scale 1-4. The questionnaire consists of 65 items about two aspects in Lean Organization, which are Organization and People. Where organization aspects are: (1) Vision and Leadership; (2) Value and Process Management; (3) Business Process and Standardized Work; (4) Organization Structure, and (5) Continuous Improvement. While people aspects are: (1) Employee Involvement (2) Expansion of Autonomy; (3) Adaptation to Change; (4) Cross-Function Experience; and (5) Training and Development.

#### E. Method of Analysis

- **Validity and Reliability Test**  
 Validity test was analyzed using the Pearson Correlation. The results of validity test revealed that the validity of Lean Level Assessment is found to be valid,  $r(136) = .66$ ,  $p < .05$ . While reliability test was analyzed using the Cronbach Alpha. The results of reliability test revealed that Lean Level Assessment is found to be reliable, (44 items;  $\alpha = .96$ ).
- **Fuzzy Logic Analysis**

Fuzzy Logic analyzed online questionnaire with supporting information from in-depth interview. The results will be the input of aspect values, such as organization and people. The following Table 3 is the input of Lean Level Assessment.

 TABLE III  
 MEMBERSHIP FUNCTION OF FUZZY LOGIC

Lean Level	Membership Function
Not Lean	{ -1 ; 0 ; 1.5 }
Little Lean	{ 1 ; 1.75 ; 2.5 }
Moderate Lean	{ 2 ; 2.75 ; 3.5 }
Very Lean	{ 3 ; 4 ; 5 }

#### • Correlation Analysis

Correlation analysis will be carried out between Lean Organization Level with Employee Cost using Root Cause Analysis (RCA) Tools. The purpose of this phase is to find the correlation between Lean Organization Level and Employee Cost.

From the employee cost structure of company, that each cost type is affected not only by internal organization, but also external factors. Therefore, an analysis using root cause analysis (RCA) was carried out to get the results of factors that affect the employee cost.

### IV. RESULTS AND DISCUSSIONS

#### A. Sample Size

The obtained sample was 138 respondents which can be seen in the Table 4 below based on each position.

 TABLE IV  
 RESEARCH SAMPLE

Position	Minimum	Actual
General Manager	6	6
Department Head	33	37
Section Head	13	15
Team Member Associates	76	80
Total	128	138

On other hand, in-depth interview has been conducted with result of 16 respondents, which are 6 General Managers, 7 Department Heads and 6 Section Heads. Furthermore, FGDs with Human Resources Team was also conducted for the purpose of Root Cause Analysis.

#### B. Lean Level of PT ABC

Based on the analysis using Fuzzy Logic method with 25% cross line, it revealed that the overall lean organization level of PT ABC was very lean at the score of 3.62. Where based on the aspects, the results showed that the organization aspect level was very high at the score of 3.5.

While the people aspect results reported the lean level to be very high at the score of 3.47.



Fig. 2. The results of organization and people aspect

Based on the Fig. 2, it can be seen that in terms of Organization Aspect, Vision and Leadership scored the highest, where the average score was 3.59, while Organization Structure has the lowest lean level with the average score of 3.37. Furthermore, in terms of People Aspect, Expansion of Autonomy has the highest lean level with the average score of 3.53, while Adaptation to Change has the lowest lean level with the average score of 3.41.

### C. Employee Cost

Based on the obtained data, the following Table 5 showed Employee costs trend of PT ABC in 2016 (before implementing of Lean Organization) and 2017 to 2019 (after implementing of lean organization).

TABLE V  
COMPANY PERFORMANCE AND EMPLOYEE COST (2015-2019)

Period	Rec. Profit	Employee Promotion	Bonus Factor	Inflation Rate	Employee Cost
2015	864	28%	X	7.26%	931
2016	547	33%	X - 0.7	7.26%	932
2017	1.432	26%	X + 1	3.02%	963
2018	2.332	36%	X + 2.6	3.61%	1.135
2019	1.472	27%	X + 1.4	3.13%	1.130

From the Table 5, it can be seen that there is linear relationship between the increase of company performance and employee cost. Root Cause Analysis revealed other causes to the increased employee cost as shown in Fig. 3.

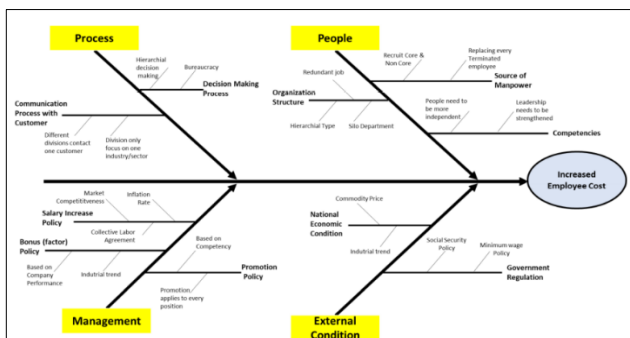


Fig. 3. Root cause analysis of increased employee cost

### • External Conditions

National economic conditions caused people looking for a job that suits their standard of living, which made a company offer competitive remuneration that led to increased employee cost, where salary contributed to 41.4% of employee cost. Moreover, the Government needs to ensure that all employees are registered in social security program (BPJS) and pension program is contributed to 10.5% of employee cost. The other factor, is the regional minimum wage.

### • Management Policy

In 2017 and 2018, the recurring profit of PT ABC was improving significantly, which impacted the increased in bonus factor and promotion policy. Where bonus has a contribution to the employee cost by 21.1%. Furthermore, salary increase policy caused by market competitiveness, employee promotion, management judgement and inflation rate as stipulated in the collective labour agreement.

### • Process

In PT ABC, different divisions are approaching one customer and there are some divisions that will focus on one industry or sector. According to Mankins [13], too many divisions that are handling the same customers will lower the productivity and while the employee cost of Division remains high.

### • People

Organization structure in PT ABC is hierarchical with layers. This structure can lead to employee cost due to number of Managers and Supervisors (section head). This is also supported by the research of Mankins [13], that having hierarchical organization structure has risen the employee salary and compensation dramatically. Hammel and Zanini [14] stated that bureaucracy and hierarchical decision-making process can creates a culture in a company that is avoid to take a risk, afraid to be more initiative, and slowing down the creative thinking and innovation of employees.

### D. Initiatives of PT ABC in Lean Organization

PT ABC has acted to decrease employee cost by creating Lean Organization. This initiative is focusing to solve the root causes related to people and process.

### • Organization Aspect

- 1) *Vision and Leadership*: cascading strategy and implementation to all employees and enhance leader role.
- 2) *Value and Process Management*: performing work related to value creation. Every work is evaluated whether it is related to value.



- 3) *Business Process and Standardized Work*: socialization about business process and standard, Business process must be agile and adapt to change.
- 4) *Organization Structure*: redesign organization through merger, workload management, and improving collaboration within organization.
- 5) *Continuous Improvement*: PDCA is done in a cycle, by reviewing ones work continuously to identify room for improvement.

• **People Aspect**

- 1) *Employee Involvement*: involving all employees to discuss an idea a FGD, then cascading into team and individual goals.
- 2) *Expansion of Autonomy*: freedom of decision-making, which encourages independency of every employee in decision-making within the limits of their roles, authority and responsibility.
- 3) *Adaptation to Change*: every employee is expected to be agile and adapt with lean organization.
- 4) *Cross-Function Experiences*: every employee is challenged to be placed or rotated into different division, location, or subsidiary.
- 5) *Training and Development*: goods detector is a competencies matrix and optimize 10-20-70 scheme.

**E. Correlation of Lean Organization and Employee Cost**

The results revealed that PT ABC is very Lean category. Some indicators that can be seen are a decrease in the number of employees and positions (Fig. 4).

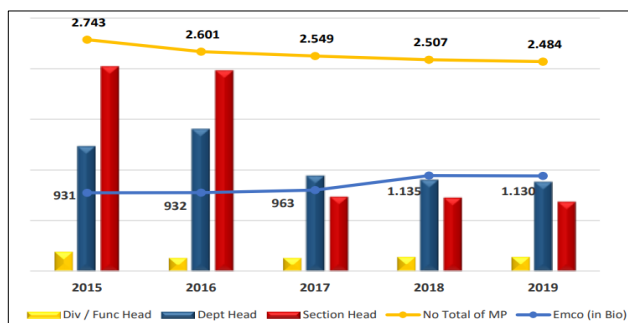


Fig. 4. Number of manpower and position

Based on the Fig. 5, it can be seen that there is decreasing of number manpower and position but slightly increasing of employee cost.

Meanwhile, based on the employee composition chart above, there is slightly an increasing composition (grade) in managerial and analyst level. This is in line with a slight increase in employee costs.

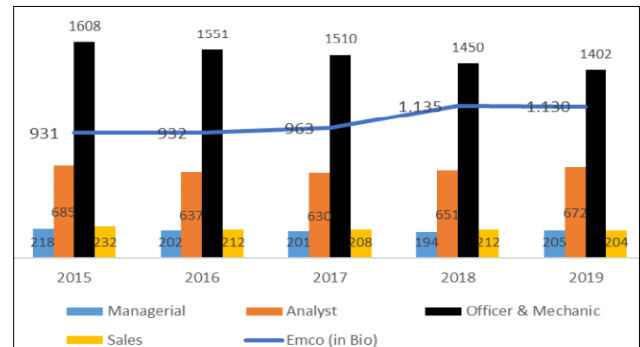


Fig. 5. Number of manpower and position to employee cost

**F. Discussion**

Based on the lean level assessment results, PT ABC is classified as very lean. In organization aspect, the highest average lean level is in the vision and leadership. This is supported by Schröders and Cruz-Machado [5] and Tayaksi, et al. [4], that reward and recognition for employees who take initiatives in achieving company strategy is a part of creating Lean Organization. While the lowest average lean level in the organization aspect is continuous improvement. This lowest average level of Lean can be improved by giving recognition to employees innovate and generate ideas in improving the process they are dealing with [5]. In people aspect, the highest lean level is expansion of autonomy, which lies in open discussion forum to discuss improvement ideas, this is aligned with Schröders and Cruz-Machado [5] that Lean Organization can be recognized by open collaboration for process improvement. While the lowest average lean level in the people aspect is adaptation to change. This can be improved by communicating change to the employees regarding the purpose of organizational change [3].

Based on the RCA, there are four main causes to increased employee cost, which are external conditions, management policy, process and people. From external conditions, it can be seen that national economic condition and management policy contributed to salary that is 41.4% of employee cost and bonus that is 21.1% of employee cost. While process consists of decision-making process that is still bureaucratic that impacts the increase of employee cost by having layers of autonomy [14] and delivering value to customer process, where several departments are approaching customer can cause waste [13]. The last is source of manpower which is apparent from the hiring cost and staffing cost [15] and competencies that is independency and leadership to take initiative in every employee needs improvement due to hierarchical organization structure [14].

Since 2017, PT ABC has acted in decreasing employee cost by implement of Lean Organization, where the initiatives are apparent from both organization and people aspect. These initiatives caused declining manpower composition. Where manpower composition has direct impact to salary as fixed cost, number of positions has direct

impact to bonus and variable cost. However, correlation is not significant due to external factors also have major influence on employee cost.

#### V. CONCLUSION

This study revealed that Lean Organization Level of PT ABC was very lean with an index of 3.62 from a scale of 4. The company has managed to carry out this initiative well, where the company is already at a very lean and in terms of company productivity based on the standard increase from 2017 when the lean organization was implemented. Based on the results of analyzing the correlation between lean organization and employee cost in PT ABC, it can be concluded that lean organization does have impact towards employee cost. However, this impact is not significant due to the fact that there are other factors that are impacting employee cost. Therefore, root cause analysis is performed to identify which causes in increased employee cost that can be resolved by implementing Lean Organization. This research also found that Lean Organization support the smooth business process and effective manpower utilization in organization which has impact on employee cost indirectly. Finally, this research provided valuable insight that implementing lean organization in PT ABC provides an example of focusing more on value creation instead of manpower termination (without layoff policy).

#### *Recommendation*

This study about assessing lean level and its correlation with employee cost suggests that an organization needs to assess its lean level in order to identify improvement within organization. Despite the fact that there are external and internal factors that are affecting employee cost, implementing Lean Organization can help an organization in managing employee cost. In carry out of this initiative, company must focus to value creation not only on employee reduction. Finally, an organization needs to continuously assess the lean level by involving employees in order to have fresh perspectives on how to implementing Lean Organization and improving productivity.

The future research should look for the new normal business models to get the exponential growth given that lean organizations have limitations, which is Work from Home policy that most companies are still unfamiliar. This is very important, especially for leaders who are dealing with business changes towards a new normal.

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