Evaluation Instrument for Pre-implementation of Lean Manufacturing in SMEs Using the Paraconsistent Annotated Evidential Logic Eτ Evaluation Method

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Abstract. The Lean Manufacturing methodology provides competitive advantages, greater productivity, better product quality, customer and worker satisfaction. This research aims to develop an evaluation instrument to be used by consultants in the evaluation of Lean Manufacturing concepts by employees of a company. This instrument uses indicators defined in the literature, in order to improve the implementation of Lean Manufacturing in small and medium-sized companies, which do not benefit from this implementation due to the lack of methods that assess how much they are prepared for the process. This article presents the results of an evaluation simulation of assimilation of these indicators using the Paraconsistent Annotated Evidential Logic Eτ. The results showed that measuring the participants' degree of assimilation of Lean Manufacturing concepts and tools can improve the success of Lean Manufacturing implementation in small and medium-sized companies.

Keywords: Lean Manufacturing · Paraconsistent Logic · Implementation · Non-Classical Logic · Framework

1 Introduction

While many benefits have been documented by companies using the Lean Manufacturing (LM) methodology, only 30% of large US companies have achieved the potential benefits. [3]. In the UK only 25% of large companies were successful with LM [4]. However, the number of small and medium-sized enterprises (SMEs) represent 90% of all companies [5] that have not benefited from the LM [1]. The failure rate in the adoption of LM occurs due to the lack of appropriate structures [2] as an example, maturity assessment models at the beginning of the implementation.

Therefore, there is a need for a structure based on indicators and training for the implementation of LM in SMEs. However, just developing this framework will not be

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