A Bird Eye View of Inventory Management

Lingaraja M J[1]

Research student, Department of Management Sciences,

Maharaja Institute of Technology Mysore, lingaraj

Dr. Manoj Kumara N V[2]

Associate Professor & Research Guide, Department of Management Sciences,

Maharaja Institute of Technology Mysore

Abstract

Feed industry has 50 years of history in India. It primarily belongs to poultry feed and cattle feed segment. Cattle feed industry is gradually growing in India into an organized sector. Feed manufacturers have increasingly started using newfangled and enlightened methods which lead to exploit the best global practices. Cattle feed industry has got huge growth possibilities in India. Inventory is the stock available to offer for sale, inventory is either finished goods or may raw materials used to manufacture goods offered for sale. Inventory is an important asset for business because inventory turnover represents the primary source of income generation and ensuing earnings to the stakeholders. To ensure the supply of raw materials and stock of finished products are on continuous basis to meet the market demand, to reduce transportation cost of materials, to maintain the optimum level of investment in inventory, to protect goods from theft, obsolescence and wastage to reduce losses & to reduce ordering cost of materials. Cost of inventory has lot of impact on profitability and success of the company. The study period of 5 years from 2014 to 2019 for the analysis and interpretation, analysis is a detailed examination of the elements collected and interpretation is a way of explaining the result of the analysis. The analysis used secondary source of data and the study used various tools, these tools are helps to prove the said hypotheses.

Keywords: Inventory, Inventory Management, Correlation, Feed Analysis, Poultry feed & Cattle feed.

I. Introduction

Inventory management refers to tracking the stock of materials in the godown in terms of quantity, size, shape, weight, dimensions, amount and location to refill them in order to manufacture on continuous basis or to meet the market demand. Usually 20-30% of company's assets are in the form of inventory. Companies put lot of efforts to maintain sufficient inventory. By effective inventory management System Company can meet customer demand without any hurdles. Inefficient inventory management leads to potential loss in sales which cannot be filled. Stocking too much inventory which is not even required can also lead to huge business losses. Categorization of inventory is entirely depends on nature of the business, managers should have proper knowledge regarding material size, price, quantity and its types, before taking any inventory management decision manager should conceder these criteria. CIMA defines that the inventory control is all about "the systematic regulation of stock level". The areas of purchases, ordering, storage receipt and issues are comes under material of inventory.

II. Background of the Study

Inventory is the stock available to offer for sale, inventory is either finished goods or may raw materials used to manufacture goods offered for sale. Inventory is an important asset for business because inventory turnover represents the primary source of income generation and ensuing earnings to the stakeholders. The asset which is stored in the form of inventory by the company in order to fulfill the following three needs.

- ➢ Raw material
- ➢ Semi-finished goods
- ➢ Finished goods

III. Review of Literature

Prof.Manjusha Talmale (2018) in their research paper Research paper on inventory management system' expressed about the stock sizing and ordering system. It gives the concrete understanding of key planning parameters of inventory management. It goes beyond classic inventory management by tearing the logic and calculation which are traditionally use in inventory management and exposes the concealed limitation and flaws. David used excel formulas and spreadsheet for explaining in simple English instead of complicated mathematical formulas. **Daniel Atnafu (2018)** In the article „Impact of inventory management practice on firm‟s competitiveness and organizational performance' author aimed at systematically examine the impact of inventory management practice on firms. Inventory accuracy is all about gaining competitive advantage by increasing efficiency. **Dr. K V Krishna Reddy, Dr, M S Siddarth Sai, Dr. Rakesh Prabhu (2017)** In their article „A study on the selective controls of Inventory management and application of ABC XYZ control matrix' they explained that traditional inventory management models developed to focus more on risk unbiased decision makers. Developing strategies that increase the expected profit and reduce the expected cost over a period.

Yogesh Kumar, Rupesh Kumar Khaparde (2017) In their research paper „FSN analysis for inventory management‟ expressed about various manufacturers and suppliers to deal with the competition to maximize profit. A structural viewpoint which helps to optimize every section of the inventory hence the whole inventory can work collectively well. Especially the book is the outcome of own experience of John in this field and philosophies that taught him the management. **Bijal Pandya, Hemant Thakkar (2016)** In their journal article „A review on inventory management control techniques: ABC–XYZ analysis' expressed techniques of inventory management using ABC and XYZ analysis with criteria and application in practical. **Raja Durratan Sakinah, Raja Suhaimi (2016)** In their article „A study on relationship between inventory management and company performance' published in a journal of advanced management science. This article is the companion for those who wants to increase their familiarity in inventory management to the next level. The author described each topic with strategic approach. **Talatu Muhammad Barwa (2015)** In their article „Inventory control as an effective decision-making model and implementations for company's growth‟ the author makes easier the task of designing and working with an inventory. The inventory management comes to three things the Time, Space and Cost all three aspects are explained well in this article. The article enhances the management skills by providing the constructive view point over inventory management.

Prasanna Chandra (2015) In their book of financial management' expressed that, In the production process inventory provides flexibility in scheduling activity so that an efficient schedule and high employment of capacity would be attained. Lacking in-process inventory, a holdup at any stage in the production activity renders redundant the machines and facilities at consequent stages. This results in delay and idle amenities. **I M Pandey (2014)** In their book of financial management‟ expressed The intend of inventory management is to keep away from extreme and insufficient level of inventories and to maintain adequate level of inventory for the smooth operation of production and sales. It is the responsibility of the finance manager to place the order at right time through the right source to obtain the right quantity at the right price and quality. **Radha Iyer (2014)** In their Article Inventory management they expressed views on purpose of holding inventory, improving effectiveness of inventory management, concept testing, 80:20 Rule, types of inventory, inventory costs and management techniques. **Taygi (2014)** In their article „Optimization of inventory model‟ the author described about techniques to optimize the supply chain in order to maximize the profit. He experienced that the optimized supply chain will also leads to enhance the capacity and management of inventory.

Tom Jose V, Akhilesh Jayakumar, Sijo M T (2013) In their research paper Analysis of Inventory control techniques; A comparative study expressed about the cost of effective inventory management. Every aspect of inventory management is covered in the paper. The author gives the latest technological advancements to current environmental situations and to establish modern warehouse. **Vyuptakesh Sharan (2012)** Inventories should be classified based on their importance and special care should be taken for more important things. The order size of inventories should be economic quantity in order to minimize the cost; The material re-ordering point must be determined in order to avoid no stock situations. An optimum level of safety stock must be maintained. Amaranath. **(2012)** In their book of financial management expressed the inventory management is a continues process which should followed by all firms by their effective management". **M R Garg (2012)** In the article „Balanced feeding for improving livestock productivity‟ the author expressed about increase in milk production and nutrient use efficiency and decrease in methane emission. The article also has the forecast of future livestock requirement, advancement in dairy farming and need of livestock industry. **M Y Khan & P K Jain (2013)** in their book of financial management expressed the views regarding the optimum level of inventory would be different between the different areas. The financial manager has to square the contradictory viewpoints of the various serviceable areas regarding the suitable inventory levels for fulfilling the overall intention of maximizing the owner's capital.

Vyuptakesh Sharan (2012) in their book of financial management‟ expressed the views regarding Inventory management is loaded with both costs and profit. The finance manager has to trade- off between these two in order to maximize the value of the firm. To be specific, he should consider four important points into account. **Max Muller (2011)** in the book Essentials of inventory management author expressed every essential topic of inventory management, firm can watch over inventory and rate of refilling, which products the firm should invest on with the help of stats and everything else. The book is well constructed in the viewpoint of establishing a good inventory system. It also focuses on risk concerned in inventory management. **Murali and Sinhala (2010):** In their tome of working capital management, they said that inventory management is a tool to manage working capital more effectively. **Ramkrishna. (2000)** In their piece of writing they said that the firm should chose the method for inventory management only after detailed study of their firm size, production process, capacity and availability of raw materials. P. V. Kulakarni and B. G. Satyaprasad (2011) In the book „financial management‟ they expressed that in the view of financial manager, value of the raw materials is not equal to inventories, the firm has also invested in consumables. Financial manager should believe that inventory as locked up capital. On the other hand the departments which consumes for, spares, work-in- progress, financial goods and scrap for various functions.

IV. Statement of the Problem

Cost of inventory has lot of impact on profitability and success of the company. Inventory management and its optimized decisions are based on finding of key success factors and right decision at the right time. Inventory management of production oriented company plays vital role in analyzing the efficiency of production and utilization of available resources. The general methods of inventory management and the methods used in KMFCFP in particular are analyzed in this study.

V. Objectives of the Study

- To analyze the performance of the company in handling of raw material.
- To analyze the significant changes in handling the inventory using inventory management techniques.

VI. Research Methodology

6.1 Type of Research

Descriptive research method is used for the research work.

The research design is the blueprint for the research, which guides for collection of data in different phases of the project. It frames the work which specifies what type of information is to be collected the source of different types of data and procedure and formalities of collection in order to solve the problem.

6.2 Sources of Data

- **Primary Data:** It is the first hand data which is collected directly from the staff, executives and employees of the company by personal interview for the purpose of the study.
- **Secondary Data:** The secondary data is the data which already available. It has been collected from various in print and unpublished sources like: Annual reports, Directors‟ report, published financial

statements, Broachers, Annual general meeting proceedings and Tender advertisements.

6.3 Tools for the Study
A. Financial Tools for Analysis
  i.   Material values
  ii.   ABC Analysis
  iii.   VED Analysis
  iv.   HML Analysis
  v.   FSN Analysis
  vi.   XYZ Analysis

B. Statistical Tools for Analysis
  i **Correlation:** Communication between 2 variables.

6.4 Data Processing and Analysis Structure
The five years inventory data collected from the stores department of the company has been segregated into individual materials. Materials are compared with their respective five years opening balances, purchases, consumption; inter unit transfers and closing balances.

VII.   Data Analysis
The study period of 5 years from 2014 to 2019 for the analysis and interpretation, analysis is a detailed examination of the elements collected and interpretation is a way of explaining the result of the analysis. The analysis used secondary source of data and the study used various tools, these tools are helps to prove the said hypotheses.

Table – 1.1   **Materials Average Annual Data**

Material	Avg in 2015	Avg in 2016	Avg in 2017	Avg in 2018	Avg in 2019
Calcite powder	1128482	2635059.8	1866381	1835658.5	1448445
Coconut doc	85210013	100411353	112162532	59542923	33884767
Common salt	1358440	1936547	2594602	2130641	2646219
Cotton seed doc	29394384	63620171	64069607	46098409	14645215
DORB	59352977	69370223	129526309	130464220	111955045
MAIZE	396768001	377703931	429544955	418963978	199779037
MMCF50	9146275	14179001	17121753	19281722	14680914
MOLASSES	24941166	43534027	56026057	57811569	46665219
RAPE seed	49062417	78039860	76966419	68729836	48717014
RICE polish	25407345	47149434	53061396	52506549	40045755
UREA	2773172	4426025	4856397	5566292	4317700

- Opening value for the first two years are lower compared to next three years. For the last three years the company has maintained the substantial increases in the opening balances of Calcite powder that means production.
- At the beginning of 2014 the opening balance of Coconut Doc is above Rs.3 Cr which is above the average level of opening stock. In the second year of the table the opening stock was at the low level due to high consumption in the previous year and then it has been managed above the average level in the third and fourth subsequent years.
- In the beginning the value of common salt is at peak i.e. Rs. 838663 and in the second year it was declined to below Rs. 1 lakh. In the last 3 years it was maintained more or less near to the average level.
- In the first year the value of cotton seed was above Rs. 15000000 and it has been declined to below Rs. 10000000 in the second and third years. In the fourth year it was increased drastically to Rs. 24638464 which is highest value in the 5 years due to low consumption.
- The value of Dorb in the 2014-15 and 2017-18 was very high i.e, above Rs. 30000000 and in the second third and fifth year it was below the average level i.e. Rs. 20000000.
- In the year 2014-15 the value of Maize is worth Rs. 835176678.1 which is highest in subsequent 5 years.
- In the year 2014-15 the value is too high and in the year 2015-16 it was too low i.e. Rs. 350759.685. There is gradual increase in third and fourth years and witnessed the drastic increase to Rs. 2999165.38 in

the year 2018-19.

- In the year 2014-15 the value is Rs. 15060381.37 which is 5 years The opening balance of Rice Polish at the beginning of 2014 was highest in the 5 years i.e. Rs.14616855.68, by the second and third year it was declined to below Rs. 5000000 which is lesser than average level.high; in the second year it has been decreased to Rs. 2070431.246 which is 5 years low. In the year 2016-17 opening balance was drastically increased above average level and gradually decreased in last two years.

- The value of Rape seed in the year 2014-15 was Rs. 41091544.2 which is 5 year high. In the second year there was a drastic decrease i.e. Rs 2311873.24 and increased in third year and the same up and down trend continued in next subsequent two years.

- There is a downward trend in the value of Urea from the year 2014-15 to 2017-18, i.e. Rs. 2378198.43 to 351965 where value of the first year stands in highest place and value of fourth year stands in lowest place.

Table - 1.2   **Methods of Analysis of study**

Analysis	Maize	Dorb	Coconut doc	Rape seed	Molasses	Rice polish	Cotton seed	MMCF 50	Urea
ABC %	48.13 %	13.22 %	10.33 %	8.49%	6.05%	5.76%	4.96%	1.96%	0.58 %
VED %	48.13 %	13.22 %	10.33 %	8.49%	6.05%	5.76%	4.96%	1.96%	0.58 %
HML %	48.13 %	13.22 %	10.33 %	8.49%	6.05%	5.76%	4.96%	1.96%	0.58 %
FSN%	40.46 %	17.98 %	11.06 %	7.84%	7.81%	6.45%	4.93%	2.26%	0.61 %
XYZ%	78.40 %	5.89%	4.28%	3.57%	2.62%	2.57%	1.84%	0.37%	0.21 %

- The 11 different raw materials segregated into A, B & C categories based on their value. Material Maize, Dorb and Coconut Doc are belongs to „A" category which has occupied 48.13%, 13.22% and 10.33% respectively and covered 71.68% of total materials. Material Rape seed, Molasses and Rice Polish belongs to „B" Category which occupied 8.49%, 6.05%, 5.76% respectively and covered from 71.68% to 91.98% of total materials. Materials Cotton seed doc, MMCF50, urea, Common salt and calcite powder belongs to „C" categories which occupies 4.96%, 1.96%, 0.58%, 0.28%.

- In this case three materials are considered as vital they are Maize, Dorb and Coconut Doc which has 48.13%, 13.22% and 10.33% respectively in overall materials. . In this case five materials are considered as essential goods they are Rape seed.

- Materials Coconut doc, Rape seed and rice polish are belongs to slow moving category with 11.06%, 7.84%, 7.81% respectively. Company can provide less important for managing these materials.

- Materials Molasses, Cotton seed doc, MMCF50, Urea, Calcite powder and common salt are comes under Nonmoving category with 6.45%, 4.93%, 2.26%, 0.61%, 0.31% and 0.29% respectively. Company can manage easily without hard inventory management.

- Materials Rape Seed, Dorb, Coconut Doc, Molasses are belongs to Y category with 5.89%, 4.28%, 3.57%, 2.62% respectively. Company can manage these materials with less inventory control.

- In this Z category is very huge which has Cotton Seed Doc, Rice Polish, MMCF50, Urea, Common Salt, Calcite Powder with 2.57%, 1.84%, 0.37%, 0.21%, 0.15% and 0.11% respectively

Table – 1.3   Correlation r values of Individual Product

Material	Calcite powder	Cocon ut doc	Comm on salt	Cotton seed	Dorb	Maize	MM F5 0	Mol asse s	Rape seed	Rice polish	Urea
Calcite powd	1.00	0.43	0.17	0.85	0.01	0.25	0.42	0.44	0.86	0.67	0.52
Cocon ut doc	0.43	1.00	(0.25)	0.54	(0.25)	0.76	(0.11)	(0.07)	0.67	0.18	(0.10)
Comm on salt	0.17	(0.25)	1.00	(0.31)	0.80	(0.41)	0.69	0.78	0.23	0.66	0.65
Cotton seed	0.85	0.54	(0.31)	1.00	(0.24)	0.59	0.22	0.16	0.78	0.43	0.32
Dorb	0.01	(0.25)	0.80	(0.24)	1.00	(0.01)	0.88	0.90	0.27	0.74	0.82
Maize	0.25	0.76	(0.41)	0.59	(0.01)	1.00	0.16	0.10	0.61	0.27	0.14
MMC F50	0.42	(0.11)	0.69	0.22	0.88	0.16	1.00	0.99	0.58	0.94	0.99
Molass es	0.44	(0.07)	0.78	0.16	0.90	0.10	0.99	1.00	0.60	0.95	0.97
Rape seed	0.86	0.67	0.23	0.78	0.27	0.61	0.58	0.60	1.00	0.81	0.63
Rice polish	0.67	0.18	0.66	0.43	0.74	0.27	0.94	0.95	0.81	1.00	0.95
Urea	0.52	(0.10)	0.65	0.32	0.82	0.14	0.99	0.97	0.63	0.95	1.00

From the above table it is evident that Coefficient of Correlation is adopted for all level of inventory, where out of 11 units the level of correlation the level of correlation is very low between only 2 units i.e. Maize & Dorb.

VIII.   Results & Discussion

- Overall management of opening balance of coconut doc is quite good.
- The Company has maintained good standards in consumption of Coconut doc in the 5 subsequent years
- The overall opening balance of common salt is good.
- Company has not managed consistent opening balance of material Dorb.
- The overall consumption of Dorb is good since the company has increased the level gradually.
- In the year 2015-16 opening balance of Maize declined to lowest level due to huge consumption in previous year. In the last three subsequent years the opening balances are near to average level which shows a good trend. In the year 2016-17 opening balance was drastically increased above average level and gradually decreased in last two years.
- In the year 2016-17 opening balance of MMCF50 was drastically increased in the year 2018-19 Molasses has witnessed the drastic increase i.e. Rs. 19070829.57
- The overall trend in consumption of Rape seed is not satisfactory.
- The company has not maintained the consistency in closing balance of Rape seed.
- The consumption level of Urea was gradually increased from the year 2014-15 to 2017-18 i.e. 8% to 26% and the consumption level was decreased to 20% in 2018- 19, but since the average level is 20% it won"t affect the production.
- Material Maize, Dorb and Coconut Doc are belongs to „A' category.
- Material Rape seed, Molasses and Rice Polish belongs to „B' Category.
- Materials Cotton seed doc, MMCF50, urea, Common salt and calcite powder belongs to „C' categories.
- Vital category of materials are Maize, Dorb and Coconut Doc.

- The co-relation between the consumption and purchase of raw-material Calcite powder is quite good. The material is expensive and requires more working capital so the company should purchase only as per requirement. This shows the efficient management of working capital. It is suggested to improve the working capital policy to provide the required funds for inventory.

- Material Common salt's analysis shows that the company holding huge amount of common salt compare to its requirement in production. The intention behind holding this particular stock is it is available at lower prices, so it does not require huge money. In other hand the procurement cost may become high if the company buys it often.

- The consumption of material Cotton seed shows this particular material did not used throughout the year due to unavailability in some season. However the firm substituted this with relevant suitable material which does not affect on quality and quantity of final product.

- The company is managing the materials Calcite powder and Dorb with same strategy. The particular material Dorb is costly compared to calcite powder. Therefore in order to avoid the financial burden company can maintain only to the extent of requirement.

- The inventory management techniques such as ABC, VED, HML, FSN & XYZ are effective tool for inventory management. As on today in Karnataka cooperative milk producer federation limited traditional methods of inventory management system is in practice. Scientific method of inventory management should be utilized in the company in order to manage the inventory in more effective manner.

IX. Conclusion

KMF Ltd. is one of the pioneers for the development of cooperative forming. The inventory which plays a vital role in financial management of KMF Cattle Feed Plant which is having a direct linkage for the data analysis in the project report covered in detail regarding the all essential aspects of inventory management in KMF Cattle feed plant Shikaripur, it is noted that the inventory management practices adopted by the company are very traditional and which is required to give an essential results. But study reveals that there is still a need for effective adoption and implementation of scientific methods of inventory management techniques which can help the company to improve productivity which in turn increases the profitability.

Reference

1) A review on Inventory Management" by Bijal Pandya, Hemant Thakkar (Vol:2(3), 2016)
2) A study on the selective controls of Inventory management and application of ABC XYZ control matrix' by Dr. K V Krishna Reddy, Dr, M S Siddarth Sai, Dr. Rakesh Prabhu (Volume 16, May 2017).
3) FSN analysis for inventory management' by Yogesh Kumar, Rupesh Kumar Khaparde (Volume 5 Issue II, 2017).
4) International journal for research in applied science and engineering technology (IJRASET) by Prof.Manjusha Talmale (vol;ume: 5 Issue 4, 2018).
5) Analysis of Inventory control techniques; A comparative study by Tom Jose V, Akhilesh Jayakumar, Sijo M T (Volume 3, Issue 3, 2013).
6) Optimization of inventory model' by Taygi (2014).
7) Impact of inventory management practice on firm"s competitiveness and organizational performance' by Daniel Atnafu (2018).
8) A study on relationship between inventory management and company performance' by Raja Durratan Sakinah, Raja Suhaimi (2016).
9) Inventory control as an effective decision-making model and implementations for company"s growth" by Talatu Muhammad Barwa (2015; 3(5): 465-472).
10) Balanced feeding for improving livestock productivity by M R Garg (2012).

Websites

1. www.krishijagran.com
2. www.clfma.org
3. www.bis.gov.in
4. www.researchgate.net
5. www.dairyknowledge.in
6. www.livestockcensus.gov.in