IMPLEMENTING A DISTRIBUTION REQUIREMENT PLANNING SYSTEM IN A DISTRIBUTION COMPANY

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ABSTRACT

An Enterprise Resource Planning system had modules like MPS, MRP, DRP,... In this paper we analyse the implementation of DRP system in a distribution of building materials enterprise. In this essay we introduce the reason for choosing the system DRP for their distribution management, and also the implementation process that the enterprise has followed, the problems that they have faced and the benefits reached. Finally, as a conclusion, we withdraw the total process estimation.

Key words: Distribution Resource Planning, Enterprise Resource Planning, Baan.

INTRODUCTION

Nowadays, every company is trying to be more competitive and to reduce its operating costs as a passport to becoming a player doing business in tomorrow’s markets. This situation, related to the absolute need to build feasible critical mass in almost every business segment, thus imposing the need for larger volumes of production and service, and the need to fulfill ever increasing and sophisticated client requirements have created the opportunity for companies to develop technological solutions that could support making radical changes in other companies’ business processes so that they can address the new and challenging market reality.

To reach all this challenges, companies have been introducing the information systems in its operating areas. In the 60’s, production systems were focused to inventory control. There were programs for each company area: purchasing, warehouse, accountancy, ... In the 70’s MRP systems appeared, and then in the 80’s the Requirements-based scheduling systems, such as MRP II are created to plan the manufacturing resources. The next stage in the evolution of information systems has been directed toward integrating all the business activities and processes throughout an entire organisation. These information systems are commonly referred to as Enterprise Resource Planning (ERP) systems.

As the name suggest, the objective of these systems is to provide samless, real-time information to all employees who need it, throughout the entire organisation: accounting, purchasing, engineering, distribution resource planning (DRP), etc. In this paper we shall examine the implementation process of the DRP system of BAAN IV in a distribution of building materials enterprise in Catalonia (Spain).
Distribution Resource Planning (DRP)

The Distribution Requirements Planning Business-Object allows an organisation to manage the distribution of product between facilities. This tool (DRP) complements the user’s ability to ensure that the warehouses within a defined structure, bill of distribution, are being replenished with the right product at the right time in the right quantities.

The DRP tool allows the user to anticipate which warehouse within the structure will require products by making use of the inventory and demand data within each facility of the structure. Organisations with multiple warehouses, like the enterprise in this paper, within one logistical company can use DRP to manage their inventory and calculate their future aggregated demand. DRP does not rely on historical sales data, but rather on future time-phased requirements. DRP is an extremely vital partner in safety stock level management.

The DRP calculation output, in Baan, is Planned Replenishment Orders. Now the user can alter any of the data in these planned orders. After the order data is approved or accepted, it is then transferred to the Replenishment Order Control module.

The system generates rescheduling messages and exception messages during the DRP run:

1. The system generates rescheduling messages during the DRP run. The system will advise the user when orders already exist for which actual requirement dates do not coincide
2. Exception messages are also generated during the DRP run. Examples of exception messages are inventory above maximum inventory or inventory below safety stock. The system supplies the user with exception messages that identify differences with master data information

Rescheduling messages and exception messages can be displayed onscreen or printed on hard copy. These messages are extremely useful tools for the user to optimally plan distribution of goods within the network.

As we have said previously, DRP system, based on an established distribution structure, also referred to as bill of distribution, allows you to determine where and when inventory is to be replenished. The system determines, within the distribution structure, whether the economic stock falls below the reorder point due to incoming demand. This demand is calculated from the higher of either the forecast or the actual demand (sales requirements or warehouse replenishment requirements).

The economic stock calculation is:

\[
\text{Economic stock} = (\text{On hand} + \text{On order}) - (\text{On hold} + \text{Allocated})
\]

If this calculation results in inventory shortage, the system will check for inventory availability in the established replenishing warehouse. Priorities are assigned to specific warehouses within a given distribution structure for replenishing sequence. If this warehouse, the one with an assigned high priority, does not have sufficient inventory, based on the same calculation as above, the system will then check subsequent warehouses with lower priorities within that structure for replenishment.

After the system finds the warehouse that is capable of replenishing the warehouse-requiring inventory, the system generated a recommended order. The system not only considers the required inventory, but also the time it is needed in and the time to carry these materials. At
this point the system simply generates a recommended order - this is only a system advice. The user can now review, modify, or even delete this recommendation. After the user agrees or modifies the system-generated recommendation, the next step is to confirm and release this recommendation into a replenishment order.

Due to the complexity of some distribution structures, it becomes important to have DRP review the optimal material supply flow on a regular basis (daily). The session Generate Planned DRP Orders will accommodate that specific need. This DRP session can be run in one or two ways: full regenerative DRP or net-change DRP:

1. Full regenerative DRP regenerates the entire file, not considering previously recommended orders
2. A net-change DRP will only consider those items for which demand or consumption changes have occurred

The full regenerative DRP should be run as an overnight process because of the heavy load that it has to process (the entire file). The net-change DRP can be processed any time.

The distribution sector enterprise presented continuously had implemented this type (Baan IV) of DRP system in their warehouse management, shared out all over Catalonia.

Enterprise presentation

R.M.S.A. is a distribution enterprise. Its main activity is based on building materials distribution, also for construction company or civil works. The enterprise had at present more than 20,000 different references. It was founded in 1962, at since the very beginning it has been a familiar company. Although now the High Direction is in external hands, the second generation family members are still working in the enterprise.

Actually R.M.S.A. had 110 workers and its invoicing it is about 5.000 million pesetas yearly. The enterprise had 19 warehouse situated among Girona and Barcelona and also a Central distribution facility.

MOTIVATION FOR IMPLEMENTING A DRP SYSTEM

The signs that persuaded RMSA to implement a DRP system where the following: the high level of stock in some warehouse and the constant lack of materials in others, the mistakes in stock accounting, the lack of warehouse’s co-ordination and co-operation, the lack of basic control in the material transference’s, ..., in short: the detection of a bad way of work, also comparing with the most direct competitors, in costs and efficiency terms.

In front of this facts and adding the problems that the old enterprise system could cause due to the “2000 effect”, the High Direction, advised by the new Computer department, integrated by junior and motivated technical, begun to analyse which system will feet better into their needing.

IMPLEMENTATION PROCESS

The implementation process begun in December 1998, and at present the enterprise it is running with the DRP new system.
The stages that RMSA followed in the implementation process were:

- **To decide which software will need the enterprise in the future**
  
  The decision appeared when RMSA became to evaluate the problems that the old system would bring in spite of the “2000 effect”

- **To select the most appropriated software**
  
  The first objective in the selection process was that the ERP system had to include a DRP system, useful for the distribution tasks of RMSA.
  
  It was important the fact that it was not possible to find a software that feet 100% with the needing of the company. It is because of this that the chosen software must be flexible to solve the problems that the enterprise is facing. The selection of Baan IV software in front of other systems it was based basically in four key points:

1. The superiority of the DRP module (based on French distribution software, the most advanced and complex systems)
2. For RMSA, the stock management where basic and Baan IV has one of the most complete and advanced stock management systems in the market
3. Baan’s software is able to implement the system in alphanumeric screens, and RMSA just had spent a lot of money in hardware. They bought more than 50 SIEMENS screens
4. Other similar software suppliers used the triangle (Soft Company + Consultant + Hard Company), but Baan formed their the workers of RMSA

- **Organise the implementation process**
  
  The process followed by RMSA where designed by Baan, as a standard

- **The implementation**
  
  During the system implementation, the task of the consultant where only to give a technical information and to guide the project development, but the main responsibility was of RMSA. The Computer department was the project lider

- **Implementation development project evaluation and monitoring**

- **Final results**

  It should be noted that the DRP implementation can become a re-engineering or re-design process tool. In this regard we should point out that frequently there are different opinions about if it is good or not to make a Business Process Re-engineering, BPR, as the same time as the company is implementing the DRP system.

  RMSA has not made BPR and later, the High Direction has very much regretted that, because of the constant problems that had been appeared (solved by some “system patch”).

**IMPLEMENTING PROBLEMS AND REACHED BENEFITS**

**Implementing problems**

The main problems during the implementation process in RMSA had been the following:

There were misunderstandings between SIEMENS, the hard supplier, and Baan, because this time was the first time they were working together (Baan use to work with companies like IBM, Sun or HP)
They must create system patches in order to adapt to the DRP system to the way of doing in RMSA.
The Baan consultant made the learning process in a separate way between the different software modules. It would be better to give more integrity to the project and its members.
The workers reaction was in the very beginning of great expectation because they think that the system would make their work easier. Later, the aged workers begun to generate a distrust feeling of the new DRP system. This fact was very important for the Human Resources department, and thanks to the help of Key Users, the initial system distrust were eliminated. At present day, the DRP systems seems to be the helpful tool again.
In this regard we can see the figure above, where the behaviour of the people is represented. RMSA has not been an exception to this fact.

![Figure 1: How people behave](image)

**Reached Benefits**

The key question that the High Direction asked was: What benefits RMSA will obtain with the DRP system implementation?

The main benefits that RMSA was seeking in implementing this new DRP software were:

- To drastically reduce the cost of the company in money and human resources
- To provide technology tools that permit substantial simplifications of the processes involved in the distribution management
- To create a base so that the company’s billings can grow while the costs of providing the corresponding internal support become proportionally less than they are at the current level of business
- To achieve a better balance between decentralisation and control, to avoid duplication, to ensure synergy, and manage the indicators that permit evaluating actual RMSA distribution performance
- To be pioneer in the distribution sector, in the employment of new technologies

Although the DRP Baan IV purchase and implementation represented a big invoice for RMSA (more than 40 million pesetas), the High Direction considered it essential in the way of the future competitive advantage of the company in the distribution sector.
When the implementation was finished, three months ago, the initial results are the following:

Talking about the cost reduction, the human resource reduction is one of the fastest results to obtain. Three months after the implementation, RMSA has been able to reduce about a 10% its staff (those who made hand work and a lot of times duplicated). This reduction it has been made in the right way, with no troubles between the present staff.

Another result is the increasing distribution process control, and also the generation of more exact data.

After the DRP implementation process RMSA has made an important work: to classify all Statistical Inventory Control (SIC) references.

RMSA has been able to identify and eliminate lots of obsolete data as well as eliminate the duplicity of codes for the same reference depending on the warehouse it was located.

Also, RMSA it is now more well-known in its sector because of being the first catalan distribution enterprise in implementing the DRP system of Baan Company.

In the figure below we can see the result of an study of 1992 about the mainly benefits that the enterprises have obtained after a DRP system implementation.

![Figure 2: Mainly benefits after a DRP system implementation](image)

CONCLUSIONS

After analysing all the process that RMSA has followed for implementing a DRP system, the mainly conclusions that we can take out are the following

About the RMSA High Direction

The High Direction has played a fundamental part in the process of DRP implementation. In the bad moments is when the Direction has encouraged the staff to continuing going on with the process. Also the Direction involve all the staff in the project with good results.

About the staff (workers)
The behaviour of the workers is an aspect that we have already commented. At present, the perception of the majority of the RMSA staff is that the DRP system is good for the company and its daily running. There are still some workers that don’t trust in the DRP system, but their are the minority and their features are the age (more than 55 years), without studies and normally hand-worker.

About the consultants

The feature of the consultant is basically for the good development of the implementation. In connection with this RMSA thinks that it would be better that the junior consultants only develop support tasks.

About the key users

RMSA Direction is specially satisfied about the election that it has been made about the key users. The key users have been key for the implementation success. This key users (8 workers of different departments) have been trained by the Baan consultants for learn all about the DRP system and then explain all their knowledge to their fellows. The key user feature is a young person, motivated, with studies and with good skills in communication.

Let us conclude by saying that the future RMSA perspectives includes to take profit of the re-organisation of processes and data to obtain the quality standard ISO 9001:2000.

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