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AN EMPIRICAL INVESTIGATION OF INVENTORY MANAGEMENT PRACTICES OF MYSORE PAPER MILLS LIMITED BHADRAVATHI – A CASE STUDY

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ABSTRACT

Inventory Management and Inventory Control must be designed to meet the dictates of the marketplace and support the company's strategic plan. The many changes in market demand, new opportunities due to worldwide marketing, global sourcing of materials, and new manufacturing technology, means many companies need to change their Inventory Management approach and change the process for Inventory Control. Despite the many changes that companies go through, the basic principles of Inventory Management and Inventory Control remain the same. Some of the new approaches and techniques are wrapped in new terminology, but the underlying principles for accomplishing good Inventory Management and Inventory activities have not changed. The Inventory Management system and the Inventory Control Process provides information to efficiently manage the flow of materials, effectively utilize people and equipment, coordinate internal activities. Inventory Management and the activities of Inventory Control do not make decisions or manage operations; they provide the information to Managers who make more accurate and timely decisions to manage their operations. This study was conducted to investigate the inventory management practices followed by MPM limited. This study conduct to fill the gap in theoretical and empirical knowledge of Inventory management practices of paper manufacturing units. The data was collected using in-depth structured and non structured interviews with senior managers, lower level managers, operational workers, site-observations and analysis of existing documented data sources. Validity of the data is ensured through triangulation. This qualitative research uses critical analysis of the facts to present aspects of the findings. The research findings reveal that manual operation of the inventory management process.

KEYWORDS

inventory management, inventory control, manufacturing industry, paper mills.

INTRODUCTION

There are four important components for running an industrial organization i.e., Men, machine, material and money. All these four components have to be employed in an industry in order to make the manufacturing process to extract the finished products and marketing it properly to get sales realization with profit. Profit making is an important goal or an object of any industrial organization. To attain the maximum profitability utilizing the above set Four M's to the optimum level. Money is used for procurement of the material which is required for the production. During the time of procurement the requirement of the proper material has to be identified and required quality and quality of material has to be decided in advance. This is nothing but a process of material procurement planning. The very purpose of planning of procurement of material is to purchase the good quality material for a most competitive lowest price. This will help the organization to undertake manufacturing process most effectively with minimum or nil wastage. Many times in an industry organization's improper planning in material procurement leads to filing up material stock in the form of raw-materials; semi-finished goods (W-I-P) unsold finished goods. The aim of such stock is called inventory. Any unwanted stock leads to debt capital which cannot be appreciated as good financial management. Hence, material and money are playing a vital role in the efficient financial management.

STATEMENT OF THE RESEARCH PROBLEMS

Every business firm however big and small has to maintain inventory and it constitutes an integral part of the working capital. It has been estimated that inventory in Indian industries constitute a significant portion of current asset inventories require a significant investment not only to acquire them but also to hold them investment in inventory is said to be idle but it is unavoidable in any organization manufacturing or trading. So inventory cost has become necessary cost.

Thus it would be very interesting to throw light upon the structure of inventory or the company in order to point out the degree of efficiency with which funds were utilized in the major component of working capital.

If the company having a good control and management than it can reduce the cost it increases the profit. The holding period of inventory is more in the company.

OBJECTIVES OF THE STUDY

- To study the effectiveness of inventory management.
- To study the inventory management practices in MPM.
- To evaluate the inventory control techniques in Mysore paper mills limited (MPM)
- To offer suggestion for improving the efficiency in inventory management

SCOPE OF STUDY

This study was mainly concentrated on inventory management being adopted by the company. The purchase procedure followed by the company and further actions for satisfying the requirement are analyzed. The company's procedure for stores will influence more on the level of inventory of the company. So the study of purchase has vital role to understand the efficient system of the company.

LIMITATIONS OF THE STUDY

1. The time constraint which the study has been conducted only for six weeks.
2. The expected delivery schedules may not be possible in some monopoly items. The average level can be fixed after an in depth study.
3. Level of accuracy of results of research restricted to the accuracy level.
4. The ABC classifications were done for materials and some materials were selected and studied. The study can be extended to other materials also on the same lines.

INDIAN PAPER INDUSTRIAL SCENARIO

The paper industry is cyclical in nature: its demand is linked to the level of economic activity and the supply is influenced by domestic production and as well as international trade in pulp and paper. USA (over 30%), Western Europe (around 20%), and Japan (12-15%) account for a major portion of the demand. Global

demands add stagnated in 1990-93 at around 250MN TPA with showing down of economic growth. Per capital consumption actually dropped 3-5% and with dropping demand capacities closed down. The recovery started in 1993-94 with improvement economic outlook. In 1994-95 international pulp and paper prices kept rising on the back of growing demand.

India's per capital consumption is very low at 3 kg against a world average of over 45 kgs, domestic industry has nearly 600 mills with an aggregate capacity of 3.8 MN tons per annum. Out of 600 mills, 30 are large wood/bamboo based mills, 80 are agro based and rest are waste paper based. The effective capacity is about 2.6 million tones as a lot of mills are sick. In the new s print segment total capacity is around 0.4 million TPA (MTPA), of this 73% is dominated by four major players in the public sector while the rest of the capacity is shared by 14 players.

FUTURE PROSPECTUS OF PAPER INDUSTRY

Strong demand from packaging segment will drive demand growth for industrial paper. Establishment of new business area such as telecom and power will lead to increasing literacy levels, thus improving low per capital consumption of paper (3.2 kgs p.a). Besides rapid growth in population, enhanced literacy levels, growing quality consciousness and changing consumer preferences will drive paper demand. In view high capital costs, expansion of existing units and revivals of sick units remain the practical option for capacity addition. Also, paper mills in India have to look for ways to cut down costs to compete with imports.

International paper prices are not expected to price substantially over the short medium term. Domestic paper companies will thus continue to reel under the pressure of reduced margins. However, a depreciating rupee will marginally protect domestic companies from imports. Due to increased supply, some of the companies have put their expansion plans on hold or have reduced their investment opting for lesser capacity expansions.

HISTORICAL PAPER INDUSTRY DEVELOPMENT IN INDIA

Indian paper industry is classified broadly into two categories paper and paper bonds then newsprint. The paper and paperboard segment constitutes of cultural paper, industrial paper and special paper. Paper industry in India has a long history with the first mill being commissioned in 1832. The initial development and growth of paper industry till the early nineteenth century was affected by the shortage of wood (soft wood) in the country. But in 1914, in development of a process based on bamboo lead rapid growth of domestic industry. By the end of sixties, the capacity for paper production lagged, demand and imports increased to approximately 10% of the domestic demand. Most of the domestic production was concentrated in the hands of a few large mills. By the late sixties, bamboo as an input to paper industry came under short supply. Taking this into account, the government of India started encouraging small units based on an agro residue and waste paper in the seventies. Fiscal incentives were also offered. This led to spurt in the number of mills with small capacities.

But from the late eighties industry started facing an oversupply situation lower price realization and plant closures. The downtrend continued till 1992, when demand supply situation improved.

From 1993, step with the easing of the worldwide recession in the industry, investments started increasing. A booming capital market also helped in raising money for new capacities. The industry was in a jolly mood up to 1996.

The increase in supply coupled with a worldwide recession has pushed the Indian paper industry back into down trend. The global cycle was further affected by the Asian crises, which has reduced demand considerably. Since 1990 the paper industry in India, is following global cycle with periods of over capacity leading to drop in paper prices, lower capacity utilization and slow down in investments/capacity addition, followed by closure of mill, decreased in demand supply gap and then back full circle to an increase in paper prices.

BACKGROUND AND INCEPTION OF THE COMPANY

The MPM situated on the bank of river Bhadra at Bjadravathi, Shimoga Dist., Karnataka state, was incorporated in the year 1936 as a joint sector company. The foundation stone was laid by the then Maharaja of Mysore Sri. Krishnarajendra Wodeyar. It was started with a small capacity of Rs.2.5 million. Since inception, the MPM never looked back. It went from one threshold of progress to another expanding its annual capacity to 8000 MT in 1952, then to 18000 MT in 1964 and to 24000 MT in 1972.

In 1976 the company ventured a major expansion project by installing new machinery to produce 75000 MT of news print per annum and increasing the capacity from 24000 MT to 30000 MT per annum of writing and printing varieties of paper. The project was completed during 1981. In 1983, a sugar mill of 2500 TCD was commissioned and thus MPM become the first largest, single location integrated plant in the country manufacturing news, writing and printing paper and sugar at a single location. The integration of sugar mill with paper mill is with the idea of utilizing the by-products of sugar mill i.e., sugar cane baggase for paper production and avoid dependence of forest based raw materials and avoid deforestation. With the commissioning of newsprint project, the company was able to help the country to reduce imports substantially.

BRIEF EXPLANATION ABOUT THE ORGANIZATIONAL STRUCTURE OF MPM

The organizational structure of enterprises would depend upon its size, product manufactured and its fictional divisions. The organizational structure may be flexible. The company may change its structure according to the needs and suitability. In MPM Ltd., the Board of directors is having the major position in the company. The chairman is the chairman cum managing Director (CMD) of the company. He is held responsible for formulating and implementing the policies, Procedures and rules with the assistance of Board of Directors appointed by the Government and various financial institutions. Different functional department heads like production, marketing finance, and HRD & A etc., also assists him.

The Government appoints the General Manager of HRD & A. He always keeps contact with all other functional departments for routine administration. He also keeps direct contact with C.M.D. Each functional department heads are assisted by the Assistant Managers. The Director of Production is in charge of some divisions viz., Material, Paper, Pulp, Sugar, Chemical etc., there is always co-ordination between all functional departments through horizontal communication

INVENTORY MANAGEMENT PRACTICES IN MPM

The literary meaning of the word "inventory" is stock of goods. Every enterprise needs inventory for smooth running of its activities. It serves as a link between production and distribution process. The unforeseen fluctuation in demand and supply of goods also necessitates the need for inventory. It also provides a cushion for future price fluctuations.

The purpose of inventory management is to ensure availability of materials in sufficient quality and quantities as and when required and allow minimizing investment in inventories. Thus it is very essential to have proper control and management of inventory.

Activity Ratios or Turnover Ratios at Mysore paper mills Ltd.,

Activity ratios are calculated to measure the efficiency with which the resources of a firm have been employed. These ratios are also called turnover ratios because they indicate the speed with which assets are being turned over into sales.

Some of the turnover ratios that are used to know the efficiency of inventory management in Mysore paper mills lit..., are as follows: inventory turnover ratio, inventory conversion period, raw material turnover ratio, stores and spares turnover ratio, work-in-process turnover ratio, finished goods turnover ratio, inventory to working capital ratio, fixed asset turnover ratio.

Inventory Turnover Ratio at Mysore Paper Mills Ltd

Inventory turnover ratio measures the velocity of conversion of stock into sales. Usually, a high inventory turnover velocity indicates efficient management of inventory because more frequently the stocks are sold; the lesser amount of money is required to finance the inventory. A low inventory turnover ratio indicates an inefficient management of inventory. A very high turnover of inventory does not necessarily implies higher profits. The profits may be low due to excessive cost incurred in replacing stock in small lots, stock-out situations, selling inventories at very low prices etc.,

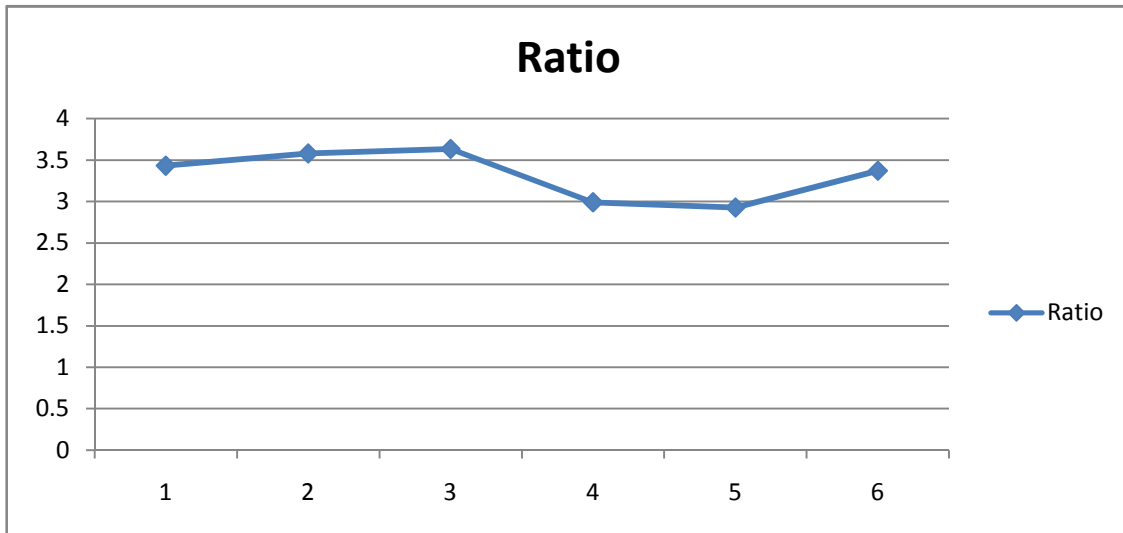
The different components of inventory are raw materials, work-in-process. store, spares and finished goods.

TABLE 1: INVENTORY TURNOVER RATIO (RS IN LAKHS)

| Years | Cost of goods sold | Avg. inventory | Ratio |
|-------|--------------------|----------------|-------|
| 2005 | 37791.16 | 11004.83 | 3.43 |
| 2006 | 40331.81 | 11274.68 | 3.577 |
| 2007 | 46860.56 | 12904.125 | 3.631 |
| 2008 | 44240.68 | 14802.155 | 2.989 |
| 2009 | 45692.28 | 15617.21 | 2.926 |
| 2010 | 44667.86 | 13256.66 | 3.369 |

Source: MPM annual reports

FIG. 1: INVENTORY TURNOVER RATIO



The inventory turnover ratio was 3.43 in 2005 and it is decreased to 2.926 in 2009 because inventory consumed and production high but in the 2010 it is increase to 3.369 it is not good compared to previous year and also cost (cost of goods sold) is high.

RAW MATERIAL TURNOVER RATIO

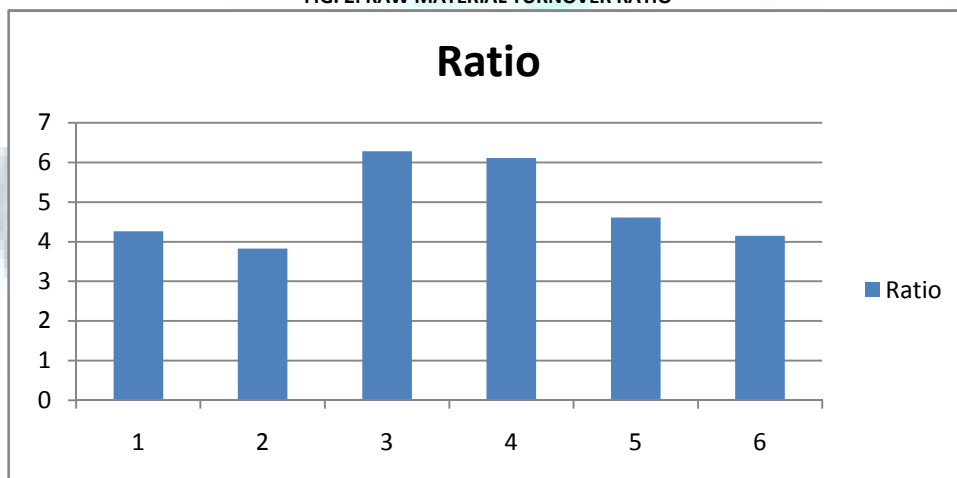
It is the ratio with which we can measure the efficiency with which the firm converts raw materials in to work in progress. Materials consumed can be found out as opening balance of raw materials plus purchase minus closing balance of raw materials.

TABLE 2: RAW MATERIAL TURNOVER RATIO (Rs in Lakhs)

| Years | Sales | Raw material | Ratio |
|-------|----------|--------------|-------|
| 2005 | 32128.00 | 7530.62 | 4.266 |
| 2006 | 34927.31 | 9116.53 | 3.83 |
| 2007 | 41519.00 | 6609.52 | 6.282 |
| 2008 | 39405.00 | 6449.79 | 6.109 |
| 2009 | 42490.00 | 9210.67 | 4.613 |
| 2010 | 33743.00 | 8139.07 | 4.146 |

Source: MPM annual reports

FIG. 2: RAW MATERIAL TURNOVER RATIO



This ratio indicates the relationship between the sales and raw materials. In the year 2005 it was 4.266 and it is increase to 6.282 in 2007 there is strong relationship between sales and raw materials but in 2010 it is decrease to 4.146 it shows decrease the efficiency of the firm.

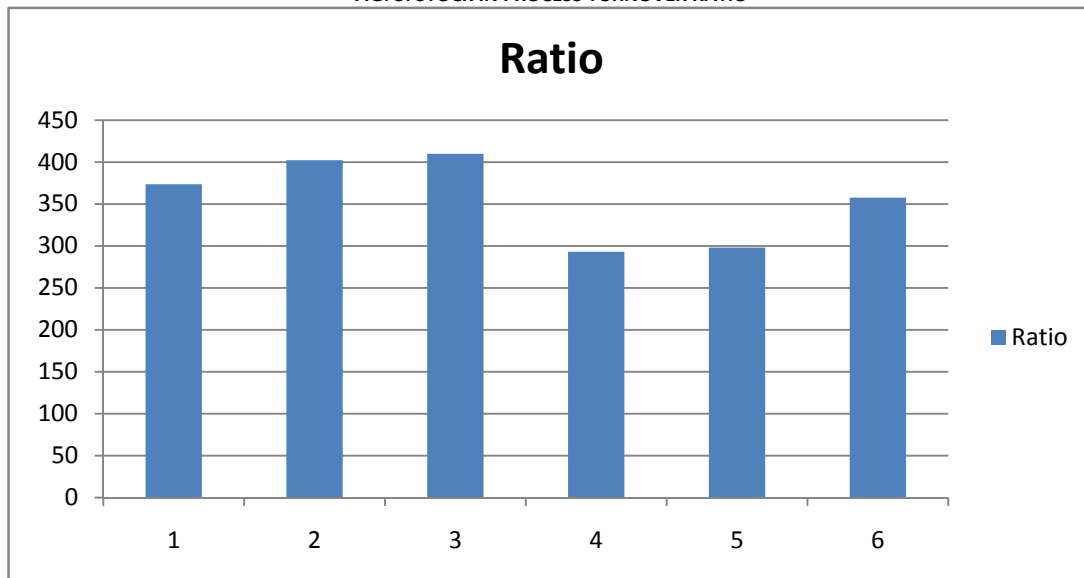
STOCK IN PROCESS TURNOVER RATIO

TABLE 3: STOCK IN PROCESS TURNOVER RATIO (Rs in Lakhs)

| years | Sales | Stock in progress | Ratio |
|-------|----------|-------------------|---------|
| 2005 | 32128.00 | 86.02 | 373.49 |
| 2006 | 34927.31 | 86.82 | 402.295 |
| 2007 | 41519.00 | 101.25 | 410.06 |
| 2008 | 39405.00 | 134.45 | 293.08 |
| 2009 | 42490.00 | 142.56 | 298.05 |
| 2010 | 33743.00 | 94.31 | 357.78 |

Source: MPM annual reports

FIG. 3: STOCK IN PROCESS TURNOVER RATIO



This ratio shows the relationship between the sales and stock in process. It was 373.49 in the 2005 but it is decreased to 298.05 in the year 2009. But in the 2010 it is increased to 357.78 it is not good to organization because stock in process turnover ratio is should be decrease and stock in process could be increase so it is better to origination.

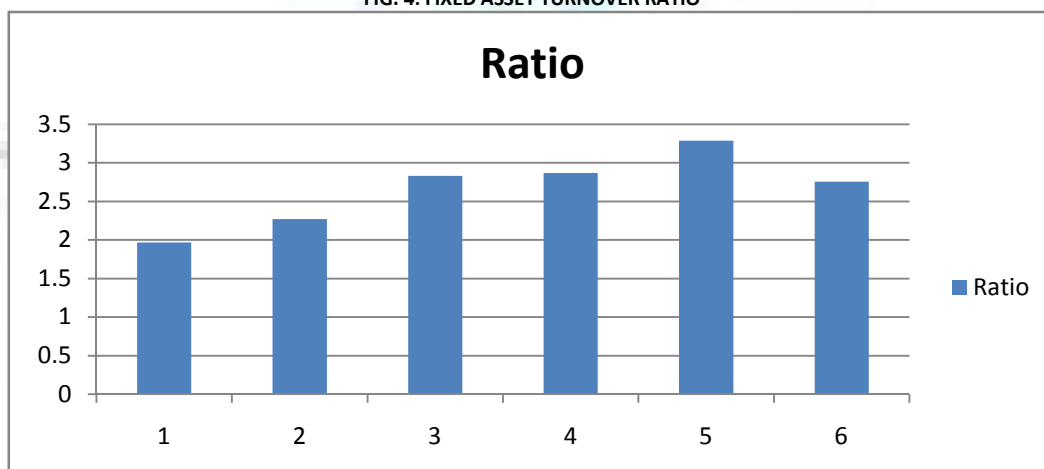
FIXED ASSET TURNOVER RATIO

TABLE 4: FIXED ASSET TURNOVER RATIO (Rs in Lakhs)

| Years | Sales | Fixed assets | Ratio |
|-------|----------|--------------|-------|
| 2005 | 32128.00 | 16268.63 | 1.97 |
| 2006 | 34927.31 | 15409.83 | 2.27 |
| 2007 | 41519.00 | 14660.64 | 2.83 |
| 2008 | 39405.00 | 13745.73 | 2.87 |
| 2009 | 42490.00 | 12914.34 | 3.29 |
| 2010 | 33743.00 | 12234.46 | 2.76 |

Source: MPM annual reports

FIG. 4: FIXED ASSET TURNOVER RATIO



This ratio indicates the extent, which the investment in fixed assets contribution was 1.97 times in the year 2005. And it has increased to 3.29 in 2009. But in 2010 it is sudden changes (i.e. decreased) in fixed assets turnover ratio that is 2.76 because of huge changes in sales so the fixed assets turnover ratio decreased.

INVENTORY CONTROL TECHNIQUES OF MPM LTD**ABC ANALYSIS**

Large number of firms has to maintain several types of inventories. It is not desirable to keep the same degree of control on all the items. The firm should pay maximum attention to those items whose value is the highest. The firm should therefore classify inventories to identify which items should receive the most effort in controlling. The firm should be selective in its approach to control investment in various types of inventories.

The high value items are classified as

'A' items and would be under the tightest control.

'B' items fall into between these 2 categories and require reasonable attention of management.

'C' items represent relatively least value and would be under simple control.

ECONOMIC ORDERING QUANTITY

One of the major inventory management problems to be resolved is how much inventory should be added when inventory is replenished. The EOQ should be applied to Mysore paper mills Ltd for the purpose of many units should be issued for production department as per production schedule. The will involves the ordering cost and carrying cost. For analyzing the EOQ techniques company's 2 years raw materials data should be taken it should be presented and calculated. It is the fixed quantity of material which is ordered when the stock comes down to a reorder level, so that cost of purchasing is equal to cost of storage making the total inventory cost minimum.

There are various ways of determining the EOQ, such as setting out a tabulation of cost for various order quantities until the minimum cost is determined or by formula or by using a graph. The most convenient way is the following formula:

$$EOQ = \sqrt{\frac{2 * \text{Cost of placing an order} * \text{Demand for the period}}{\text{Purchase price per unit} * \text{cost of storage as \% of total landed cost}}}$$

The EOQ applied to Mysore paper mills Ltd raw materials for 2 years. The company's EOW units will be varied in 2 year because of quantities issued to the production department will be change the year after year. If the consumption rates will increase the quantities of raw materials should also be increased for the production. The every item in EOQ techniques presented in table will be used for paper production.

VED ANALYSIS

This classification is usually applied for spare parts to be stocked for maintenance of machines and equipment based on the criticality of the spare parts. The stocking policy is based on criticality of the items. The vital spare parts are those which can cause stoppage of the plant if not available usually such spare parts are known as capital or insurance spares.

HML ANALYSIS

The high, medium and low classification follows the same procedure as if adopted in ABC classification only difference is that in HML, the classification unit value is a criteria and not the annual consumption value.

The items are inventory should be listed in the descending order of unit value and it is up to the management to fix limits for three categories.

HML analysis is useful for keeping control or consumption at departmental levels for deciding the frequency of the physical verification and for controlling purchase.

FINDINGS

1. Inventory turnover ratio are increased from 2005 to 2007(3.43 to 3.631) than it decrease in 2008, 2009 finally it increased in the 2010. As same as the inventory conversion period is decreasing while increased the ratio and increasing while decrease the ratio.
2. Raw material turnover ratio is lowest in 2006 at 3.83 and highest in the year of 2007 at 6.282 it can measure the efficiency of the firm.
3. Stock in process increases in 2007, 2008, 2009 at 101.25, 134.45, 142.56, respectively but it decrease in 2010 at 94.31 it is not better to organization.
4. Stock-in-process ratio should be decrease so it is good to organization but it increase from year to year in 2005 it was 373.49 but it increase 402.295 to in 2008.
5. Investment in fixed asset contribution was 1.97 times in the year 2005, and it has increased in 2009 at 3.29 but in sudden decrease in 2010 at 2.76 times.
6. For making ABC analysis usually companies consider value and consumption. In Mysore paper mill limited, they also consider the value and consumption of raw materials. This is one of the best evaluations of ABC analysis in which the company has developed.

SUGGESTIONS

As per the study inventory management and its implementation in Mysore Paper Mill Ltd., it was revealed that management of the inventories play strong role in the success of the organization

- 1) There is always a threat from the domestic players and a potential threat from the MNC is for the MPM so it is desirable to contract effective barriers to reduce competition.
- 2) The MPM should also concentrate on the diversification so as to ensure expansion and to utilize the unexploited opportunities.
- 3) As the dealers are not satisfied by the margin offered by the company, it should increase the margin for the dealers who have been utilized both for selling and collecting marketing information.
- 4) The company should also target on the high customers who from the customer base from the MNCs.
- 5) The company should invest on more on R&D to come up with new varieties of paper in a cost effective manner.
- 6) The company has use various technologically advanced media such as the internet, mobile, advertising and digital displays to promote its products apart from the conventional media.
- 7) It should periodically contract its dealers and customer and should review its performance.
- 8) Implementation of better and new information system entrepreneur resource planning, software packages, as discussed will cater to the additional information requirements of the company which in turn will improve the efficiency of management of inventory control system.
- 9) For making ABC analysis usually companies consider value and consumption. In Mysore Paper Mill Ltd., they also consider the value and consumption of the raw materials. This is one of the best evaluations of ABC analysis in which the company has developed.
- 10) The store should be moderate according to the needs of the company. This will provide effective, safe and good storage system.
- 11) The company is making open order for the whole year to the supplier and the plants according to monthly schedule produce the inventories.
- 12) The company should follow the first in first in first out method in issuing the materials to the production department.
- 13) These materials issuing practices are doing well and have more contribution towards effective material management. It helps a lot in achieving effective inventory control over the materials in the company.
- 14) The Company which is gives more concentrates on employees benefit for the current year (i.e. the employee's benefit which increased compared to previous year) that has to be reduce.
- 15) The company which gives more cash discount on sales so this is not good for organization.
- 16) Employers do not use any set of safety helmets and also. So it makes compulsory use of safety helmets while doing the work which helps to the efficiency and health of employees.

- 17) The company can consider by producing the other varieties of paper like cards, drawing paper etc.
- 18) Excessive labor in certain department they should try to remove the labor.

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