AGILE MANUFACTURING PRACTICES FOR NEW PRODUCT DEVELOPMENT

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ABSTRACT

For decades multiple management philosophies directed towards lean production and mass were assumed as to respond to process inefficiencies and rampant consumerism, optimizing operation costs. However, new customization and flexible productions philosophies have been gaining ground in some industries, such as the agile manufacturing. From a literature review that addresses the history of this philosophy, it is clear that agile manufacturing is not fully comprehended, with very scarce information about practical cases. In this paper we describe an exploratory methodology approach, with three semi-structured case study interviews. The goal is to study which of agile manufacturing practices are being applied in the studied companies and what is the perceived effect that these have on operational performance. Since most of these companies develop highly customized products, the role of agility on new product development can have a huge impact on their operational performance. Because the exploratory cases are few in the literature about agile manufacturing and none of them made in Portugal, it is assumed the original character of this study.

Keywords: Agile manufacture, agility, turbulent environment, operational performance.

INTRODUCTION

The inevitable growth of competitiveness in the business world has led to the development of different management philosophies. Over many years these management philosophies were focused on a competitive advantage based on mass production and lean production focused on reducing costs and standardized processes. But in markets with increased and increasingly volatile demands, these philosophies seemed to bring more than appropriate responses. That's when other philosophies oriented customized responses, more agile and flexible production systems, as the case of agile manufacturing started to emerge. The concept of agile manufacturing first appears in literature in 1991 by Nagel as the philosophy of the future and that would bring the United States back into the limelight of world production with the consequent increase competitiveness (Nagel 1992). The agile manufacturing aims to fill the need for companies to respond to a dynamism in the markets, translated into an ever-changing surroundings: turbulence (Vázquez-Bustelo, Avella et al. 2007).

This paper aims to examine the agile manufacturing in the context of three case studies with industrial equipment producers in Portugal. To what extent some of the agile manufacturing practices were applied by evaluating the perception of its impact on the operating performance of companies. The main objectives of this research are realizing: a) which agile manufacturing practices were (or are being) implemented in the companies studied; b) the reasons that led to the implementation of these practices; c) what effects the practices associated with agile manufacturing have brought to the operating performance of companies;
and d) what the perception of managers on the performance improvement compared to each of the practices of agile manufacturing.

METHODOLOGY
The present study uses the principles of realistic philosophy since facts and credible data are analyzed and explained by its context. It also respects an inductive approach since it does not establish a cause-effect relationship of the points studied, it does not generalize the survey results and by always taking into account the context and macro surrounding of these points (Lewis, Thornhill et al. 2007). The exploratory study is mono-method with a strategy of multiple case studies. Since the primary data is collected through direct observation and semi-structured interviews, the study has a cross-sectional time horizon (Lewis, Thornhill et al. 2007).

In order to meet the proposed objectives, the interviews were based on a script, prepared to obey the variables of the conceptual model of Vázquez-Bustelo, Avella et al. (2007) and the questions asked in the exploratory case from Inman, Sale et al. (2011) article. Prior to conducting the interviews there was a direct observation of the production practices of companies through the visit to the premises. The interviews lasted on average 45 minutes, using a video call, between May and August 2014.

DISCUSSION AND CONCLUSIONS
The concept of agility as the ability to respond to the changing market and take advantage of them. To consolidate research the principles of agile manufacturing and the elements that define it were studied: Drivers, enablers, and performance objectives. All companies interviewed have differentiation as a strategic orientation with objectives of delivering customized solutions and highly customized products.

After the interviews there were some conclusions. The first, and most interesting, is that the Agile Manufacturing is not yet a widespread philosophy of managing for the companies studied, being virtually unknown as a global concept. However, it was found that many of the practices of agile manufacturing are already implemented in these companies without association with this philosophy. It was also concluded, by the finding through respondents opinions, that agile practices contribute positively to the studied companies operating performance.

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REFERENCES