



AN EXPLORATIVE STUDY ON LEAN MANUFACTURING AND EMPLOYEE APPROACH IN AUTOMOBILE INDUSTRY

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Abstract

The paper is based on a orderly literature review that scrutinize how the implementation of Lean could bring value to the organization processes and contribute for achieving an operational excellence. Different organizational factors which have importance in the implementation process are thoroughly examined. The research outlines the challenges that companies experience when they change their business model towards implementing a new to the company management system Lean concept.

Keywords: lean implementation, lean enterprise, Lean, challenges, process improvement

Introduction

Going and seeing firsthand work conditions in practice, right now, and finding out the facts for one rather than relying on reports and boardroom meeting. The workplace is also where real people make real value and going to see is a mark of respect and the opportunity to support employees to add value through their ideas and initiative more than merely make value through prescribed work. The management revolution brought by lean thinking can be summed up by describing jobs in terms of Job = Work + Kaizen. Built-in quality means to stop at every doubtful part and to train yourself and others not to pass on defective work, not to do defective work and not to accept defective work by stopping the process and reacting immediately whenever things go wrong. Every traditional business, whether in production or services, is addicted to batch. The ideas as that once work is set up one way, we'd better gets on and quickly make as many pieces of work as we can to keep the unit cost down. By working strenuously on reducing change-over time and difficulty, it is possible to approach the lean thinking ideal of single piece flow. In doing so, one reduces dramatically the general cost of the business by eliminating the need for warehouses, transports, systems, subcontractor use and so on.

Review of Literature

Erik Drotz and Bozena Poksinska, (2014) " The purpose of this paper is to contribute toward a deeper understanding of the new roles, responsibilities, and job characteristics of employees in Lean healthcare organizations. The paper is based on three cases studies of healthcare organizations that are regarded as successful examples of Lean applications in the healthcare context. In order to succeed with Lean healthcare, it is important to understand and recognize the differences in job characteristics between Lean manufacturing and healthcare.

Frank Wiengarten et al (2015) the purpose of this paper is to assess the influence of cultural collectivism on the efficacy of lean practices. Furthermore, this study assesses whether or not potential cultural disadvantages related to the level of individualism at the national level can be compensated for at the organisational culture level. This study represents a comprehensive attempt to simultaneously assess the collectivism cultural components of lean practices at the national as well as at the organizational level.

Glenn Parry et al (2010) this paper aims to develop a methodology for lean implementation that reduces the risk of damaging a company's key resources and abilities through the application of core competence theory. The methodology was trailed through cooperative inquiry in a business unit of a leading global aerospace company using a case study approach. An accessible definition of core competence that captures academic theory was proposed through an industrial working group. Further a methodology for lean implementation, drawing upon core competence theories was developed. The method comprised four tools: market analysis, the visible value stream, customer value analysis, and financial modeling.

Goutam Kumar Kundu and Murali Manohar, (2016)The purpose of this study is to capture the perception of the IT support service practitioners regarding the applicability of the lean practices and prioritize them after analyzing the gaps with respect to current usage and importance from practitioners' perspective. It involved development of an instrument to capture the perceptions of the IT support service practitioners.

Jannis Angelis and Bruno Fernandes, (2012) Innovation is a key source of competitiveness in the knowledge economy, and continuous improvement (CI) is a key element of such corporate pursuit. The purpose of this paper is to explore links to prevalent shop floor conditions which support or prohibit the effective realisation of CI. However, for suggestions on product improvements, significant practices are worker favorable industrial relations and human resource practices. To test



work practices, work practice variables were measured with single items, trading lower measurement reliability for increased scope.

Jostein Pettersen, (2009) The purpose of this paper is to investigate the definition of lean production and the methods and goals associated with the concept as well as how it differs from other popular management concepts. It is shown in the paper that there is no consensus on a definition of lean production between the examined authors. The authors also seem to have different opinions on which characteristics should be associated with the concept.

June M. Worley and Toni L. Doolen, (2015) The aim of this study was to understand the relationship between organizational structure and lean implementation success and to explore the impact of a lean implementation on the development of employee problem-solving skills. Organizations that implement lean manufacturing strategies experience widely differing results, with unexpected outcomes for some organizations. The results do indicate, however, that an organization with fewer resources to dedicate to the lean effort may find the transformation process slow and may experience fewer performance benefits.

Manoj Dora et al (2014) analyze the status of the lean manufacturing practices and their benefits and barriers among European food processing SMEs. The gap in the literature regarding the application of lean manufacturing in the food sector is identified and addressed in this study. The originality of this paper lies in analyzing the current status of the use of lean manufacturing practices among food SMEs in Europe and identifying potential barriers.

Pernilla Ingelsson and Anna Mårtensson, (2014) to present the result from a study carried out at an organization, which has recently started applying Lean, to examine changes in the importance and presence of Lean values within the organization in relation to when different parts of the organization started to apply Lean. The study showed no difference between the three groups in relation to the stated importance of the values, something that could indicate that there is a commonly shared value base in the organization.

TickFei Chay et al (2015) they found that, investigate the shortfalls in the current lean implementation frameworks. The frameworks were analysed according to the following criteria: first, "What" is the approach of lean implementation, i.e. top-down or bottom-up; second, "How" to implement lean (description of steps or sequences of lean implementation along the lean journey); third, "Why" the reason of adoption of the proposed lean tools, techniques or practices (thereafter TTPs) in each phase of lean implementation; and fourth, "Who" are the targeted internal stakeholders to use or apply the lean TTPs that were proposed in the frameworks.

Methodology

To measure the lean practices factors as perceived by employees of Manufacturing and examine the relationship between Behavior Lean Practice.

Data Collection	: Primary and Secondary
Sampling Methods	: Judgment Sampling
Research Design	: Descriptive
Scale	: Likert Scale
Tools Used	: Mean, SD, ANOVA and Correlation Analysis

Results and Discussion

Figure 1: Demographic Variables with Frequency Analysis

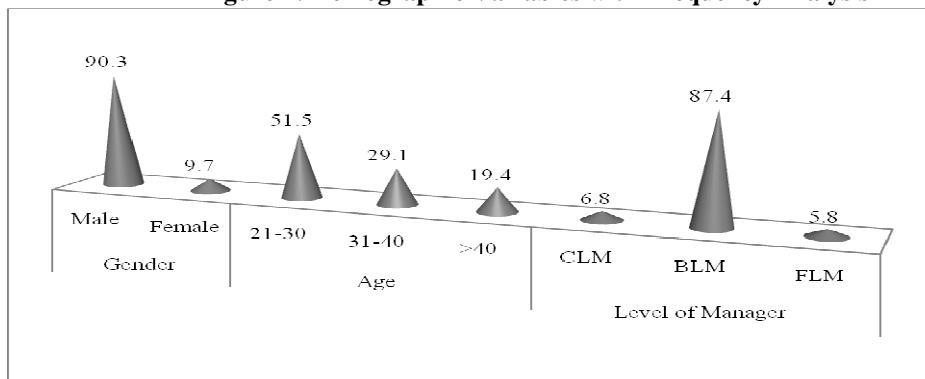




Table 1: Mean and SD for Lean Practice Factors

	Mean	SD
Organizational Roles	2.91	0.35
Organizational Commitment	2.94	0.27
Motivation	3.18	1.25
Self directed work teams	3.43	0.10
Cross functional work force	3.55	1.30
Quick changeover technique	2.66	0.81

Table 1 details as following for lean practices lowest and highest: Quick changeover technique (M=2.66, SD=0.81) and Cross functional work force (M=3.55, SD=1.30).

H₀ 2: There is no significant difference between Level of Manager and Lean Practice Factors

Table 2: ANOVA for Level of Managers Vs Lean Practice Factors

		N	Mean	SD	F	Sig.
Organizational Roles	Corporate Level	7	2.86	0.90	.772	.001
	Business Level	90	2.98	1.40		
	Functional Level	6	3.67	1.03		
	Total	103	3.01	1.35		
Organizational Commitment	Corporate Level	7	3.00	1.91	.885	.002
	Business Level	90	3.50	1.19		
	Functional Level	6	3.00	1.55		
	Total	103	3.44	1.27		
Motivation	Corporate Level	7	2.86	0.90	.683	.007
	Business Level	90	3.18	1.29		
	Functional Level	6	3.67	1.03		
	Total	103	3.18	1.25		
Self directed work teams	Corporate Level	7	2.71	1.60	3.492	.034
	Business Level	90	3.53	1.03		
	Functional Level	6	2.67	1.03		
	Total	103	3.43	1.10		
Cross functional work force	Corporate Level	7	3.57	0.53	.576	.006
	Business Level	90	3.59	1.32		
	Functional Level	6	3.00	1.55		
	Total	103	3.55	1.30		
Quick changeover technique	Corporate Level	7	3.57	0.53	.044	.009
	Business Level	90	3.67	0.82		
	Functional Level	6	3.67	1.03		
	Total	103	3.66	0.81		

Table 2 is the independent F-test analyses of perception of respondents are different level of manager towards Lean Practice Factors. We can see the employee behaviour mean, SD and significance value. ANOVA analyses conducted for different level manager categories significance value of Lean Practice Factors scores for respective categories do differ significantly therefore; null hypotheses (H₀1) are rejected.



Table 3: Correlation

Correlations		1	2	3	4	5	6	7
Behaviour Lean Practice	Pearson Correlation	1	.437**	.523**	.416**	.544**	.344**	.653**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N		103	103	103	103	103	103

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

Table 3 very clearly shown that; positive correlation related to Lean Practice Factors and employee behaviour.

Conclusion

The results indicate that the relationships between internal lean practices and quality, delivery, flexibility and cost were found to be positive and significant. Further, industry clock speed was found to moderate the relationship between internal lean practices and quality, delivery and flexibility, but not cost. While internal lean practices can improve operational performance, managers should be aware that internal lean practices are not universally applicable, and the rate of change within an industry should be considered at the time of implementing lean principles. Much of the lean literature tends to be biased towards its effectiveness. However, empirical evidence shows that not all lean implementation have led to positive results, which has been attributed to the general complexity in the relationship between internal lean practices and performance.

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