

Essence of Production Planning for SMEs

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Abstract

The Small Manufacturing Enterprises (SMEs) are spread throughout the world. It's a labour intensive industry but technologically it is not having latest gadgets and also not following proper production planning in the production unit. In this paper, it has been highlighted that proper production planning is going to benefit the SMEs and meeting the customers demand in time. Idle time is going to be reduced and the inventory can be utilised in a systematic manner. To have success in production planning, the SMEs have to do proper machining & for assembly aspect along with spare parts procurement, it should be same at the correct moment. The design, support & service and inspection should also be done accordingly. All the aforementioned aspect will result in proper production planning for the SMEs.

Keywords

Quality, Planning, Production, Material

I. Introduction

The SMEs have a huge contribution for the development of any nation in today's context. As the competition is necessary day by day, new national and MNC companies are coming in the market. In order to sustain in the field, SMEs have to introspect at production planning area.

The clients are looking for good quality product within schedule time that can only be achieved if a proper production planning is followed by SMEs. For doing so, it must put emphasis on material planning, capacity calculation, scheduling, order allocation, manpower planning along with execution of tasks.

SMEs have to go for a dynamic pragmatic approach while doing production. In that context production planning is one of the very important arenas to be looked into for its success and would help them to compete with the other big companies by enhancing their brand value by producing quality products fulfilling clients requirements within stipulated time frame.

The emergence of CAD/CAM and adequate production planning provided an opportunity for improving the productivity of the design and manufacturing process (Groover and Zimmers, 1984).

System structure can be the basis of classifying PPC systems. Any structural representation needs to recognise that production planning and control is hierarchical and that different levels in the hierarchy operate over different planning horizons. Structures need to be consistent with developments in information technology and should also be able to represent the dynamics of PPC systems. The GRAI model (DOUMEIGNTS et al., 1992) was developed primarily for systems analysis and design whereas the aim of the framework for production control (BONNEY & HEAD, 1993 and BONNEY et al., 1999b) has been to increase understanding and assist the process of designing production planning and control systems.

In BONNEY et al. (2000a), the product design, process design and manufacturing system design stages of introducing a product into production are represented in structured analysis format. The stages are kept in balance by the use of a hierarchical, iterative design process.

Planning issues in industries are often capacity oriented and centred on a Make-To-Stock (MTS) strategy where undifferentiated products are considered (Fransoo and Rutten, 1994). There are, however, often difficulties to distinguish between different industries regarding material or capacity dominance, time phased or rate based, or even the choice of MTS or Make-to-Order (MTO) and Assemble-to-Order (ATO) (Dennis and Meredith, 2000). Capacity can be limited by different bottlenecks and when choosing between capacity and material focus, industries tend to first schedule capacity and then materials in order to achieve the capacity utilization according to plan (Taylor et al., 1981a).

II. Methodology

The main goal is to analyze basic problems of production planning in SMEs in connection with the complexity of their production processes, point out its main dilemma and outline some potential solutions that are verified through the presented case study.

The mentioned quantitative study was realized as a questionnaire-based investigation and it included 30 respondents from the SMEs segment. In the next phase, interviews with production managers of seven selected SMEs were conducted in order to better understand the problems arising from the product portfolio complexity and methods that are used for their solving.

The respondents were also asked to identify several factors connected with the production planning in their companies that positively or negatively influence the SMEs' performance.

III. Results

Production planning has a significant impact on a company's performance because it can influence all of the three key factors of competitiveness: quality, time of production and costs. Difficulty of production planning increases with the product portfolio complexity.

From an accounting point of view, inventories are considered to be assets. However, in reality, inventories negatively influence company performance as they absorb financial resources that could be used for more important business activities. On the other hand, having enough finished (or semi-finished) products in stock helps to react more flexible on customer's demand what positively influences the quality of provided services and delivery times. The production planning can be properly done if the capacity calculation, material planning, time & action, scheduling, order allocation, manpower planning and execution of tasks done in a proper scientific manner.

A. The Main Problems of Production Planning

During the study 30 SMEs manufacturing companies were asked about their main problems with production planning. Majority of them mentioned the lack of the proper production planning due to lack of material planning, labour machines information, material and order based information along with lack of R&D facilities.

In addition to that unified inventory management system and permanently actual information about the availability of each product and each material for everyone who needs this information for his work (sales representative, production planner etc.) which is not transmitted on time causes a lot of other problems like non-

realistic delivery times promised to the end customer, chaotic production planning, stress and disgust of production workers etc. These types of companies often do not devote time to implement a new methods and approaches into their current management processes even when they know that they need it.

Each of the interviewed companies confirmed that the main problems of the current business environment are permanently higher customer's requirements for delivery times, product innovations and high unpredictability of customer demand. These factors negatively influence the complexity of the whole production process and production and logistic costs.

IV. Case Study

The company selected for the case study is a small Manufacturing enterprise of spare parts manufacturing with around 30 employees.

This company is a typical example of a highly complex production system. It produces parts of pump and their accessories used in petrol pumps. Furthermore, its products are very specific and quality demanding. The concerned company is facing a severe problem due to lack of production planning. Improper coordination among the different departments and material planning is not done on material and order based estimation and not putting emphasis on R&D. As a result, it is not unable to supply the order within delivery dates and its brand image is affected.

A. Proposed Model

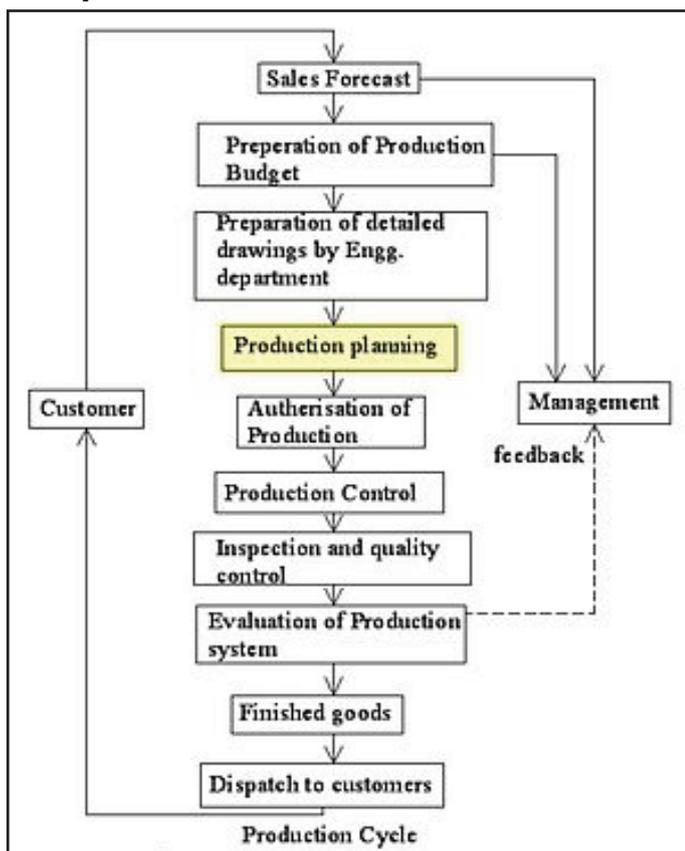


Fig. 2: Model for Production Planning

The main purpose of proposed simplified system of production planning was to differ between several types of orders: normal order, extra order and normal order with extended delivery time and make-to-stock production. It was necessary to set some rules, how all mentioned types of orders should be processed. Normal orders have the highest priority and all needed materials and

component have to be always in stock. In case of extra orders or orders with extended delivery times, special conditions must be negotiated with customers. It means that material and components are ordered separately for these types of orders and therefore delivery times are longer. The type of make-to-stock production is processed only in case of idle capacities and enough materials in stock.

V. Conclusion

As we learned from the previous part, production planning can greatly affect the company's performance and in complex production processes is much more important and difficult, especially in case of SMEs. Therefore, enterprises must be careful about the gained improvements because they cannot always have only a positive impact on the company's performance. They need to find an optimal combination of the system's efficiency and flexibility. It has been found that all problems with the production planning in SMEs are influenced by the complexity of production process caused by improper planning related to material, labour and machines required properly for a particular production.

However, as can be seen from described improvements, systematic stocks' reduction can help to improve both the production process efficiency as well as its flexibility. Therefore, we can conclude that all potential influences must be considered when implementing some new systems and concepts.

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