Process Analysis with help of Business Process Reengineering and SAP

Ashish Sharma, [1] Nagendra Sohani [2]

Department of Mechanical Engineering, Institute of Engineering & Technology
Devi Ahilya Vishvavidyalaya, Indore

Abstract

Most of Ancillary industry often phase problem of fluctuating demand from their customers this is due to either seasonal variation or infrequent order placed. Inventory management and to fulfil customer demand for any Ancillary industry it is very difficult. Using Business Process Reengineering and SAP as ERP tool we will be able to manage Inventory and Customer demand on time. SAP is the most advanced and highly used as ERP all over world, knowing its importance and advantages associated with it in India most of company also switching to this ERP solution because of its wide application and usability. For Ancillary industry it is necessary to manage inventory at their own side and to carry the safe inventory is also necessary, like what kind of inventory you want to carry either in raw material form or product form so as to avoid Bullwhip effect.

Business Process Reengineering helps in determining the root cause and hidden aspects of managing inventory, not only inventory but with the help of Business process reengineering it can be applied to any section or department for understanding their functionality. Now in current trend with growth in manufacturing industry handling material is very important because of fluctuation in demand from Customer as well as due to availability of Raw material on time especially in Indian market. With SAP monitoring of material becomes quite easy and data availability in just nick of time. Ultimately Customer demands given priority most in any ancillary industry for fulfil their demand on time as per their schedule. We can maintain flow of material and remain updated with the present stock in industry. For ancillary industry it is very important to being responsive and provides value to their customer. SAP and BPR helps in sharing right information to right person at right time to meet the schedule demand of customer. With this model we will be able to make our system smooth and maintain workflow of given ancillary industry. Information can appear simultaneously in a many places as needed.

Key words :- (BPR) Business Process Reengineering, (ERP) Enterprise Resources Planning, (SAP) System Analysis and Program Development, (RFID) Radio frequency identification

1. Introduction

The original approach to Business process re-engineering (By- Michael hammer) is how to apply BPR into real world of business. It is the analysis and design of workflows and processes within an organization for better performance and results. A business process is a set of logically related tasks performed to achieve a defined business outcome. Re-engineering is the basis for many recent developments in management. In business process reengineering main role is of cross functional team. The cross functional team is comprises of many people from different department taken together to perform for achieving a common goal cross functional team members comprises of engineer from each department of organisation production, quality, store planning, purchase, finance and human resources. BPR help in self managing team containing of empowered members as a solution to problematic decision and as well as way for improving organizational capacities and customer value.

SAP (Systems, Applications and Products in Data Processing) is a software corporation that makes Enterprise software to manage business; SAP is the market leader in enterprise application software. The company's best known products are its enterprise resource planning application (SAP ERP). The idea behind using SAP is because of its functionality and service and value it offers to user is very much better and it is the advance version of ERP.

Now with recent development in Business process it is easy to maintain workflow of any ancillary industry with the help of this tool BPR and SAP. The main concern of industry is to manage inventory and customer order on time and to offer them best service with added value without any other extra cost. To manage inventory it is necessary to have information about each department and that information must be true.

2. Objective:-

The following are the main objective of this research paper

- How to manage inventory
- How to fulfil customer order on time
- How to maintain workflow of organisation

2.1 Methodology:-

BPR: - BPR help in understanding whole process of industry and it will help in making some changes were system needed. With proper training, coordination amongst department and using information technology process becomes smooth helps in adopting new method.

SAP: - SAP is used as ERP tool which helps in planning, scheduling and forecasting. SAP help in making the right information flow to right person at right time.

RFID: - Radio frequency identification has come to signify system solution for tracking and tracing object both globally and locally using RFID tags. Track and trace object within industry or outside industry which help in monitoring inventory level. It can be connected to same server on which SAP is connected or using it.

2.2 Literature Review: - According to Michael H Small and Mahmoud Yasin College of Business and Technology East Tennessee University, Johnson city, Tennessee, USA, to assess forecast it is on paper but it's difficult when you fail to fulfil customer order. To meet demand and supply you need to have SAP as ERP tool. From various researchers find that a buyer move to next shop if product of his choice is not available, this is same case follows in industry also when industry fail to fulfil customer order than he switches to different industry. With help of SAP we can plan our schedule as per forecasting and previous demand of that particular order or supply, so as to meet customer order on time and to add value to it. SAP helps in setting benchmark for assessment of right forecasting.

According to Muhammad A. Rizvi and Michael Tarn are the Assistant professors at department information Systems, Haworth college of Business Western Michigan University Kalamazoo, Michigan, USA, They marked importance of BPR and SAP combining both this tool it help in maintaining inventory, they emphasis on information. They highlighted importance of not only information but also the kind of safety stock a industry must have and to manage it for those where consumption and demand are vary with season and infrequent.

According to Rashmi jain and Anitashree Chandrashekaran from Steven institute of Technology Hoboken, New Jersey, USA , they highlighted importance of BPR how it help in changing and adopting new process and how it interface between technology and BPR.

Similarly Alan Eardely and Andrea Radman Staffordshire University, Staffordshire, U.K. highlighted the importance of business process and how it helps industry to gain advantages with business process by doing some empirical research. Business process how helps in financial gain and performance in overall process in system.

3. Approach:-

The process begins from planning as per required schedule by customer and start doing work on it as soon as the schedule arrives; taking all the parameter into consideration forecast and previous order placed by customer, order process begins. BPR helps in determining not only were the process is needed to work hard but it also helps in working according to our capacity planning and we can do more in planning ,without planning order cannot fulfil on time.
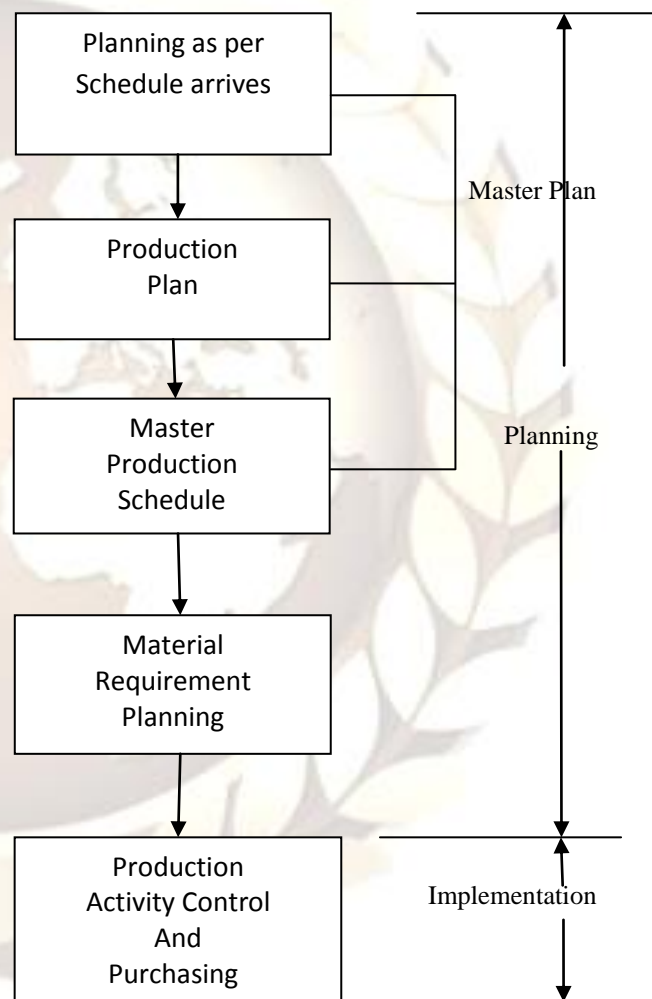

Fig. 1   Manufacturing and Planning control

Adopted source: Introduction to Material Management by Stephen N. Chapman

Above figure represent how the production process starts as soon as schedule arrives. In planning phase all required planning is done in SAP and then with

that we run the SAP MRP controller, all this Capacity planning is done in MRP controller in SAP which helps in managing inventory by keeping previous record and maintaining schedule.   And in implementation phase we produce part as per the order and planning than punch it in SAP Production planning, it keeps record of the number of parts produce. This is basic cycle how to execute planning. But the main concern is to maintain safety stock as per the requirement of future by customer. We can plan what kind stock we want to carry and in what form it should be either Make to Stock or Planned to order than according to the consumption and type in which we want to carry inventory is planned in production process of SAP and than planned work transform into real data. SAP has provided solution to each and different kind of industry, so that they can transform and configure the SAP as per their requirement and need. Depending upon Raw material availability planning of inventory can be done accordingly. Either makes to stock or planned to order.
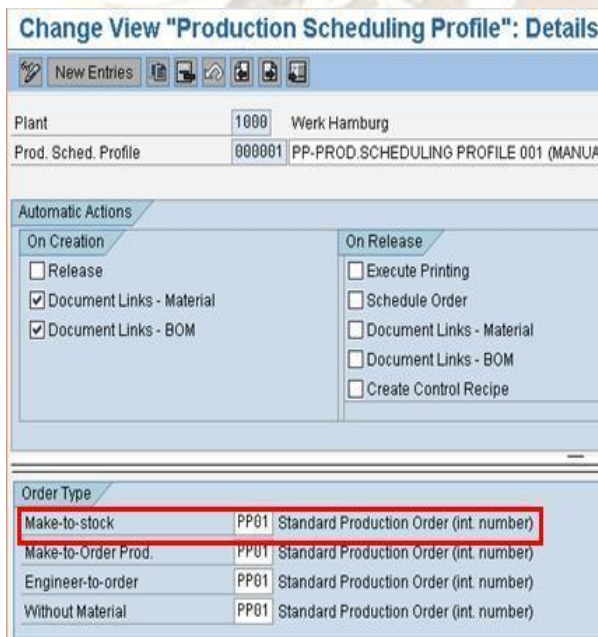

Fig 2 View of Production process in SAP
Adopted Source: SAP Software screen
Now main focus is on how to manage inventory in system and physical, for that it is better to use RFID (Radio frequency identification). RFID is tag which can be put on any physical part which helps in monitoring not only location but it also helps in security of parts produce. In industries it is often found mismatch in actual and system part produce for that RFID is very beneficial although it can be connected to same server on which we are using SAP and it is directly interface into SAP architecture. This is the big advantage in SAP because its allows other software to interface with it, which is not in case of other ERPs.

RFID tags can be attached to any part and it tells the location of part within or outside industry. The other advantage of RFID is it is programmable we can customize as per our needs this tag.
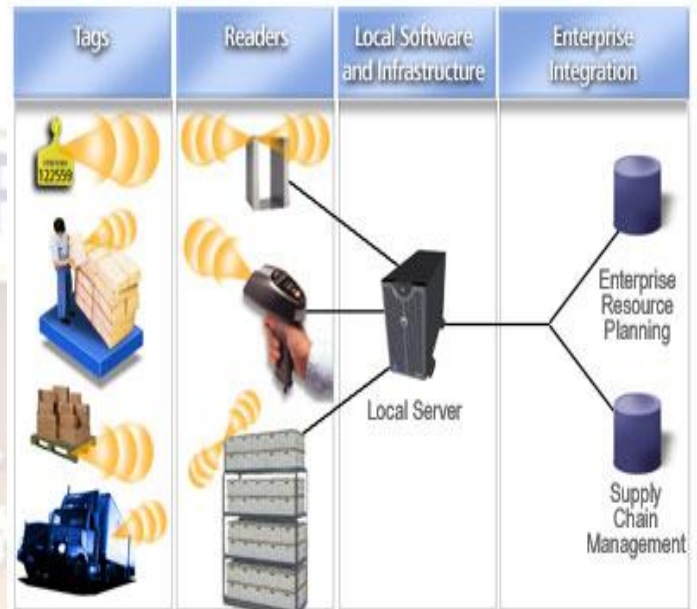

Fig 3 RFID Tags interface with ERP
Adopted Source: AdvancedInfrastructure.com

4. **Model comparison and analysis: -** In this section the performance of this particular model is compare with the earlier process before using BPR and SAP on the basis of cost and service. The procedure for calculating Safety stock is done   in few steps.
In order to describe plant's ERP model,
Let as assume,
SS= Safety stock
x_{it} = monthly demand for item i in   month t;
$\hat{x}_{it}$ = forecast of demand for item i in month $\hat{x}$ t (smoothed demand); and
$\varepsilon(x_{it})$ = error in predicting demand in month t.

Step1 $\varepsilon(x_t) = x_t - \hat{x}_{t-n}$
Where t-n represent last period

Step2 : **make a forecast** (i.e. smoothed demand)
$\hat{x}_t = \hat{x}_{t-n} + \alpha\varepsilon(x_t)$
where, $\alpha\varepsilon$ [0,1]

Step 3 **MAD (mean absolute deviation)**
$MAD = \frac{1}{12}\sum_{t=1}^{12} x_t - \hat{x}_{t-n}$
Step4 **Compute W**, which is ratio of re supply lead time (L) to the duration of forecasting period to duration of forecasting period t. Then

$$W = \begin{cases} \frac{L}{t} & if\ L > t \\ 1 & otherwise \end{cases}$$

Step 5 **Compute safety stock**

$SS_t = \kappa \sqrt{w} \times MAD$
Where k is factor of stock probability

Step 6 **Compute safety stock values**
$S_t = SS_t + L\hat{x}_t$

Adopted source: an applied model for improving inventory management in ERP systems by Muhammad a Razi and F Michael Tarn

The simulation study compared the service levels and costs of the proposed model and the ERP model using simulated items closely resembling cost and demand nature of actual items.

5. **Conclusion: -** The objective of this research was to provide a simple and practical approach for improving inventory management with this particular technique and model of BPR and SAP. There are many models are available for managing inventory but with changing in work culture and advancement in industries this particular models fit for inventory management. This particular model is not restricted to ancillary industry but it can be applied to any industry.

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