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LEAN APPROACH APPLIED TO PRODUCT DEVELOPMENT: SURVEY OF PRINCIPLES AND PRACTICES USED AUTO INDUSTRY IN BRAZIL

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ABSTRACT

The purpose of this paper is to describe the diagnostic application of a survey conducted with the largest private companies in Brazil. The focus was to identify the principles and practices of lean approach being used in the PDP, such as Value Stream Mapping (VSM), Voice of Customer (VOC), Early Supplier Involvement (ESI), Standardization, Visual Management, Set-Based Concurrent Engineering (SBCE), Virtual Simulation, Project Record Library and lessons learned. The questionnaire was sent to 48 auto industry companies, and 22 responded, which meant a return rate of 46%. This value does not allow generalizations, but it is possible to outline a scenario of this sector and indicate which principles and practices that are being implemented in isolation and/or systemically. In conclusion, we describe some of the auto industry trends and future prospects.

Keywords: lean, product development, auto industry.

INTRODUCTION

Regardless of industry organizations have been working, some problems are common - communication barriers, lack of a Product Development Process (PDP) structured, lean controls flawed, deliveries that exceed the planned term - in short, the most waste knowledge and information. One of the successful ways of dealing with this problem is through the lean approach, which operates constantly in reducing waste, to deliver customer value. When applied to product development, has been improving processes in order to flow without interruptions caused by variability of tasks, delays and unreliability of information. Another opportunity for improvement is at the product level, i.e. you need to design something easy to manufacture.

This paper uses the survey methodology, also known as evaluation research, which considers a significant sample of a problem to be investigated (MIGUEL, 2010). In this study the focus is to diagnose the existing lean practices in product development of the largest Brazilian companies. Firstly occurred the literature research in journals, theses/dissertations, books and conferences on major issues of Production Engineering, Product and Process area - product development, lean approach and benchmarking as a method of diagnosis and implementation of improvements. Thus, was elaborated a questionnaire to be applied to the sample of companies. The sample was chosen the top 500 firms in sales in the year of 2009, according to the criteria of Exame (2011). Among all the sectors covered, the focus of this paper will be

the auto industry which is the most representative in the sample (34%). More details of this research are in Dal Forno (2012).

RESULTS AND CONCLUSIONS

The results from the survey are in Table 1. It shows that most businesses have lean practices in product development. However, businesses don't always are called "Lean". Many already use some practice, but there is no designation of the term in the vision of a lean system. Still, there is a trend of companies began to manufacture expand deployment to other processes.

Table 1 - Survey auto industry Brazil results (Dal Forno, 2012)

QUESTIONS	Results	%
Project type	Incremental	34
Using Lean approach	Yes	82
Processes with Lean	1 process	36
Year that began Lean enterprise	2005 and 2010	33
VSM Practice	Yes	45
Early Supplier Involvement (ESI)	Yes	95
Number of Suppliers	Reduced	41
PDP Standardization	Yes	95
Organizational arrangement	Departmental	45
Voice of Customer (VOC)	Yes	68
Software for monitoring schedule	Yes	100
PDP metrics	Yes	86
Departments involved in PDP	Above 5	82
SBCE	Yes	50
Internal Customer Value	Yes	82
Record lessons learned	Yes	73
Design Library / history projects	Yes	95
Frequency monitoring schedule	Weekly	73
Simulation Virtual / Digital Models	Yes	73
Continuous process improvement / kaizen	Yes	91
Training of employees	Yes	95

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