

# A Study to Identify the Influence of Employee Issues in Implementation of Lean Manufacturing In Small and Medium Scale Manufacturing Organisations in India

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**Abstract**—Lean manufacturing is an effective tool to face the high competition among Small and Medium Enterprises (SME) due to the emergence of globalisation and advancing technologies. It focuses on improving the productivity of the organisation by eliminating various wastes. Like any new philosophy, for implementing Lean manufacturing, the management will have to overcome numerous barriers. Any improvement in an organisation will be implemented through employees. Employee issues can act as one of the barrier for lean implementation. This paper studies the employee issues to be faced by the management while implementing lean. The data was collected through questionnaire survey and 128 responses were collected from owners, managers and supervisors of SME's. The data was collected and the reliability was assessed using SPSS. This study identifies various significant variables that are influenced by these factors and ranked them with respect to their importance.

**Index Terms**— Lean Manufacturing, SME, Barriers, Questionnaire Survey, Implementation, Employee issues, Resistance to Change

## I. INTRODUCTION

SME's plays a crucial role in the world economy. Likewise, SME's play a significant role in the Indian economy by contributing about 45% of the GDP and growth in the employment generation rate. The competition among organisations are increasing day-by-day as an effect of changing technical and political conditions in world and domestic market. This high competition calls for the SME's to develop new technologies and strategies in order to withstand the tight market. Lean manufacturing (LM) is a management tool, which could improve the productivity of the organisation by eliminating the wastes. Even though the SME's are having some inherent advantages regarding the size and number of employees, the implementation of LM in an organisation has many barriers. This study identifies the various employee issues and their effects, while implementing LM with the help of questionnaire survey.

## II. LITERATURE REVIEW

According to [1] LM is revolutionizing manufacturing environment by focusing on producing high quality products in most efficient and economical manner. It is being achieved by incorporating less resources. The implementation of a new initiative like lean manufacturing will face a lot of barriers [18].

Apart from the cases of successful implementation, cases of failures of LM implementations have been reported. According to [16], implementing LM system is not an easy task. A lot of barriers have to be faced by the SME's with respect to regional and geographical differences. According to [12], the organisations will have to identify and understand the resistance forces or barriers for the successful implementation of any change.

[18] argued that "Most SME's employ with low skill levels and they would not foster the ideology of skill enhancement". Since the technical knowledge in certain process requires the expertise and skills, it would affect the LM implementation. Lean implementation may not reach its intended purpose if there are inappropriate training methods and knowledge transfers [7].

[15] argued that lean implementation require focus on all perspectives – people, process and technology equally. It is the employees who are heart of the manufacturing systems [14]. The implementation and smooth working of an organisation will only be possible with employees.

This paper studies the importance of factors that are influenced by employee issues. An extensive survey was conducted to find the employee issues from the literature. After the literature review, the following issues were identified as barriers for the LM implementation (Table 1).

1. Lack of well trained and experienced staff (W)
2. Lack of knowledge about existing specialist (K)
3. Culture and resistance to change(C)
4. Employee Absenteeism (A)

Table 1 Employee issues

	K	W	C	A
Rachana et al (2002)			x	
Achanga et al (2006)		x	x	
Prattana et al.				
O'Rourke (2005)	x		x	
Kumar et al.		x	x	
Vienazindiene and Ciarnie			x	
Quintana (1998)				x
Bamber and Dale (2000)		x		
Wong and Wong, (2011)		x		
Houshmand and Jamshidnezhad, (2006).		x		
Eswaramoorthi et al., (2011)		x		
Hurd, (2004).	x			
Jadhav et al (2014)	x	x	x	x
AME	x			
KFW	x	x		
Healy et al. (2008)	x			

### III. RESEARCH METHODOLOGY

An opinion survey was conducted among 15 SME's to gather the variables belonging to the factors of employee issues. The collected information was then analysed to identify the variables. A total of 31 variables were identified. The number of variables identified for each factors were listed in the table 2 below.

Table 2 Number of variables identified for each factors

Factors	No. of Variables
Lack Of Knowledge About Existing Specialist	2
Lack Of Well Trained And Experienced Staff	6
Culture And Resistance To Change	11
Employee Absenteeism	12

Using these variables questionnaire was developed and survey was conducted in the locations of Kerala, India. A five point Likert scale was used to grade the degree of agreement in the questionnaire. The survey was conducted through personal interview and online survey. The online link was sent to about 500 companies through email. In the first attempt only 3 companies responded. Then again a reminder was made regarding the survey and obtained a total of 10 responses. The remaining responses were collected by conducting personal interviews with owners/supervisors/managers. A total of 128 responses were collected by both means. Most of the respondents who participated in the survey was belonging to the small scale industries (with a participation of 70%). The remaining respondents were belonging to medium scale industries (30%).

### IV. RELIABILITY OF QUESTIONNAIRE

A reliability test was then conducted to check the consistency of survey. According to Black (1999), reliability test "is an indication of consistency between two measures of the same things". The reliability can be measured using statistical tools. [6] identifies Cohen's kappa coefficient, Ebel's intraclass correlation and Cronbach's alpha coefficient, can be used for checking reliability. The most commonly used method among them – Cronbach's alpha is used in this study for checking the reliability using IBM SPSS software.

According to [2], alpha value greater than 0.6 is acceptable. The results after eliminating some variables for better alpha value shows that the questionnaire is reliable after eliminating 8 variables. The alpha values ranges from 0.646 to 0.728. The cronbach alpha values of each factor is given in table 3

Table 3 Results of reliability analysis

Factors	No. of factors	No. of variables deleted	Cronbach's alpha, $\alpha$
Lack of knowledge about existing specialist	2	0	0.728
Lack of well trained and experienced staff	6	1	0.646
Culture and resistance to change	11	2	0.710
Employee absenteeism	12	2	0.701

## V. ANALYSIS OF BARRIERS

Using the responses obtained through survey, analysis was conducted using statistical tool - mean. Mean of each variables were identified and the one with highest mean was considered as the most important factor. To identify the significant factor mean of the all variables were considered. The results of the analysis is shown in the Table 4 according to their order of importance.

Table 4 Results of Analysis

Variables	Mean	Avg. Mean	Std. deviation	Avg. std. deviation
<b>Lack of knowledge about existing specialist</b>				
Difficulty in finding skilled person	4.203	4.015	0.933	0.977
Other SME's ready to offer more salary	3.828		1.020	
<b>Lack of well trained and experienced staff</b>				
No suitable methods for training based on specific need of SME's	3.796	3.554	1.060	1.199
Informal training due to financial issues	3.703		1.152	
MSME not conducting training programs periodically	3.460		1.056	
No onsite training for new workers	3.445		1.309	
Labor migration	3.367		1.419	
<b>Culture and Resistance to change</b>				
Fear about change in skill and they won't be able to make transition well	4.000	3.315	1.086	1.121
Psychological reasons -Fear of failure	3.945		0.890	
Benefits and rewards of change are not communicated properly	3.492		1.190	
Reason for change is unclear	3.476		0.938	
Loss of status	3.398		0.844	
Fear on adding responsibilities	3.359		1.456	
No confidence in workers	3.148		1.191	
Fear about job loss	2.734		1.276	
Some restrictions from trade union	2.289		1.217	
<b>Employee Absenteeism</b>				
No incentive for strong attendance	2.75	2.431	1.248	1.233
Boredom on job	2.726		1.188	
Accidents and illness due to absence of safety	2.703		1.263	
Not conducting health programs	2.468		1.362	
No punishment for low absenteeism	2.406		1.146	
No motivation by better offers	2.304		1.098	
No monitoring in absenteeism	2.265		1.365	
No flexible time for workers	2.265		1.167	
Poor employee-employer relationship	2.218		1.273	
Harassment by owners and stress	2.203		1.219	

## VI. RESULTS AND CONCLUSION

The analysis shows that Lack of knowledge about the existing specialist is the most important barrier in implementing LM and it shows that difficulty in finding skilled person and the offers provided by other firms were ranked first and second positions respectively. The analysis shows that both these factors has important role in this factor. In lack of well trained and experienced staff, no specific methods for training and inadequate training due to financial issues are the important reasons for it. Also, the lack of training provided by the MSME department and no onsite training for new workers adds to this employee issue.

The factor culture and resistance to change is due to the fear about various factors. The study shows that fear of workers to make the change well, fear of failure, improper communications, unclear reason for change and status loss were the major reasons in the same order. The employee absenteeism has lower influence compared to others and their major reasons were listed in the table 4. The study was concentrated in the locations of Thrissur, so the response may change with respect to geographical differences. Also, the lack of knowledge about the lean manufacturing act as a challenge during data collection.

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