ERP -PRODUCTION PLANNING MODULE FOR SMALL SCALE INDUSTRY

Nivedita Ghorpade[1,] Kirti R.Mantri[2]
[1]*(Mechanical, JSPM's RSCOE/ Savitribai Phule Pune University, India)*
[2]*(Mechanical, JSPM's RSCOE/ Savitribai Phule Pune University, India)*

Abstract : *The purpose of this paper is to thoroughly present the findings of a project undertaken regarding the development of a detailed production Planning system and its implementation in a Salunkhe paper Products. The proposed system, entitled "Design and Development of production planning module of ERP for Small Scale Industry", is developed through the scope of a decision support tool and was aimed at aiding the production planner in scheduling weekly production orders to work centers along various manufacturing cells. The core design principles were: ease of use, simplicity, flexible GUI (Graphical User Interface), generation of manageable reports and low development budget. The practical application occurred in a dynamic, Make-To-order (MTO) manufacturing environment.*

Keywords: *ERP, MTO, MPS, MRP, CRP*

I. Introduction

The case study of Production Planning Module of ERP project is small scale industry manufacturer of paper products. The company is MTO Company in such a case decision making plays very important role. The production process followed has a high degree of complexity. As a result of its complex production process and lacking IT infrastructure the presented case study during the last few years faces numerous problems concerning violated due dates, accumulated late orders, supernumerary production orders, excessive component inventory, poor releasing policies, nonsystematic dispatching methods, inadequate work load control and low shop floor visibility. To counter these mishaps the SME considered implementing a detailed production scheduling system that would render the production groups visible within a planning period, shift dispatching control from the foremen to the planner and provide the latter with all the necessary decision support tools in releasing, dispatching, work load control and dynamic event management. Although such an approach is by no means a panacea, it will aid the planner in better organizing and managing the entire production process by adding another level to the hierarchical planning framework, one that extends from a day or shift to a single period (week).[1]

II. Production Planning And Control System

The production planning and control system uses a hierarchical level of planning at the highest level it lies forecasting module. The module that handles past data of sales of company and accordingly it forecasts demands for next period by linear regression method or exponential smoothing method. The forecasting data given to aggregate planning module which generates two plans according to strategies like workforce leveling with overtime and workforce leveling without overtime and best plan is selected. The master production schedule translates aggregate plan into specific end items. The Master production schedule data is given to material requirement planning module which also required data like inventory status and BOM file. All data is processed and orders are released or planned for the materials required for the products in the company. The capacity planning requires the data of MPS and the loading capacity of particular work center. According to the data it generates report on whether the capacity is improved or not. The production control module can generate the report like daily production report, breakdown maintenance report.

III. production planning module software

3.1 Methodology of the project

The IDE-visual studio 2010 is used to develop the software for production planning module. Front end of software are C#. NET, ASP. NET, Back end of software is SQL Server 2008. The production planning

module is divided into sub modules like Forecasting sub module, Aggregate planning sub module, Capacity planning sub module, Master production schedule sub module, Material Requirement planning sub module. The Reports generated by the software are Customer order Report, Forecasting Report, Aggregate Planning, Master production schedule Material requirement planning, Capacity Requirement Planning, Production Report, and Maintenance Report.

3.2 Design and modeling of production planning and control software
3.2.1 Data Flow Diagram
The data flow diagram is A graphical system model that shows all of the main requirements for an information system: inputs, outputs, processes and data storage
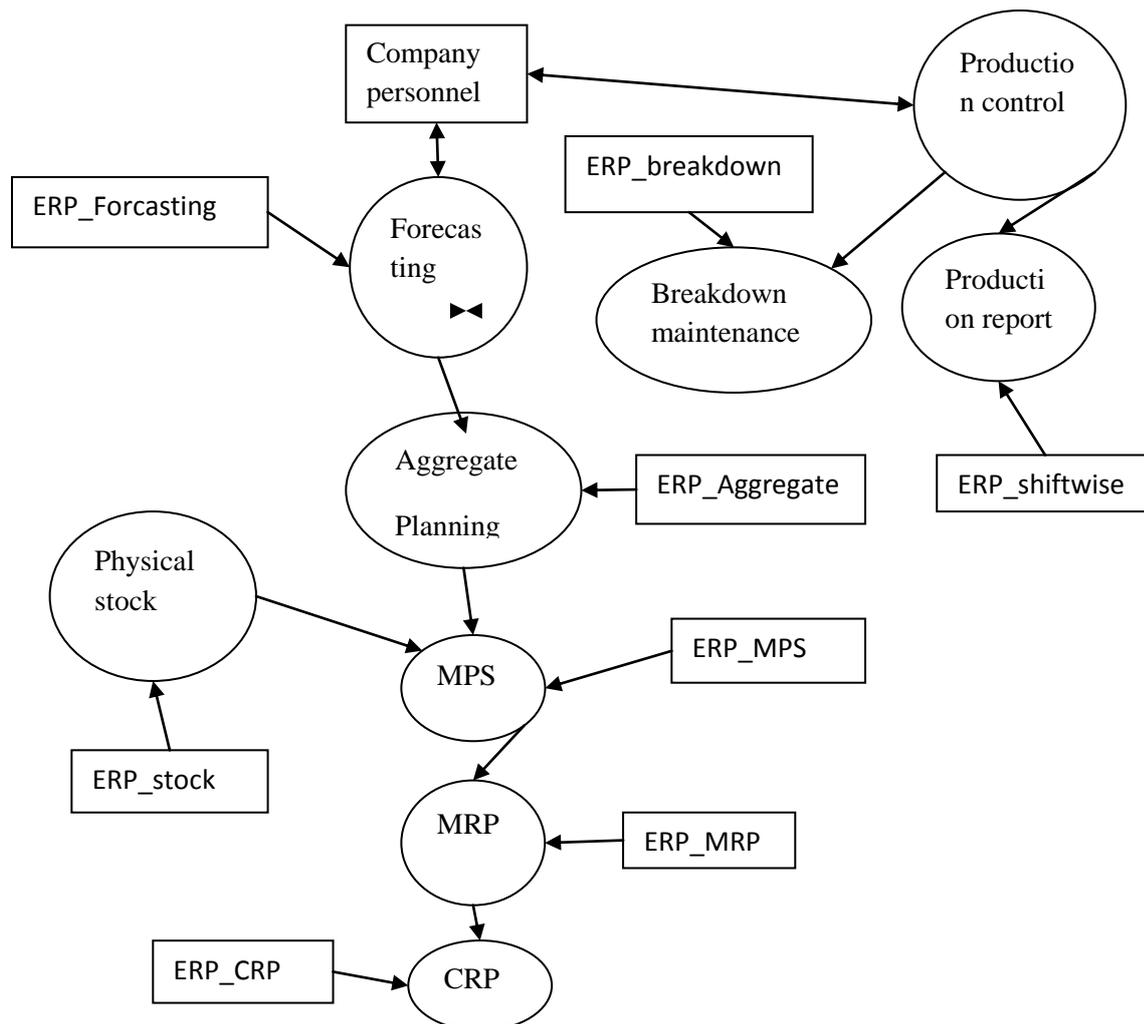
3.2.1 Data Flow Diagram

IV.   Functionality Of Proposed Work
4.1 Forecasting module
Forecasting module uses sales data of last 6 month from the database and calculates the demand for next three months using the exponential smoothing method and linear regression method. The user has to select the month and item i.e. product.
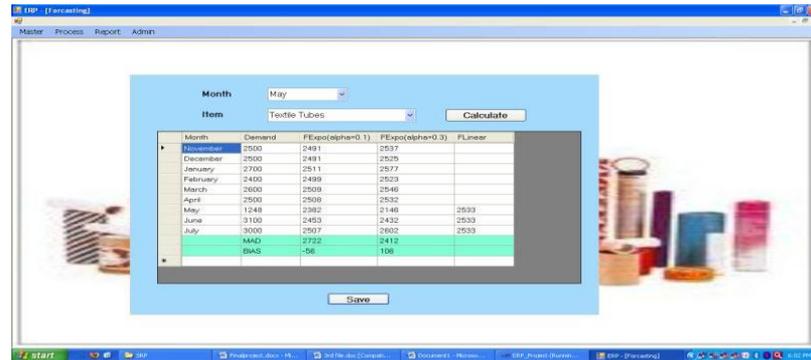
4.2 Aggregate planning

Aggregate planning module uses a data from forecasting module and according to two strategies used like workforce leveling with overtime and without overtime aggregate plans are generated and the effective plan is selected. User has to select the item, enter workers monthly pay, the hiring and firing cost and the inventory carrying cost. And overtime percentage.
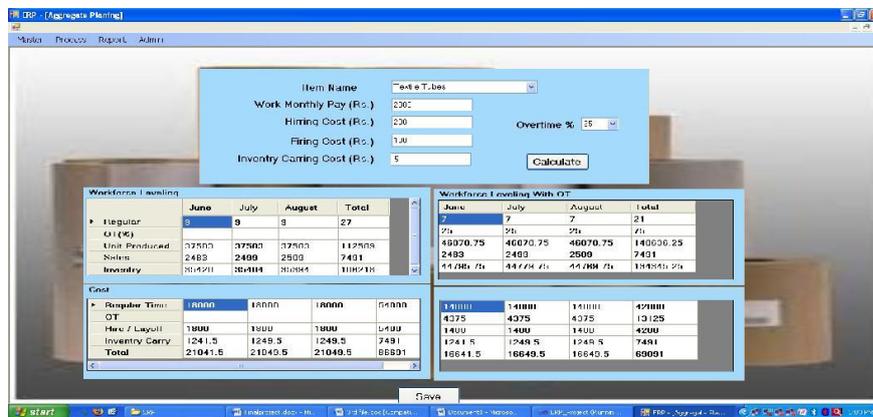
4. 3 MASTER PRODUCTION SCHEDULE

Master production schedule translates the aggregate plan into specific end items. This module requires the data of orders from customer and the physical stock of the products available. Accordingly it generates the weekly production requirements for each product. User has to select the month for which MPS should be generated and the item i.e. product. Physical stock and demand quantity taken from the database.
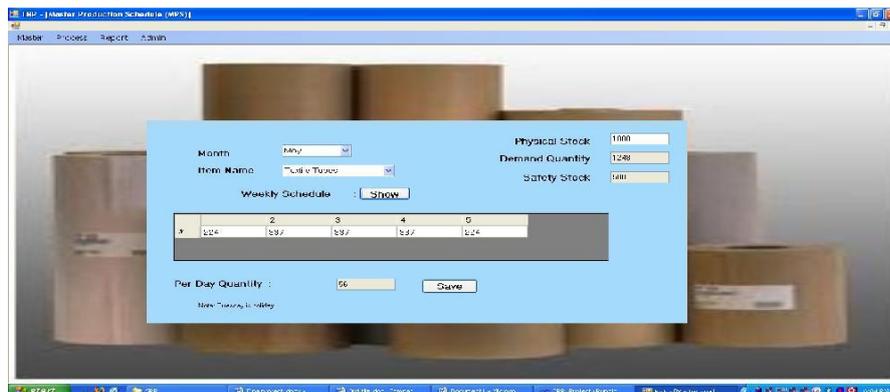
4. 4 Material requirement planning

The Master production schedule data is taken from MPS module and data like inventory status and BOM file is saves database is taken. All data is processed and orders are released or planned for the materials required for the products in the company. User has to select the MPS for item, month, and component material plan and lead time from the database.
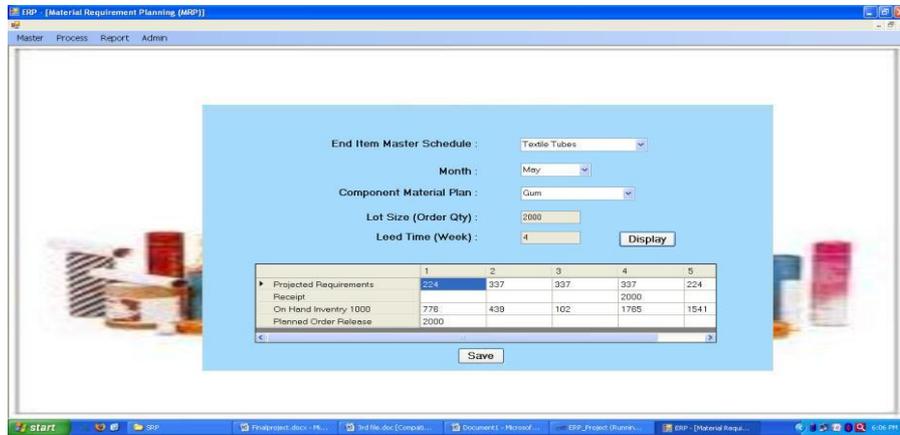
4. 5 Capacity planning

The capacity planning requires the data of MPS and the loading capacity of particular work center. According to the data it generates report on whether the capacity should be improved or not. And accordingly MPS can be changed or not.
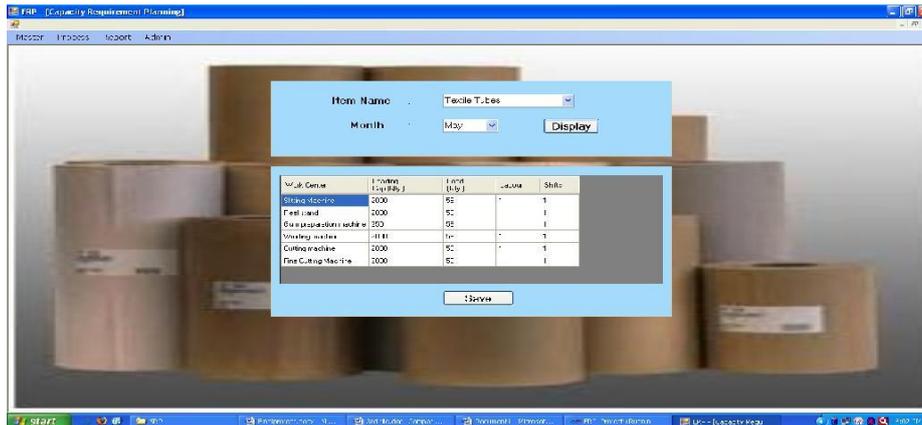
4.6 Production control module

The production control module can generate the report like daily production report, breakdown maintenance report. The user (supervisor) has to enter the daily production and the data of breakdown maintenance.

4.6.1 Daily production
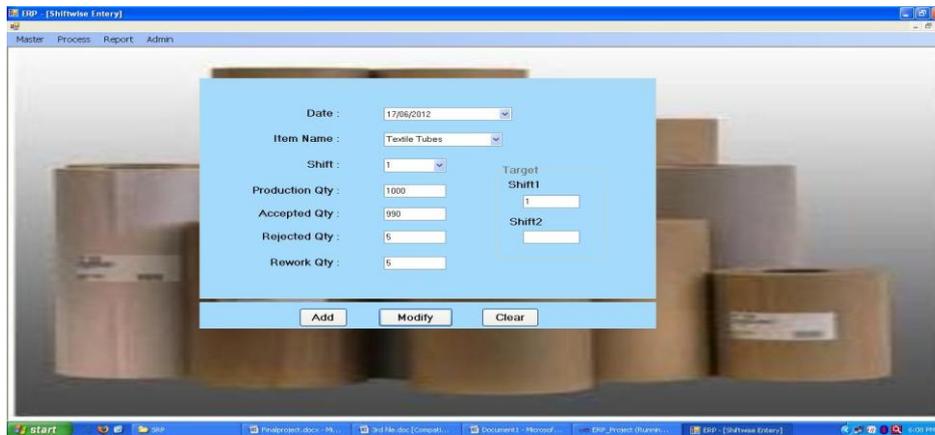
4.6.2 Breakdown Maintenance
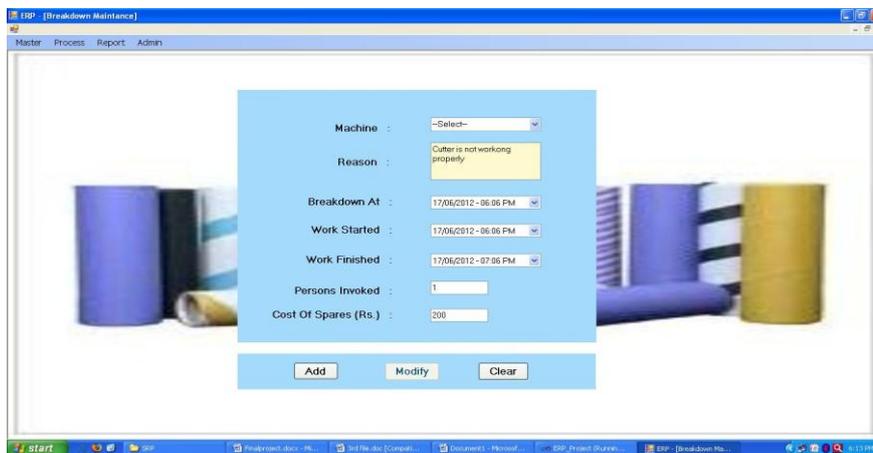
V. CONCLUSION

The work is aimed at designing and developing production module for a small-scale industry Salunkhe Paper Products, Plot No. E39, MIDC, Islampur which cannot afford to buy any of higher end commercial ERP systems that are available in the market today. However with the usage of this module, the company can effectively manage its production function. The company has been able to forecast its product demand and allocate its resources (production) through aggregate plan. Based upon production schedules, materials and capacity can be planned effectively and in advance. Usage of the module will result in active control on the production activity. Management information system with regard to production function will improve significantly and result into quick communication within company and outside, with suppliers and customer thereby facilitating decision-making process.

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