

Bernardes, Maurício M. M. Development of a model for planning and controlling production in small sized construction companies. Dissertation for the degree of Doctor of Civil Engineering at Federal University of Rio Grande do Sul, Brazil, 2001. (In Portuguese)

ABSTRACT

In recent years, several research studies have indicated that production planning and control is generally ineffective in construction companies. One of the main problems is the fact that planning is usually not seen as a managerial process, but merely as a task related to plan generation. Also, the control function tends to be focused on the management of contracts, rather than on production management. Besides, most studies concerned with the improvement of planning in construction have not made explicit how construction companies should develop their own planning and control systems.

In this context, several research studies have recently aimed to contribute to the improvement of production planning and control in terms of effectiveness, since this process plays a key role in the performance of construction projects. Some of these studies have investigated the application of the new production management paradigm, which involves a number of concepts, models and practices developed in different countries, industrial sectors and companies, focusing on the improvement of production performance. The application of the new production management paradigm to construction has resulted in a production philosophy called Lean Construction.

The main objective of this thesis is to identify how construction companies can develop their production planning and control systems, using Lean Construction core concepts and principles. The study is focused on small sized construction companies, since these companies usually do not have much resources to invest in process improvement.

Ten construction companies took part in this research work, which was divided into four main stages. Initially, some case studies were carried out in the companies, aiming to identify how production planning and control was being performed. In the second stage, a basic model was proposed for this process, aiming to support the development of planning and control systems in those companies. The third stage consisted of the implementation of planning and control systems, using action research as a research strategy. Finally, in the fourth stage the implemented systems were evaluated. During the development and implementation of those systems, a model for production planning and control in small sized construction companies was consolidated, and a set of practices that link this model to Lean Construction core concepts and principles was established.

One of the main conclusions of the study is the proposition that the development of production planning and control systems for small sized construction companies should be based on models that establish guidelines for the implementation of their information systems. This is due to the fact that most companies do not know how to develop such systems. The study also indicated the need to involve users and consider their perceptions in order to minimize possible barriers to implementation.