MANUFACTURING RESOURCES PLANNING II: A STUDY OF FAILURE FACTORS AND GUIDELINES FOR INITIAL SOFTWARE ACQUISITION, SELECTION AND IMPLEMENTATION PROCESS

Kang Eng Thye
Roslan Bin Jamaludin
School Of Information Technology

Abstract: *Hampir dua dekad, MRP II menjadi alat sokongan industri pengeluaran yang popular di merata dunia. Organisasi-organisasi menggunakannya untuk lebih bersaing dengan penggunaan sistem maklumat berkomputer yang cekap. Bagaimanapun, maklumbalas dari industri berkenaan pelaksanaan MRP II tidak menggembirakan. Berdasarkan perangkaan, 80% dari pelaksanaan MRP II dilaporkan menemui kegagalan disebalik kelebihan yang di tawarkan. Pelbagai punca dikaitkan dengan kegagalan pelaksanaan MRP II. Matlamat kajian ini ialah untuk mengenalpasti punca yang menyumbangkan kepada kegagalan ini dan membantu organisasi-organisasi terutamanya di Malaysia dengan menyediakan panduan pembelian dan seterusnya pelaksanaan pakej-pakej MRP II.*

Almost two decades MRP II has been a popular tool in supporting the manufacturing industries worldwide. Many organizations seeking this application to be more competitive by effective used of computerized information system. However, feedbacks from industries on the implementation of MRP II are not favorable. Based on the statistics by independent body, 80% of MRP II implementation are reported as failure besides its good points. Various reasons are given regarding the failure of MRP II implementation. The main purpose of this study is to investigate the factors that contribute to the MRP II failures and to assist especially Malaysian companies with an appropriate guidelines before purchasing and implementing any MRP II packages.

1.0 Introduction

The used of advance technology by organizations can be seen as an important strategic tool to maintain its competitiveness in the business world. ***Manufacturing Resources Planning II*** (MRP II) or Enterprise Resource Planning (ERP) has been widely used by organizations as an important tool to enhance their management and increase productivity throughout the business functions.

However, many new users do not realize the complication and tediousness an MRP II's implementation process can be. A comprehensive understanding of an organization's business characteristics is vital to ensure the success of MRP II implementation. Also the nature of an organization's business classification need to be identify such as process industry, discrete industry, repetitive industry, make-to order, make to stock, etc., as the fundamental criteria before selecting the right and suitable MRP II software or packages.

Due to problems of MRP II implementation worldwide as well as in Malaysia, there is a need to study on issues pertaining the failures so as to assist the existing and prospective MRP II users, to avoid falling into the same pitfall as happened to many past users.

2.0 Objectives

The purpose of this study is:

- To identify the reasons of MRP II implementation failures.
- To propose a guidelines during the process of selecting an MRP II packages.
- To assist the industries from falling into the same failures as experienced by past MRP II users.

3.0 Methodology

Literature reviews

Libraries in Universiti Utara Malaysia and Universiti Sains Malaysia provided ample sources and references for literature reviews on MRP II current issues while oversea libraries such as the British Library provided major input relevant to this study. Local organizations especially the American Production and

Inventory Control Society which is based in Malaysia also provided useful information to this study.

Interviews with the MRP II users

A few local companies were selected to obtain information on the actual problems they have experienced with the MRP II implementation.

Feedbacks from MRP II vendors and suppliers
Comments from the vendors and suppliers has been an important input for this study.

4.0 Factors of failures

Kochhar (1987, p.385) exposed that computer manufacturers, software developers and suppliers usually highlighted successful implementations only. Failures are rarely informed, discussed, recorded and documented.

Hoyt (1977, p.204) revealed that almost 80 percent of all computer systems or programs are 'operating failures'. With his experience in MRP projects, he added that they had a lot of successes and even more failures. White, et al (1982) identified 50% of organizations running the MRP software do not achieve their objectives.

While Ho (1992) has stated that many firms failed do understand and manipulate the full potential available in MRP applications.

The reasons for failures as reported by industry practitioners can be identified as failures pertaining the pre-implementation and implementation (Hoyt, et al). They are listed as follows:

Pre-Implementation

- lack of top management commitment and participation during the initial period.
- lack of the pre-implementation studies and analysis of requirements.
- lack of exposure, training and education.

Full Implementation

- top management seldom made a real commitment and full participation to run the business with the new system.
- task assignments passed to lower level personnel rather than the best people.
- lack of planning to deal with organizational changes and their impact on the employees.
- pre-training cannot get full attention from worker and inadequate training on how individuals will perform with their new systems.
- most system implementation failures, occur because the systems simply are not in harmony with the needs or style of the business.
- middle staff such as supervisor are not technically well verse and has problem understanding technical issues.
- shortage of manpower and high work load.

From the analysis of MRP II failures, it shows that the implementation is not an easy task. The problems of its implementation is not simply technical in nature, more so it comprises of the dynamic business nature and characteristics; management style, participation and commitment, and human factors.

All factors of failures are highly embedded and integrated which requires IT professionals, managements and end users to work together and deliver maximum commitment to ensure the success in implementing the MRP II.

5.0 Guidelines for selecting MRP II packages

The scope of this section is mainly on earlier preparation and necessary steps require for selecting a suitable MRP II packages. Careful selection process in the initial phase is vital. Once an application has been selected there's no turning back or it's a complete waste of money and effort.

Shachter (1982, p.497) put it that acquisition of new packages is a complex task. Often, clients cannot understand why the consulting company cannot recommend a package from off-the-shelf.

There are many reasons and variables need to consider where each companies has its own special requirements and needs while software developers continuously and systematically enhancing their products. However, Steinberg (1982, p.500) suggested a guideline during the acquisition process:

- identifying user requirements and system specifications,
- establishing the evaluation criteria,
- selecting the evaluation strategy,
- evaluating the software packages and selecting one for installation, and
- negotiating and awarding the contract.

5.1 MRP II project team

Participation or representation from personnel from across all business functions in an organization is necessary and likely the only ways to ensure a successful MRP II project implementation.

Blood (1994, p.54) suggested that 'having the user support group within the company can help assure the necessary consistent use of the system. The people who make up this group must be knowledgeable in several aspects:

- They must understand the MRP system comprehensively
- They must have a good understanding of the company's business functions and activities
- They must have a strong production background
- They must be people who speak the user's language first, and the computer language second!'

5.2 Instructions prior to any purchase of MRP II packages

Before an organization have any intention to shop for a MRP II software, its important to consider the following aspects:

a. Do not rush

Top management usually put on great pressure to the MRP II team members to implement it as soon as possible. If the project is executed immediately without a sound and thorough study and preparation, the packages might not deliver the required objectives, or did not into fit the organization.

Delaying of project is common. Unexpected problems and unpredictable circumstances will surface throughout the whole

process. It is better to counter problems in advance and take longer time to solve it, rather than facing the same problems in the future which could eventually create even more serious problems.

b. Steering Committee

As mentioned earlier, a steering committee or any MRP II project team should be established. This team should consist of personnel or representative from all business functions and it is recommended that the team members to be on full time basis to concentrate on this project without heavily tight up with their daily job. Otherwise, no body will give commitment to this project.

5.3 Selecting an MRP II packages

Many current literatures do not discuss in detail on selecting an MRP II packages. However, below are two activities suggested which could be useful as guidelines.

5.3.1 Preparations before contacting vendors

a. Work Flow Documentation

Having all company business functions, operations, processes and procedures documented is important before the MRP II acquisition. There are several reasons why documentation is necessary:

Time Saving - time can be saved in understanding the whole organization functions. Repeated and lengthy discussion can be avoided in explaining to vendors the operation of the organization.

Clear message delivery and better understanding - Crucial and important issues may not be left out in the complexity the organization's operation. Oral discussion only helps to clarify gray areas to vendors.

Company operation problems can be identified - Company problems can be easily identified. Vendor can assist in providing relevant guidelines and suggestion before any actions can take place to implement the software.

Software suitability can be justified - This is the main reason and purpose for documenting the company operation. Both parties can rely on the documents to discuss the software suitability in details. Furthermore, organization can identify the strength and weaknesses in any packages offered by vendors.

Good reference through out the whole MRP II project - This documentation will play an important role for both parties through out the MRP II acquisition and implementation stages. Any discussion for improvement and amendment will rely on this documents as reference.

There is no specific technique to document the organization workflow. However, based on the documentation, organization can identify how the vendor software can support in improving their business and operation.

b. User requirements identification

Steinberg (1982) and Hollander, et al added that identifying user requirements and detail manufacturing operations is the most critical point in the acquisition process. After user requirements are identified, they should be translated into systems specifications in terms of volume, response time, complexity, and computational requirements. If detail user requirements are not rationalized and documented comprehensively, it is difficult identify and determine which packages will be appropriate.

c. Improvement of current operation

Many small and medium size organizations operating in a manner where individual department has its own ways of running its department. Often no standardized or uniform work collaboration between departments. Problems arise due to lack of understanding and conflict within departments. Information flow within departments often inefficient.

MRP II system demands a proper procedure and uniform organization operation, procedures and policy. All job functions of each department including the staff must be clearly stated, defined, integrated and collaborated.

5.3.2 The selection of MRP II packages

Literature reviews commented on the selection process of MRP II are as follows:

- The evaluation and selection process is both lengthy and costly, when it is performed properly (Shachter, p.497).
- Steinberg (1982) added that the acquisition process is to 'buy smart not fast' and user should be highly committed in this phase of the software acquisition process.

a. Request For Proposal (RFP) from vendors

This RFP is the first contact with vendors and should be done before further short listing software vendors. 'When Request For Proposal is prepared, the vendors that the RFP is to be sent to must be determined, and the returned proposals must be evaluated to narrow the field for further investigation' (Shachter, p.497)

Proposals submitted by vendors often not suffice to short list or making final vendor selection decision since they do not exposed the weaknesses but only promoting the strength of their products. However, it is a basis in understanding the vendor profile. One way to know their capability is during the software presentation and demonstration, and followed with detail discussion with the vendors which can produce important feedback before making any decision.

b. Short listing vendors

Evaluating vendors is a time consuming process. There is no fix number of vendors should finally be short listed , but guidelines below can be very useful:

- Fundamental features and functionality which are required by the organization must be stated clearly in the proposed packages and carefully verified before final selection is decided.
- Holden (1976) suggested that software packages should comprised of 'a comprehensive production control system, rather than one of the typical sub-systems, e.g. stock control'. He further added that 'it should have adequate support and maintenance facilities, and that it should have some degree of general recognition throughout the industry'.
- Shachter (1982) recommended visiting vendors and/or their users premises during the evaluation of vendor and system.

5.3.3 Final Vendor Selection

In the final vendor selection stage, the price or cost of a system is negotiated. However, software price should not be a main concerned in selecting potential vendors. Price quoted by vendors normally considering a lot of variables. It is useless to opt for low price software because the risks might be paying more later (e.g. future possible modification) yet it does not mean the most expensive is the best.

Price negotiation has been commented by Loizeaux (1992, p.85). He said that the software price is highly negotiable and could easily reduced up to 45% and noted that 'MRP software costs may well be only 25% to 40% of the entire project cost. The "real" costs are the time your employees spends on MRP training

and away from work. Besides that, the "lost opportunity" costs of an MRP implementation project that falls behind schedule and perhaps the additional cost of re-implementation if the original one fails'.

6.0 Discussion

This paper could be a useful guide especially to prospective users intended to implement the MRP II packages in their organization. It is an important that if early thorough, extensive and systematic preparation is neglected such as having workflow documentation available, identifying current operation problems and issues, and user requirement study; it is recommended not to proceed to the next process such as of software selection and evaluation. This is a common reasons of failures in software acquisition process and has been happening repeatedly in and across organizations.

Organizations should practice cautious before deciding on any particular software as well as vendors, allowed selections open to options. Identify the strength and weaknesses of organization processes, the proposed software packages and also the products and services of vendors alike.

Guidelines proposed here although might not be comprehensive and detail, it may serve users from falling into the same mistakes experienced by many unsuccessful implementation.

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