

## The Relationship of Lean Management Principles with Lean Maturity Levels: Multiple Case Study in Manufacturing Companies

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**Abstract :** Companies and other institutions are constantly seeking better organizational performance and greater competitiveness. In order to fulfill this purpose, there are many tools, methodologies and models for increasing performance. However, the Lean Management approach seems to be the most effective in terms of achieving a significant improvement in productivity relatively quickly. Although Lean tools are relatively easy to understand and implement in different contexts, many organizations are not able to transform themselves into 'Lean companies'. Most of the efforts in its implementation have shown single benefits, failing to achieve the desired impact on the performance of the overall enterprise system. There is also a growing perception of the importance of management in Lean transformation, but few studies have empirically investigated and described the 'Lean Management'. In order to understand more clearly the ideas that guide Lean Management and its influence on the maturity level of the production system, the objective of this research is analyze the relationship between the Lean Management principles and the Lean maturity level in the organizations. The research also analyzes the principles of Lean Management and its relationship with the 'Lean culture' and the results obtained. The research was developed using the case study methodology. Three manufacturing units of a German multinational company from industrial automation segment, located in different countries were studied, in order to have a better comparison between the practices and the level of maturity in the implementation. The primary source of information was the application of a research questionnaire based on the theoretical review. The research showed that higher the level of Lean Management principles, higher are the Lean maturity level, the Lean culture level, and the level of Lean results obtained in the organization. The research also showed that factors such as time for application of Lean concepts and company size were not determinant for the level of Lean Management principles and, consequently, for the level of Lean maturity in the organization. The characteristics of the production system showed much more influence in different evaluated aspects. The present research also left recommendations for the managers of the plants analyzed and suggestions for future research.

**Keywords :** lean management, lean principles, lean maturity level, lean manufacturing

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