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A Study of Performance of Materials Requirement Planning (MRP) Software Users in Pharmaceutical Industry

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ABSTRACT

To study the performance of users of material requirement planning software in pharmaceutical industry a survey was conducted under the topic "A Study of Performance of Materials Requirement Planning (MRP) Software Users in Pharmaceutical Industry". Purpose of the study is to know how MRP software helps to improve job function, helps to improve organization's performance and Overall confidence/satisfaction of users. Structured questionnaires were developed to collect primary information.

KEYWORDS : MRP, ERP Software, Production Planning,

Introduction

Manufacturing creates wealth by adding value to goods. To improve productivity and wealth, a company must first design efficient and effective systems for manufacturing. It must then manage these systems to make the best use of resources. One of the most effective ways of doing this is through the planning and control of the flow of materials into, through, and out of manufacturing.

Materials Requirements Planning (MRP, or MRP-I) was launched in the mid-1960s and quickly became popular for providing a logical, easily understood method for determining the number of parts, components, and materials needed for the assembly of each end item in production.

The progress of pharmaceutical industry is substantial and many-sided with the result that it has become one country's leading industries. India is now producing a larger quantity of varied pharmaceutical products.

Purpose of the Study

The study is defined as "A Study of Performance of Materials Requirement Planning (MRP) Software Users in Pharmaceutical Industry". The purpose is to study the performance of users of production planning and materials management activities in the various pharmaceutical industries, as part of its efforts to determine the factors that lead to the successful application of integrated planning system, system effectiveness and user satisfaction. The study has been designed to collect information on pharmaceutical manufacturers engaged in producing of formulations and bulk drugs.

The Study

The present study is exploratory in nature attempting to understand the MRP practices through software. The study has also undertaken a detailed analysis on certain aspects related with the formulation as well as bulk drug manufacturer.

Research Methodology Sampling design and procedure
Research Population Employees of the pharmaceutical industry where any materials planning system or at least GMP is follow.

Sampling unit Experts, users, professionals who have at least know pharmaceutical materials planning system.

Sample Size In order to conduct the study on a reasonably manageable scale, the sample was targeted at approximately 650 participants

Sampling technique Purposive Sampling method.

Sampling frame A sampling frame was made relating to directions for identifying the target population.

Sample control To ensure the at least GMP practice, the sample was controlled.

The Tools

Data Collection tools

This study was designed to use a mail survey to gather data about the use of MRP in pharmaceutical industries.

Data analysis tools

The study used various statistical techniques to analyze the data. Chi square analysis, Z-test, t-test, Correlation coefficient and index / ratios were used.

Sample Distribution

Table 1 - Sample distribution - Category wise

S. No.	Category	No. of respondents	Percentage of respondents
1	Bulk Drugs	24	17.143
2	Allopathic Formulations	82	58.571
3	Above Both	16	11.429
4	Ayurvedic Formulations	04	02.857
5	Allopathic and Ayurvedic Formulations	12	08.571
6	All Above	02	01.429
	Total	140	100

The Results

The results are discussed with performance of MRP software users. Performance between users and non – users were also carried out to understand the benefits of the MRP software systems.

Performance of MRP software users

To evaluate performance of MRP software, the opinion of users was measured on three factors i.e. job function, organization performance and overall confidence/satisfaction.

Table 2- Users of MRP software

Serial No.	Category of respondent	No. of respondents
1	Formulations manufacturers	98
2	Bulk Drugs manufacturers	24
3	Both above categories	18
4	Total respondents	140
5	Total MRP software users	113
6	Total Non – MRP users	7

Table – 3 Comparison between users and non-users of MRP

Serial No.	Indicators	MRP Users	Non – MRP Users
1	Average sales turnover	159.80 lacs	46.79 lacs
2	Employees performance	3.8	2.75
3	Organization performance	3.879	2.5
4	Satisfaction of employee	3.8	2.75

Table 4. Performance of MRP software users

Serial No.	Factors	Hypothesis	Result*	Remark
1	Software/ERP helps to improve job function	H_0: $p \leq ½$, Ha: $p > ½$, $n = 107$	Accepted.	It is concluded that the, software/ERP helps to improve job function is high.
2	Software/ERP helps to improve organization's performance.	H_0: $p \leq ½$, Ha: $p > ½$, $n = 105$	Accepted.	It is concluded that the, software/ERP helps to improve organization's performance is high.
3	Overall confidence/satisfaction of employee	H_0: $p \leq ½$, Ha: $p > ½$, $n = 105$	Accepted.	It is concluded that the overall confidence/ satisfaction of employee due to convenience of software/ERP is high.

*Calculated value of $Z > 1.645$ at 5% level of significance in one sided test.

10. Limitations

However the study aimed to achieve its stated objectives in full earnest and accuracy, it may have been hampered due to certain limitations.

Confidentiality – Confidentiality of the manufacturing processes, internal quality system and plant design is the high concern for pharmaceuticals manufacturer, and it may be the one of the reason respondents may not given the actual information.

Authenticity of the information supplied – The respondents may have tried to hide information, due to the company polices lack of functional knowledge and lack of system knowledge. To check authenticity, some questions were repeated in the different form and crosschecking was done wherever it was possible.

Respondent bias – As often experienced in personal interview based questionnaire, it may bias the respondent's replies and the personal interests and attitudes of interviewers can cause them to interpret responses differently.

Technical Knowledge – Knowledge of practical application of materials management principals and software required for response.

Incomplete responses – The selected respondents refused to cooperate at times. Further, it was difficult to encourage the respondents to provide the complete information.

Macro factor analysis – It is limited to economic and demographic factors only.

11. Suggestions

The suggestions are presented to provide a direction for further work to ensure continuation of the effort and further strengthen the understanding about MRP system and software.

The implementation of MRP software system is just like a business process reengineering, where lot of policies is to be restructured, hence it require lot of support from the top management.

Successful implementation of MRP software requires lot of passion, time and money, management is advice to keep these points while planning for MRP software.

Effectiveness of the system is largely depending upon its customization and user training; industries must concentrate on these factors.

Software is the only an information tool and hence alertness and consciousness of the end users are very important to maintain its accuracy while doing transaction.

In-depth interviews provide comprehensive information about the intrinsic motivations of the respondents. Such interviews can also help the researchers in exploring the first hand experiences of the respondents and the problems faced by them from time to time.

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