

УДК 339.1

Sultanov Firudin, Asgarov Aghamir, İbadov Elsevar

THE BENEFITS OF MATERIAL REQUIREMENT PLANNING IN INVENTORY MANAGEMENT

MRP is a production planning and inventory control system used to manage manufacturing processes. Put it differently, MRP a software permanent planning system which use master production schedule, bills of material, inventory information, purchase orders outstanding and lead times to prepare order planning schedule.

Many firms have found important benefits in MRP. These benefits include better response to customer's orders as the result improved adherence to schedule, faster response to market changes, improved utilization of facilities and labor, and reduced inventory levels. Better response to customer orders and to the market wins orders and market share. Better utilization of facilities and labor yields higher productivity and return on investment. Fewer inventories frees up capital and floor space for other uses. These benefits are the result of a strategic decision to use dependent inventory scheduling in MRP.

Key words: material requirement planning, inventory, production.

Султанов Фирудин, Аскеров Агамир, Ибадов Эльсевер

ПРЕИМУЩЕСТВА ПЛАНИРОВАНИЯ ПОТРЕБНОСТИ В МАТЕРИАЛАХ В СИСТЕМЕ УПРАВЛЕНИЯ ЗАПАСАМИ

ППМ является планирование производства и управления запасами системы используется для управления производственными процессами. Иными словами, ППМ программное обеспечение системы постоянного планирования, которые используют мастер производственного графика, векселя материала, информации о запасах, заказов выдающихся и сроками подготовить порядка график планирования.

Многие фирмы нашли важные преимущества в ППМ. Эти преимущества включают в себя ответ на заказы клиентов в результате повышения приверженности к графику, более быстрый отклик на изменения рынка, улучшение использования средств и труда, а также снижение уровня запасов. Лучший ответ на заказы клиентов и на рынке выигрывает заказы и долю рынка. Более эффективное использование средств и труда дает более высокую производительность и окупаемость инвестиций. Меньше запасы освобождают капитал и площадь пола для других целей. Эти преимущества являются результатом стратегического решения о применении зависимого планирование инвентаризации в ППМ

Ключевые слова: планирование потребности в материалах, инвентарь, производство.

Султанов Фірудін, Аскеров Агаміров, Ібадов Ельсевер

ПЕРЕВАГИ ПЛАНУВАННЯ ПОТРЕБИ В МАТЕРІАЛАХ В СИСТЕМІ УПРАВЛІННЯ ЗАПАСАМИ

ППМ є планування виробництва і управління запасами системи використовується для управління виробничими процесами. Іншими словами, ППМ програмне забезпечення системи постійного планування, які використовують майстер виробничого графіка, векселі матеріалу, інформації про запаси, замовлень видатних і термінами підготувати порядку графік планування.

Багато фірм знайшли важливі переваги в ППМ. Ці переваги включають в себе відповідь на замовлення клієнтів в результаті підвищення прихильності до графіку, більш швидкий відгук на зміни ринку, поліпшення використання коштів і праці, а також зниження рівня запасів. Краще відповідь на замовлення клієнтів і на ринку вииграє замовлення і частку ринку. Більш ефективне використання коштів і праці дає більш високу продуктивність і окупність інвестицій. Менше запаси звільняє капіталу і площа підлоги для інших цілей. Ці переваги є результатом стратегічного рішення про застосування залежне планування інвентаризації в ППМ

Ключові слова: планування потреби в матеріалах, інвентар, виробництво.

Raising of a problem in a general view and connection of it with the major scientific and practical tasks.

The years of 1960 increased interest in field of quantitative methods it has revealed that to use them in business activities and production processes. Production and material planning was very important because of delays in sub-assembly, production processes and in parallel to this the decreases in production efficiency. Some difficulties were relevant delivery of components and monitoring of the production process of parts. It was very difficult to distinguish which part of product belonging to which sub-assembly. Therefore, to solve similar problems MRP (Material Requirement Planning) was developed [1].

A simple logic based MRP for the first time developed by Joseph Orlicky at IBM in the early 1960s. The aim of designing computer based program to benefit from computer capability to manage inventory in production facilities [2].

Information Technology plays a major role in designing and implementing Material Requirements Planning systems and processes as it provides information about manufacturing needs (linked with customer demand) as well as information about inventory levels. MRP techniques focus on optimizing inventory. MRP techniques are used to explode bills of material, to calculate net material requirements and plan future production. MRPII stands for Manufacturing Resource Planning and represents an extension of MRP. MRPII points to computer based planning and scheduling designed to improve management's control of manufacturing and its support functions. MRPII maps an extension of MRP to capture all manufacturing requirements including materials, human resources, scheduling, etc [3].

Forming of aims of the article (raising of task).

The term material requirement planning implies certain define system attributes such as time-phased inventory status data, the computation of net requirements, a maximum length of a planning period, a minimum planning horizon span relative to lead time, and the development of so-called planned orders [4].

The main theme of MRP is “getting the right materials to the right place at the right time”. Specific organizational objectives often associated with MRP design and implementation may be identified among three main dimensions (Table 1), namely: inventory, priorities and capacity [3]:

Table 1

Main dimensions of MRP objectives

Dimension	Objective specifics
Inventory	- Order the right part
	- Order the right quantity
	- Order at the right time
Priorities	- Order with the right due date
	- Keep the due date valid
Capacity	- Plan for a complete load
	- Plan for an accurate load
	- Plan for an adequate time to view future load

Objectives of MRP should be identified with regard to inputs and outputs associated with it. Inputs are delineated with master production schedule, bill of materials and inventory master file. Therefore, a clear specification of MRP objectives should be associated with a respectively clear description of objectives of MRP inputs as well as MRP outputs.

Inputs and outputs of MRP.

The main inputs in MRP are as follows:

- a. Master Production Schedule (MPS)
- b. Bill of Material (BOM)
- c. Inventory Master File

A MPS specifies what is to be made and when. The schedule must be in accordance with production plan. The production plan sets the overall level of output in board terms. To plan also includes variety of inputs, including financial plans, customer demand, engineering capabilities, labor availability, inventory fluctuations, supplier performance, and other considerations [5].

Defining what goes into a product may seem simple, but it can be difficult in practice. BOM is a list of quantities of components, ingredients, and material required to make product. Individual drawings describe not only physical dimensions but also special processing as well as the raw material from which each part is made.

Inventory Master File identifies the state of components and products in inventory. Inventory Master File consist of material code, quantity, safety stock, lead time, procurement places, etc. These files provide exact information about usability of the materials. System use this information to record real accounting of movement inventories that happened and planning [6].

Primary reports and Secondary reports are two kind reports of MRP outputs.

1. Primary Reports: Primary reports are the main or normal reports used for the inventory and production control. These report consist of
 - a. Planned orders to be released at a future time.
 - b. Order release notices to execute the planned orders.
 - c. Changes in due dates of open orders due to rescheduling.
 - d. Cancellations or suspensions of open orders due to cancellation or suspension of orders on the master production schedule.
 - e. Inventory status data.

2. Secondary Reports: Additional reports, which are optional under the MRP system, fall into three main categories:

- a. Planning reports to be used, for example, in forecasting inventory and specifying requirements over some future time horizon.
- b. Performance reports for purposes of pointing out inactive items and determining the agreement between actual and programmed item lead times and between actual and programmed quantity usage and costs.
- c. Exceptions reports that point out serious discrepancies, such as errors, out of range situations, late or overdue orders, excessive scrap, or nonexistent parts.

With dependent demand, inventory scheduling and planning can be very complex indeed. In these situation, MRP can be employed effectively. If MRP is implemented correctly it has many benefits that will help improve productivity. Some of the benefits of MRP follow [7]:

1. Increased customer service and satisfaction
 2. Reduced inventory cost
 3. Better inventory planning and scheduling
 4. Higher total sales
 5. Faster response to market changes and shifts
 6. Reduced inventory levels without reduced customer service
- Material Requirements Planning (MRP) has grown greatly in

popularity. While the MRP benefits are usually observed to be substantial, little is mentioned about the costs of MRP. Yet both the benefits and costs of MRP are crucial to its ultimate success in industry. A useful paper seeks to redress this lack. They describe the benefits and costs of MRP systems, based on a large survey of MRP users, and explore why some companies seem to obtain more benefits than others. Data was obtained from a survey sent to 1700 companies, from which 679 valid responses were received [8].

Table 2

The Benefits of MRP

	I	II	III
	Pre-MRP	Current	Future
Inventory turnover	3.2	4.3	5.3
Delivery lead time (days)	71	59	44
Percent of time meeting delivery promises (%)	61	76	88
Percent of orders requiring "splits" because of unavailable material (%)	32	19	9
Number of expeditors (people)	10	6	5

The outcomes of survey are remarkable (Table 2). Indicators like inventory turnover, delivery lead time, percent of time meeting delivery promises, percent of orders requiring "splits" because of unavailable material and number of expeditors are improved after implementation of MRP. Nevertheless, participants expect that they will increase these indicators.

Degrees of improvements are improvements are medium (Table 3). After implementations of MRP the most improvements degree to be peeped at safety stock. In the graduation table production scheduling indicator comes after safety stocks. Indicator of improved competitive position is the lowest average on the table. However, it doesn't means that there is no improvement on improved competitive position.

Conclusion. MRP has a capability for implementation in any enterprise. However the success of MRP system substantially depends on

specification of production operations. Mass production with assembly lines and in complex production MRP provides more benefit. Improvements in inventory turnover, delivery lead time, percent of time meeting delivery promises, percent of orders requiring "splits" because of unavailable material and number of expeditors are some benefits of MRP. The most improvement is obtained from reducing safety stocks. It is notable that for getting better results from MRP it is crucial to use MRP system properly and it needs at least one or two years to draw conclusion.

Table 3

Degree of Improvement

	Little / None	Some	Much	Very Much	Average Score
Improved competitive position	1	2	3	4	2.1
Improved customer satisfaction	1	2	3	4	2.5
Better production scheduling	1	2	3	4	2.7
Improved plant efficiency	1	2	3	4	2.4
Reduced safety stocks	1	2	3	4	2.5
Better cost estimating	1	2	3	4	2.2
Reduced safety stocks	1	2	3	4	3.0
Improved co-ordination with marketing and finance	1	2	3	4	2.4
Improved morale in production	1	2	3	4	2.3

Reference

1. Gennadiy Vernikov, Osnovi Sistem Klassa MRP-MRP II (MRP-MRP II Sisteminin Esasları), <http://www.citforum.ru/cfin/mrp/mrpmine.shtml>, 01.04.2003.
2. Tavukçuoğlu, 2000 Yılına Girerken Yeni Üretim Tekniklerine

Bir

Bakiş,

<http://www.kho.edu.tr/yayinlar/btym/yayinlistesi/yayinlar/Yayin1999/199-yeniuretimteknikleri.htm>, 08.11.2003

3. Vassilis Moustakis, Material Requirements Planning, Report produced for the EC funded project, January, http://www.adi.pt/docs/innoregio_MRP-en.pdf , 2000

4. Joseph Orlicky, Material Requirement Planning: The new way of life in Production and Inventory Management, McGraw Hill, USA, 1975

5. Jay Heizer, Barry Render, Operations Management, prentice Hall, New Jersey 2006

6. ERDEM, M. Serdar, “Küçük Sanayi İşletmelerinde Malzeme İhtiyaç Planlaması Bilgisayara Uyarlaması”, Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü, İzmir, 1994

7. Barry Render, Ralph M. Stair, Michael E. Hanna, Quantitative analysis for management, prentice Hall, 2006

8. Edna M. White, John C. Anderson, Roger G. Schroeder, Sharon E. Tupy, A study of the MRP implementation process, Journal of Operations Management, Volume 2, Issue 3, May 1982, Pages 145-153

Рецензент: Балджи М. Д., д.е.н., професор кафедри економіки, права та управління бізнесом Одеського національного економічного університету

15.01.2018

УДК 330.52

Гасанов Тогрул Гасан оглу

АГРАРНЫЙ СЕКТОР АЗЕРБАЙДЖАНА

В статье рассматриваются некоторые важные аспекты аграрного сектора в Азербайджанской Республике. Отмечается, что аграрный сектор имеет особое значение в экономике Азербайджана. Так как, развитие сельского хозяйства, как приоритетная задача в долгосрочной госпрограмме рассчитанной до 2030-го года, является очень важным решением. Отмечается, что состояние аграрного сектора экономики затрагивает интересы каждого гражданина страны.