



Inventory management procedures in small-scale industries are being researched and analyzed: A Study

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Abstract: - This project/research looked at product quantity analysis (analysis) in this process to gather three months' worth of data from the company that is needed to finish the task for various products from a plant are timed classified into runners repeaters and strangers this information helps plan the production on a flow line vs. occasionally low volume high value produce that can be completed in a job shop the study was conducted at an automobile company that is primarily facing two problems:

Keywords: - Product Quantity Analysis, Job-Shop Production, Inventory Management, and Supply Chain Management

TRODUCTION

Analysis of product quantities Data about product demand must be gathered and understood as the initial step in this process. A cumulative Pareto percentage by volume of all products' stock keeping units is created to achieve this. These customer-generated data points serve as the starting point for demand behaviour analysis. Demand information for annualised product stock keeping units should be divided into monthly, weekly, and daily demand categories. This data often originates from the business plan forecast, which has a time horizon of six to twelve months and is expressed in units. Both high and low volume products start to present themselves by showing the cumulative proportion. It's crucial to take real customer order and sales data into account in addition to the prediction data. By doing this, the actual demand volume and mix variation, which are crucial inputs for calculating takt time, are taken into account.

By sorting the collected data and calculating a match for the production cells by: (1) their related volumes; and (2) product alignment characteristics, the product quantity analysis searches for natural splits in product groupings.

This usually an iterative process and is conducted several times in order to determine a best fit for each cells type. Product alignment characteristics could include the following the criteria:-

1. Align high volume product together.
2. Align to specific customers such as original equipment manufacturers.
3. Align to specific target markets.
4. Align to common manufacturing process.
5. Align to configuration commonality (size, material, functions, etc.).
6. Align to engineering content (standard vs. special).

Inventory management - inventory generally refers to the materials in stock, it is also called the idle resource of an enterprise. Inventory represents those items which are either stocked for sales or they are in the process of manufacturing or they in the form of materials which are yet to be utilised. A manufacturing firm generally carries the following types of inventory-

1. Raw Material - Raw material are those basic un fabricated materials which are have not undergone any operation sincethey are received from the suppliers e.g.. Bright Bars, Rounded Coils, and Pipes, etc.
2. Bought out Parts - These part refers to those finished parts, subassemblies which are

- purchased from outside as per the companies specifications.
3. Work in Process - These refer to the items or materials in partially completed condition of manufacture.
 4. Finished goods Inventories - These refers to the complete products they are ready for dispatch.

This are the above terms are discuss in this project which is used by the company from raw materials up to finished goods materials to complete the procedure.

II. OBJECTIVES

1. To ensure adequate supply of products to customer & avoid shortages as for as possible.
2. To make sure that the financial investment in inventories is minimum.
3. Efficient purchasing, storing consumption & accounting for materials are an important objective.
4. To ensure timely action for replenishment.
5. Scientifically short term & long term materials planning.

III. PROBLEM DISCUSSION

Effective inventory flow management in supply chains is one of the key factors for success. The challenge in managing inventory is to balance the supply of inventory with demand. A company would ideally want to have enough inventories to satisfy the demands of its customers no lost sales due to inventory stock-outs. On the other hand, the company does carrying inventory. Enough but not too much is the ultimate objective. The inventory investment for a small business takes up a big percentage of the total budget, yet inventory control is one of the most neglected management areas in small firms. Many small firms have an excessive amount of cash tied up to accumulation of inventory sitting for a long period because of the slack inventory management or inability to control the inventory efficiently. Poor inventory management translates directly into strains on a company's cash flow. The studied an Automobile company, works in a small scale market distributing the automobile parts to its customers. The company has difficulty in matching its supply with the customer demand efficiently, which means both stock-out of inventory and excess inventory occur in the business? The management problem has affected negatively their profitability mainly due to the existence of excess stock. It is considered that the problem results from insufficient control over inventory and volatile demand for each product on a monthly base. To get a reliable forecast of the demand is not easy task in the wholesaling industry because of being unable to estimate the right quantity of demand during a specific period for each product. Another reason is that the lead-time of most products is long, about three months at the longest.

IV. METHODS OF PROBLEM SOLVING

With the help of product quantity analysis, took the data's which is provided by a company, the data are only three month it is sufficient to calculate the efficient time regarding p.q. analysis and to manage the inventory control in both cases stock out and overstock. First we has been calculated the machining time of each and every product, in a company manufacturing eight hundred plus product for different specification which is required by the vendor company or those company who are only assembled the parts and finally dispatch into the markets. During the CNC Machine shop and then to know the final problem, that is breakdown because of in between inter relation, communication, and information, and one more important failure is that which is sequencing of operation and machines, this are problems which has been seen in the company. During the project research first we improve the plant layout and achieved the efficient machining time regarding the operation per product, and then to collaborate inter departments to provide right information to the right station after the completion of the basic fundamentals we are analysed the data which is provided by company. First to calculate the percentage of the month that means how much quantity produces and what it should be required

in a month, and to know for some process into a year. Than after to find out the cumulative percentage of the product it should gives the information to produce finally how much quantity to produce in a month or a year exactly. This calculation is shown in table 1 below. And also represent in graphically graph no. 1 below, in this graph mainly it categorised the three steps which is required project point of view is very important, (1) Strangers, (2) Runners, (3) Repeaters. This three area symbolically represented in graph with the help of this figure to know quickly which one product is required is high in market.

Table 1 Calculation

part no.	TOTAL DISPATCH	RAT E	% OF THE MONTH	CUMMULATIVE %
MW029715	2726	23.2	1.46	100
R278327	--	0	0	100
SKE 01	0	0	0	100
TAPPER BUSH	0	0	0	100
TCU-31919	0	19	0	97.91
31920	0	0	0	99.72
31947	0	0		99.72
32060	0	474	0	99.01
32061	0	241	0	98.87
32062	0	363	0	98.24
32063	0	405	0	98.17
32069	0	499	0	98.01
32370	0	310	0	97.92
33137	0	323	0	97.91
33913	0	317	0	97.62
36156	0	0	0	97.2
MH-000816	1100	21.5	5.91	96.8
ME-601289	300	75.3	0.16	96.48
601825	0	0	0	96.22
622136	0	5.5	0	96.14
640860	0	7.73	0	96.04
601190	200	57.2	0.1	95.05
601159	550	53.5	0.29	93.02
601160	0	74.9	0	93
MB-395218	2100	70.7	1.12	91.2
ME-601060	0	0	0	90.89
601066	0	0	0	90.26

MB-395119	2100	70.7	1.12	90.01
391112	200	85.1	0.4	89.88
294784	300	31.7	0.16	89.2
301812	0	93.3	0	88.7
391077	0	98.3	0	88.04
35277	497	103	0.26	87.56
161357	0	67.6	0	87.02
25390	2605	101	1.4	86
25296	1200	66.8	0.64	85.53
25266	1	51.4	0	84.88
IF-300007	4010	13.7	2.15	84.88
300087	0	0	0	83.67
300089	0	0	0	83.27
300146	0	31.5	0	82.89
300584	0	0	0	82.78
300641/PDD	0	227	0	82.67
310766	0	0	0	82.48
11.12K STAR LINE	0	188	0	82.2
IKS-349	0	3.09	0	81.89
JRL-SHAFT	0	0	0	80.8
KC3165VE	0	0	0	80.36
KC3166VE	0	0	0	80.19
KC3177VE	0	0	0	80.06
M168911	0	383	0	79.86
168912	0	383	0	79.86
168913	0	379	0	79.66
168914	0	350	0	79.34
168975	0	383	0	79.28
168991	0	0	0	79.19
168992	0	0	0	79.13
IF000766	310	19	0.16	78.98
869	0	27.8	0	78.96

Note: Up to 800 parts

v. RESULT AND CONCLUSION

As I have done internship in a small scale Automobile industry. As I worked there I realise that flow of material was not effectively and efficiently working because of that company facing lots of problems, like stoppage of material on shop floor, shortage of material, improper dispatch of material.

The main reason of these problems that they were not following any inventory management, supply chain management improper coordination with vendors, no vendor development programmes were running and no coordination between inter departments and higher level management to lower level management.

So I did the project in this area so first of all I studied the plant lay-out and sequencing of machines. After studying and analysing, I made some improvement in plant lay-out and machine sequencing, that's why time of assembly line improved.

To avoid the improper coordination I advised to higher level staff to discuss with lower level employs, to share their problems and advised to them coordinate with inter departments like design department, should coordinate with production department.

For improper inventory I did P.Q. analysis for inventory and supply chain management and suggested to higher management to run the programmes for vendor development. So the final conclusion is that as I made contributions that were beneficial for the industry.

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