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## An Overview of Manufacturing Resource Planning

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**ABSTRACT:**The Manufacturing Resource Planning (MRP II) framework is an interactive corporate information system. Manufacturing Resource planning (MRP II) has developed with the introduction of supplementary details (such as employer and financial requirements) from early Content Demand Planning schemes. The framework is designed to centralize, organize and process knowledge in order to take successful decision in planning, design engineering, material control and manufacturing cost management. Both MRP and MRP II are seen as predecessors to Enterprise resource planning (ERP), which is a process whereby a company, often a manufacturer, manages and integrates the important parts of its business. This review article discussed about the importance and impact of the manufacturing resource planning on organizational performance.

**KEYWORDS:**Enterprise resource planning (ERP), Manufacturing Resource Planning (MRP II), Materials Requirement Planning (MRP), Organizational performance.

### I. INTRODUCTION

Planning of the supply demand is primarily used during the commodity life cycle of the business for material procurement purposes. The sales, stores, stock and much more are ideal for managing. This includes part of a department's inventory handling. In short, process steps for flow content, material specifications for each subdivision info[1]. The general term Material requirement planning (MRP) has now become a definition for the planning of content specifications, the closed loop MRP and the manufacturing resource planning I (MRP II). In the 1950s and 1960s the introduction of inexpensive computing power resulted in a dramatic development of the MRP-users. MRP was the earliest programming application since accounting and payroll systems to become wide-ranging. MRP provided firms with the possibility to buy products according to their existing specifications rather than merely refilling stock criteria. In the beginning, MRP was used primarily for products purchased, particularly in plants with inconsistent demand and a large assortment of goods, such as aeronautics[2].

Since the 1970s MRP and MRP II have become the biggest industrial programmes in the world, with several thousand implementations. MRP has been a common term used to describe the preparation, closed circuit MRP and material requirements (MRP II). In the 1950s and 1960s, the invention of inexpensive computing power led to a dramatic increase in the number of companies which used MRP[3]. MRP was the first programming applications since accounting and payroll programmes. In addition to merely refilling regular stock prices, MRP has allowed businesses to buy the products in compliance with actual specifications. In the beginning, MRP was used primarily for products purchased, particularly in plants with inconsistent demand and a large assortment of goods, such as aeronautics[4].

### II.LITERATURE REVIEW

#### 1. Manufacturing Resource Planning:

Growing businesses strive to build problems-solving programmes. The centralization and teamwork theory underlying MRP II helps efforts to be saved in the same structure. Accounting estimates have historically not been based on the

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same details as development figures. For eg, the department of accounting will have to measure inventory independently from manufacture. It is due to the lack of accuracy of output records for accounting – it has been prepared by an engineer, not by accountants[5]. Manufacturing teams can quantify jobs calculated in terms of 'regular hours' and separately. The advanced user of the closed loop MRP method found that if inventory recording is good enough to support the MRP system, it is good enough to support an MRP system. This has encouraged the departments of finance and development to work with the same reliable details to keep business plans updated. The relations between the financial and the development processes constitute the key step in moving from MRP closed loop to MRP II[6].

## 2. Meaning of Manufacturing Resource Planning (MRP II):

Manufacturing Resource Planning (MRP II) is method for the effective planning of all resource of a manufacturing company. It is made up of variety of interlinked functions, as shown in such as:

1. Strategic and Business Planning.
2. Demand Management.
3. Sales and Operation Planning (S&OP, also called Production/Aggregate Planning).
4. Master Production Scheduling (MPS) with Rough-Cut Capacity Planning.
5. Material Requirements Planning (MRP I)
6. Capacity Requirements Planning (CRP) and Vendor Requirements Planning (VRP).
7. The Execution Support System for Capacity and Material [Shop Floor Control (SFC), and Purchase Planning and Control]

Operational planning in sales units

- Financial planning in monetary units (for example in rupees or dollars etc.)
- Further, an ideal MRP II system has simulation capacity to answer 'what if' questions.
- Output from various report MRP II function is usually integrated with financial report such as financial plan, purchase commitment report, inventory projections.
- MRP II often integrated with a company's warehousing and distribution processes.

MRP II is a management planning, management and development activity management approach. Like procurement, accounts, accounting, delivery, marketing, manufacturing, development tasks control and general management preparation, assessment, appraisal and control, MRP II Program can apply multiple knowledge specifications to all operations and facilities. MRP II is a structured, explicit, interconnected marketing, finance and business-related information system[7]. It coordinates distribution and development schedules to ensure continuity. It creates financial demands for services such as utilities, facilities, workers and equipment and turns production results into monetary terms[8]. It assesses the organization's capacity to financially enforce the initiative and also assesses the financial benefits of the plan as profit, return on investment and return on assets[9]. It assesses financial benefits.

## 3. Features of MRP II:

(1) Master Production Schedule (MPS): It includes comprehensive details about the preparation steps that will be taken for the intended product. The process in which pieces travel on the manufacturing line is defined.

(2) Item Master Data (Technical Data): It includes the conditions for the manufacture of the goods, materials movement on the floor of the store, the marketing strategy for the shipping. The product mix also offers technological expertise for the efficient operation of the factory.

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- (3) Bill of Materials (BOM): It includes details such as the finished product assembly, the material used to make the different components, the amount of each item to be made. The number of sections displaying dimensions and quality controls for the individual components in the finished product during assembly is also specified[10].
- (4) Production Resources Data: It provides the required procedures, such as type of tooling, type of tooling materials and production machine requirements.
- (5) Inventories and orders: It includes figures for the management and ordering of inventory controls (duration) followed for production.
- (6) Purchasing Management: It reflects the preparation portion to schedule the purchases of a given commodity and amount with which the company will prosper.
- (7) Shop Floor Control: The emphasis is on the flow line or production line which automatically indicates the planning status of the company. The quantity and quality of goods during production is primarily to be regulated.
- (8) Capacity Requirement Planning: It sets out the preparation to assess the capacity for the whole plant to define process requirements as well as the output pace that enable the plant to make profits.
- (9) Cost Management: It is mainly concerned
- (9) Cost Management: The financial costs of products, hours, and equipment, purchasing, promotion and sales are specifically concerned. That is the very base on which the plant is manufactured.

#### 4. Advantages of MRP II:

- (1) It provides centralized information for the activities carried out in the plant.
- (2) The entire product planning can be made with respect to the data given at the customer level.
- (3) It receives the customer requirements right from the input data and processes the same for designing stages.
- (4) It exactly plans the quantity and type of materials required during production by coordinating with purchase department.
- (5) It decides the number of man-hour rates for manufacturing the product.
- (6) It gives the exact period of production for complex parts, so that the maximum estimation for a particular process can be decided.

#### 5. Disadvantages of MRP II:

- (1) Initial investment for the setup of the operational activities is costly.
- (2) It is a very lengthy and time consuming process.
- (3) There must be a fully dedicated staff for planning the activities and timely execution of the same.
- (4) The initial processes of MRP-I must be full proof for timely execution of data.

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## III. CONCLUSION

The manufacturer is able to purchase the correct quantity of materials on the right date using the material requirement planning (MRP-I) to reduce unnecessary inventory costs. The right content often cuts output and distribution lead times at the right time. In exchange, the customer connections grow. Manufacturing Resource Planning (MRP-II) is a corporate game plan. It helps the mechanism with accountability. The method progress can be tracked at all times. In addition, reports can be generated from any stage such as the planned order release, delay shortages, purchases and shopping orders. It also allows us to receive the revised Actions Review Report. Both techniques enable us to be flexible about processes and to review them according to the need, making it easier to use.

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