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The Synchronizer, a model for feasibility analysis and financial planning

N. Moussa^{a,*}, S.E. Moussa^b, M.S. Eid^c

^a*PICORP Holding S.A.E., The American University in Cairo, Cairo, Egypt*

^b*Wilfred-Laurier University, Canada*

^c*The Université de Moncton, Canada*

Abstract

This paper presents The Synchronizer, a powerful integrated management tool that is designed to help when evaluating the feasibility of industrial projects and preparing an optimal plan for their implementation. The Synchronizer uses as input, the forecasted demand data of the different prospective products. The Synchronizer then performs an analysis and an evaluation of the project and provides reports showing its performance over the planning horizon. These reports include the fixed assets and the startup expenses that are needed for starting the project as well as the optimum resources allocation. It also gives the optimum production plan to meet the forecasted demand. Also given by The Synchronizer are the inventory levels over the production planning period, the accounts receivable and accounts payable, the production costs and overheads, the Bill of Materials, for both imported and local materials, etc. The paper also includes an example case study to demonstrate the use of this powerful tool in the analysis of a project with alternative development plans. © 2002 Published by Elsevier Science Ltd.

Keywords: Synchronizer; Industrial engineering; Inventory

1. Introduction

Industrial engineers are always directing most of their attention to improving competitiveness through productivity enhancements in the production facility. Many tools and techniques have been and are still being developed in the conventional industrial engineering (IE) fields such as product and service design, process planning, facility layouts, inventory management and MRP, scheduling, etc. Blank et al., 1998; Krajewski, et al., 1999; Russell, et al., 2000. Today's competitiveness and globalization make

* Corresponding author.

E-mail addresses: moses711@hotmail.com (N. Moussa), smoussa@wlu.ca (S.E. Moussa), eids@umoncton.ca (M.S. Eid).

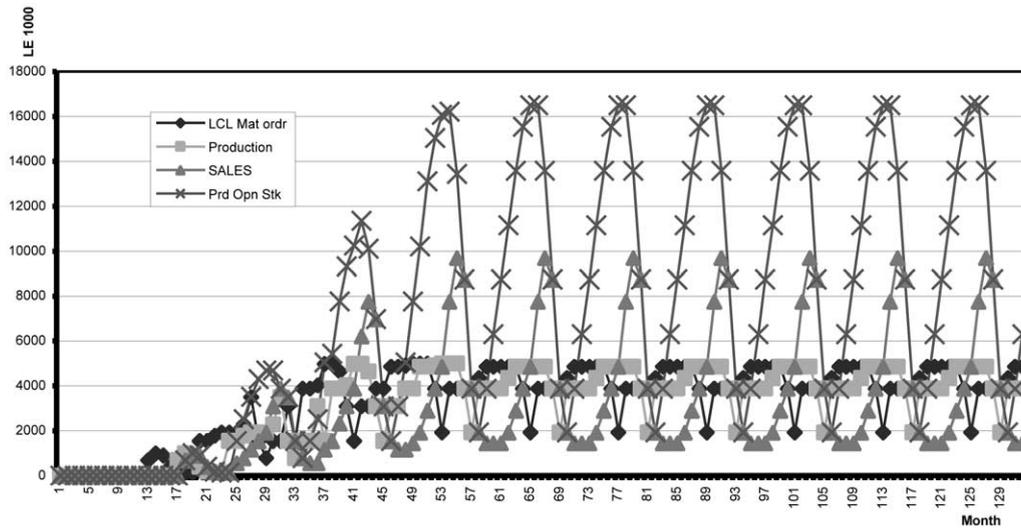


Fig. 1. The Synchronizer logic diagram.

it mandatory for the industrial engineers to direct their attention to financial planning as a key element for the future survival of any company. Financial planning, however, has always been and still is the weaker element in the formation of IE. The power of today's computers and easy-to-use spreadsheet software made it possible to counteract this deficiency and fill this gap through the use of a financial planning analysis tool as the Synchronizer.

2. Objective of the Synchronizer

The financial planning of any project, be it while performing a feasibility study or in preparation for its actual undertaking, encompasses putting together the relevant data about the project (Brigham, et al., 1999). Such data would include sales forecasts, production schedules and production plans, as well as methods of financing, the amounts financed, their sources and their schedules, in addition to the policies regarding repayments of debts and profit distribution. Once these data and policies are decided, the analysis can then be performed to determine the optimum financial plan to be followed by the company. The Synchronizer, a spreadsheet analysis tool, is designed to integrate all these factors in an effort to help management make decisions regarding the optimal strategy for a given planning horizon.

3. Mechanics of the Synchronizer

The Synchronizer, Fig. 1, is composed of different modules each executing a given task. Starting with a sales forecast, the sales forecast module reads the expected sales volumes and unit prices of the contemplated products over the planning horizon of the production plan. A production module then determines the production schedule that minimizes inventory over the different periods. A JIT policy is then assumed between the different stages of the process in order to minimize the in-process inventory.

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