

A CASE STUDY ON THE YEARLY MEAT CONSUMPTION AND INVENTORY MANAGEMENT DECISIONS IN KERALA

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Abstract

Meat processing industry play a major role in today's world. The global meat industry is a global business hitting 315 million tons of meat worldwide in year 2014. Meat in its broad definition is animal tissue, used as food. Meat industry is one of the top food industries in the world. The importance of meat in the food habit of human being is already evidenced by its extensive use. The study has been undertaken in Indian Meat Company. The company was originally designed to slaughter and process 30 pigs. The meat products of India diversify its activities by handling cattle, buffalo, goat, rabbit and poultry utilizing the available facilities. At present the company is processing forty six varieties of meat and meat products derived from the above species.

The study deals with the inventory management at Indian Meat Company. There are basically three types of inventory which constitute the smooth functioning of the organisation. These include raw materials, work in progress and the finished goods. Finished goods are those goods that have completed the manufacturing process but have not yet been sold or distributed to the end user. In accounting language inventory means stock of finished goods only. The study aims to understand the inventory management existing in the company.

Indian Meat Company possess several varieties of meat products. These products are produced in bulk without considering their consumption pattern or level. It is therefore very important to manage the inventories efficiently and effectively in this organization.

This study aims at finding out the yearly differences on purchase value of products at Indian Meat Company.

Data used for the research was collected from secondary sources. The data is analysed by calculating FSN analysis and the ANOVA test. Tables are used for presenting the data.

A better inventory management will surely help the company in solving the problems the company is facing with respect to inventory and will pave the way for reducing the huge investment or blocking of money in the inventory.

Key Terms: Inventory Management, Yearly consumption, Meat products, FSN

Introduction

Meat processing industry play a major role in today's world. The global meat industry is a global business hitting 315 million tons of meat worldwide in year 2014. Meat in its broad definition is animal tissue, used as food. Meat industry is one of the top food industries in the world. The importance of meat in the food habit of human being is already evidenced by its extensive use. The study has been undertaken in Indian Meat Company. The company was originally designed to slaughter and process 30 pigs. The meat products of India diversify its activities by handling cattle, buffalo, goat, rabbit and poultry utilizing the available facilities. At present the company is processing forty six varieties of meat and meat products derived from the above species.

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The inventory management is used in the broader sense to denote the control over the stock of the goods. Every enterprise needs the inventory for the smooth running of its activities. An inventory management is a set of policies and controls that monitor the level of inventory and determines what level should be maintained. It serves a link between the production and distribution process.

The study mainly aims to understand the inventory management existing at the Indian Meat company, as the company have large varieties of products. The study also aims to categorise the products on the basics of the consumption value and to recommend suitable techniques for the company to have an improved control over the inventory. Inventory management is very much essential in the modern scenario. A proper inventory management system will help the company to bring profit in the long run and to ensure the smooth functioning of the company.

Statement of Problem

A study on inventory management at Indian Meat Company is undertaken to know the inventory performance of the company. Indian Meat Company possess several varieties of meat products. These products are produced in bulk without considering their consumption pattern or level. It is therefore very important to manage the inventories efficiently and effectively in this

organization. The study in inventory management is also important to understand the stock level and hence enhance the smooth functioning of the organization.

Literature Review

An article on inventory management written by Baiju S. and Thattil G.S (2000), highlighted the importance of inventory control. In this article they described inventory control as something that should be front-of-mind for anyone in the wholesale distribution business. According to them, inventory control involves having greater oversight over one's stock. They also point out that inventory control is important to maintain the right balance of stock in the warehouse. When a company is having proper inventory control it is able to satisfy the needs of the customers. This would further enhance the growth of the company. An efficient and effective inventory management system is very much important for the smooth functioning of the company.

The parameters of existing model of inventory control was studied by Chakrabarti (2003). The main parameters which are taken into consideration include time duration, number of stocking points, nature of product, nature of demand and the nature of supply. Based on this there emerged several models like economic order quantity model and the economic production quantity model. Economic order quantity model will determine the optimal order size that determines the sum of carrying cost and the ordering costs. Overall the models of inventory will have a huge effect on the working of the entire organisation.

Ashok Khurana and Mandeep Singh (2005), pointed out that The decision taken by the management always depend on the traditional method of inventory control models. The author highlights the importance and the advantages of having traditional methods of inventory control .He points out that traditional method is expensive and is not a cost reducing technique. Even

though it is expensive it has the ability to manage the inventory. As far as any manufacturing unit is taken into consideration this concept will hold the most.

Rajveer Rawlin (2005), In response to this system many companies develop comprehensive management modules and systems. These new packages include many several features which were designed effectively and efficiently to help the worldwide distributors to manage the warehouse stock. But even though they have been useful for a shorter period of time, later they feel that those were not an appropriate technique for managing the inventory.

Wolf Bagby (2006) wrote an article on managing the inventory. It becomes easier for the organization to avoid inventory storage, to meet the profit goals, to shorten the cash cycle, to avoid excessive carrying cost for unused inventory and to improve the profitability by decreasing the cash conversion and by adopting the just in time systems. According to this study companies need to have more knowledge about managing the inventory. This would enhance the smooth functioning of the organization. Another benefit of maintaining inventory is that it helps to boost the financial performance. In fact large number of manufactures enjoys the savings and better performance by choosing the approach of inventory reduction. So proper managing of inventory is very much essential to have a control over the inventory which in turn would benefit the organization.

Asfaque Ahmad (2007) on an article about the inventory turnover ratio related to the handling of inventory. In this article the author defines inventory turnover ratio as the activity ratio that evaluates the liquidity of the inventories of a company. In short it denotes the speed at which an inventory gets converted to sales. A higher inventory ratio is a benefit for the company. Lower inventory turnover ratio further indicates that company is facing a problem of overstocking or understocking. Inventory turnover ratio is calculated with the formulae $\text{sales by inventory}$. It also

provides some indication to the adequacy of a company's inventory for the volume of business being handled.

D Hoopman (2007) on an article about Inventory planning and optimisation highlights that different industries have different inventory profiles and requirements. Research has indicated that company will be able to manage the inventory properly if it has got a proper inventory planning .This in turn will be highly beneficial for the company to make profit and to have a proper control over the inventory. This is very much important as inventory is been defined as an asset for the organization. But improper management of inventory will make it to be a liability for the organization. So inventory planning is very much needed for the success of any organisation. Any improper management of the inventory should be rectified very fast to avoid the problems which the company would have been faced in the future.

Fahad K.P (2009) wrote a journal on the debtor turnover ratio related to inventory management. Debtor Turnover ratio is also known as Receivables turnover ratio. It is computed by dividing the net credit sales during a period by average receivables. This ratio simply measures how many times the receivables are collected during a particular period. It is a helpful tool to evaluate the liquidity of receivables. These ratios hold a great advantage in the inventory management for proper management of the debts. These ratios are important in determining whether a company's management is doing a good enough job of generating revenues, cash, etc. from its resources. A rise in this ratio indicates the firm is expanding quickly and sale also increasing rapidly. On the other hand decline in this ratio indicates a reduction in the efficiency or fall in demand for the firm's product.

Kim and Benton (2009) wrote an article about the survey of inventory models with variable lead time. Lead time is defined as the time from moment when the customer places an order to the

moment when it is received by the customer. This article presents a continuous inventory model in which a linear relationship between lot size and lead time is established. In this model they verified that any business can make considerable savings if one can think about the impact of lot size on lead time and on the requirement of buffer stock. Lead time plays an important role in every field related to inventory management. Shortening the lead time can lower the safety stock and can increase competition ability in the business.

Alfred Francis (2010) published a journal on the types of inventories. The article mainly focuses on transit and the buffer inventories. As inventory need to pass through different levels of manufacturing, inventories need to be transported from one location to another location. These inventories are called transit inventories as they are in a transit from one location to another location. Buffer inventory is the amount of stock which is in excess compared to the current demand of goods. These inventories are used to counter attack the counter attack the uncertainties of demand and supply. They could be used to take care of unforeseen situations like poor quality and poor transportation.

Mathew T Taylor (2010) wrote an article on the anticipation inventory .In this article it says that firms often purchase and hold stock which is much higher than their present requirements in anticipation of a future event. These events can include seasonal variations in demand, price variation and an impending labour strike. These methods would allows the firm to build up their inventory reserves when the demand is declining and when the demand rises they can utilise these inventory. In this case the firms do not want to increase their production capacity and overload the workers in case if there is a sudden rise in the demand. These inventories are very helpful in that organisation which frequently meets with the problem of overstocking of inventories.

Raphella D (2014) published an article on the inventory management. This often means posting the production of newly completed goods to the inventory total as well as subtracting the most recent shipments of `finished goods to the buyers. This article points out that lack of awareness about inventory management could account for the rising increase in the raw material wastages, lost sales, product shortages, backorder penalties etc. Finished goods will always provide for better customer service. The main goal of inventory management is to achieve a proper service against the optimal cost.

Akbar T (2015) published an article on the essentials of inventory control systems. According to him essentials of inventory control system can be grouped into three major classes. These include long range planning, intermediate policy making and short term scheduling. Long range planning is needed to budget capital for facilities and for inventory investment. This would also help in a long run to arrive at a balanced budget in view of long range business forecasts. Short term scheduling is always consistent with the inventory policy. It should always be done with reference to a consistent of policies which will govern the levels of production and the kind of employment to be maintained in that particular organisation which in turn will contribute to the profit and growth of the organisation.

Ashok A K (2015) published an article on the advantages of inventory control. The main advantages discussed in this article are that proper inventory control will help in keeping the investment in inventories as low as possible. This would further enhance the availability of material by providing adequate protection against uncertainties of supplies and consumption of materials. Inventory control will further reduce the changes of going out of stock and leads to reduction in inventory levels. As a result of this more of the capital invested can be used for other operations. This provides flexibility to allow the change in production lines due to changes

in the demand pattern. Thus in short proper inventory control will provide adequate customer service and thereby allows the full advantage of economies of bulk purchase and transportation.

Arjun S P (2015) published an article on the statistical tool ANOVA. ANOVA known as the Analysis of Variance is a statistical technique used to investigate and the model exhibits the relationship between a response variable and one or more independent variables. It is a useful tool to determine if more than two population tools are equal. The technique uses the probability distribution function and information about variances of each and the grouping of populations will help to decide if there is any variability between and within each populations. Thus Analysis of Variance is a useful tool to determine if there is any statistically significant difference between and within the groups.

Arjun Singh (2015) published an article on the financial objectives of inventory management. The main important factor is the economic purchase. Every attempt aims to effect the economy in a positive manner and to bring profit to the organisation. The main financial objective of inventory management is that it would result in optimum investing and efficient use of capital. There should not be any excessive amount of investment in stock.

Kapil Singh (2016) wrote an article which describes the various types of inventories. According to him there are basically four types of inventories. They are raw materials, consumables, work in progress and the finished products. Inventories which are semi manufactured products. They represent products that need more work before they become finished products for sales. Finished products are those completely manufactured products which are ready for sale. Finished goods are the final type of inventory. All these types of inventories need to be coordinated for the proper functioning of the organisation.

Objective of Study

This study aims at finding out the yearly differences on purchase value of products at Indian Meat Company.

Methodology

Data used for the research was collected from secondary sources. The data is analysed by calculating FSN analysis and the ANOVA test. Tables are used for presenting the data.

Discussions and suggestions

FSN Analysis. All the items in the inventory are not required at the same frequency. Some are required regularly, some occasionally and some very rarely.

Classification of items based on FSN analysis

| FAST MOVING ITEMS | |
|-------------------|-----------------|
| Serial No | Items |
| 1 | Beef bits |
| 2 | Veal bits |
| 3 | Buffalo bits |
| 4 | Beef liver |
| 5 | Pork bits |
| 6 | Pork curry cut |
| 7 | Pork slices |
| 8 | Pork tenderloin |
| 9 | Mutton bits |

| | |
|----|----------------------|
| 10 | Janatha chicken |
| 11 | Beef Tenderloin |
| 12 | Pork chops |
| 13 | Dried beef |
| 14 | Broiler chicken |
| 15 | Quails |
| 16 | Boneless chicken |
| 17 | Rabbit meat |
| 18 | Chicken curry cut |
| 19 | Chicken thigh |
| 20 | Chicken drum stick |
| 21 | Chicken breast |
| 22 | Cocktail sausage |
| 23 | Pork sausage |
| 24 | Beef cutlet |
| 25 | Bacon rashers |
| 26 | Cooked ham sliced |
| 27 | Smoked ham sliced |
| 28 | Pork achar |
| 29 | Beef sausage |
| 30 | Beef achar |
| 31 | Chicken sausage |
| 32 | Chicken sausage bulk |

| | |
|--------------------------|------------------------|
| 33 | Chicken salami |
| 34 | Chicken and ham sliced |
| 35 | Chicken achar |
| 36 | Chicken cutlet |
| 37 | Salami sausage sliced |
| SLOW MOVING ITEMS | |
| 1 | Green ham bulk |
| 2 | Beef keema |
| 3 | Turkey curry cut |
| 4 | Salami sausage roll |
| 5 | Bacon whole |
| 6 | Smoked ham bulk |
| 7 | Chicken salami full |
| NON MOVING ITEMS | |
| 1 | Masala sausage |
| 2 | Hot dog sausage |

FSN analysis will give importance on the rate of consumption. Fast moving items are frequently issued from the inventory, slow moving items are less frequently issued and non-moving items are not issued from the inventory at all.

Percentage of items based on FSN analysis

| Categories | Total number of items in classes | Percentage |
|-------------------|---|-------------------|
| F | 37 | 80.4 |
| S | 7 | 15.3 |
| N | 2 | 4.3 |
| Total | 46 | 100 |

The above table shows the classification of various components as fast, slow, and non-moving items using FSN analysis based on their movements. From the classification F items are those which move fastly and constitute 80.4% of the total components. S items are those which moves slowly and constitutes 15% of the total components and N items are those which does not move and constitute 4.3% of the total components.

ANOVA TEST:**ANOVA Results between purchase value and year-descriptive**

| Year | Mean | Standard deviation |
|-------------|-------------|---------------------------|
| 1 | 687373.33 | 530692.078 |
| 2 | 568110.67 | 186131.821 |
| 3 | 27751664.67 | 24893820.756 |
| 4 | 25674289.00 | 4149713.383 |
| 5 | 43733749.00 | 8693582.060 |

ANOVA Results between purchase value and year

| | Df | F | Sig |
|----------------|----|-------|-------|
| Between groups | 4 | 7.395 | 0.005 |
| Within groups | 10 | | |
| Total | 14 | | |

The given above table shows the ANOVA results for the year and the purchase value. It was indicated that mean from 2012 to 2016 was showing a fluctuation in nature .In the year 2011-2012 it was found to be 687373.33 whereas in the year of 2012-2013 was found to be 568110. So there comes the trend of increasing and decreasing of mean. In the 2015-2016 the mean and standard deviation was found to be 43733749 and 8695582 respectively.

The standard deviation also shows a similar nature. In the year 2011-2012 the standard deviation was found to be 530692.078.3. At the end in the year 2015-2016 the standard deviation stood at 8693582.06. It was found that there comes a significant difference of 0.005. This value is less than 0.05. So we reject the null hypothesis.

So alternative hypothesis states that there is statistically significant difference between the purchase value and the year. From table there exists a statistically significant difference between purchase value and the year .The difference is likely to found out by post-hoc test.

Post hoc results of ANOVA

| (I) Year | (J) Year | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|--------------------|-----------------------|--------------------------|------------|-------|-------------------------|-------------|
| | | | | | Lower Bound | Upper Bound |
| Year 2011- 2012 | Year 2012- 2013 | 119262.7 | 9748963 | 1 | -3.2E+07 | 32203900 |
| | Year 2013- 2014 | -2.7E+07 | 9748963 | 0.11 | -5.9E+07 | 5020346 |
| | Year 2014- 2015 | -2.5E+07 | 9748963 | 0.152 | -5.7E+07 | 7097722 |
| | Year 2015- 2016 | -43046375.667* | 9748963 | 0.009 | -7.5E+07 | -1.1E+07 |
| Year 2012- 2013 | Year 2011- 2012 | -119263 | 9748963 | 1 | -3.2E+07 | 31965375 |
| | Year 2013- 2014 | -2.7E+07 | 9748963 | 0.108 | -5.9E+07 | 4901084 |

| | | | | | | |
|--------------------|-----------------------|----------------|---------|-------|----------|----------|
| | Year 2014- 2015 | -2.5E+07 | 9748963 | 0.149 | -5.7E+07 | 6978459 |
| | Year 2015- 2016 | -43165638.333* | 9748963 | 0.009 | -7.5E+07 | -1.1E+07 |
| Year 2013- 2014 | Year 2011- 2012 | 27064291 | 9748963 | 0.11 | -5020346 | 59148929 |
| | Year 2012- 2013 | 27183554 | 9748963 | 0.108 | -4901084 | 59268192 |
| | Year 2014- 2015 | 2077376 | 9748963 | 0.999 | -3E+07 | 34162013 |
| | Year 2015- 2016 | -1.6E+07 | 9748963 | 0.507 | -4.8E+07 | 16102553 |
| Year 2014- 2015 | Year 2011- 2012 | 24986916 | 9748963 | 0.152 | -7097722 | 57071553 |

| | | | | | | |
|--------------------|-----------------------|---------------------------|---------|-------|----------|----------|
| | Year 2012- 2013 | 25106178 | 9748963 | 0.149 | -6978459 | 57190816 |
| | Year 2013- 2014 | -2077376 | 9748963 | 0.999 | -3.4E+07 | 30007262 |
| | Year 2015- 2016 | -1.8E+07 | 9748963 | 0.398 | -5E+07 | 14025178 |
| Year 2015- 2016 | Year 2011- 2012 | 43046375.667 [*] | 9748963 | 0.009 | 10961738 | 75131013 |
| | Year 2012- 2013 | 43165638.333 [*] | 9748963 | 0.009 | 11081001 | 75250276 |
| | Year 2013- 2014 | 15982084 | 9748963 | 0.507 | -1.6E+07 | 48066722 |
| | Year 2014- 2015 | 18059460 | 9748963 | 0.398 | -1.4E+07 | 50144098 |

The Post-hoc test is been carried out to find the significant difference existing and it has been found that year 2011-2012 is having a significant difference with the year 2015-2016. Similar nature can also be seen with the year 2012-2013. The significant difference is found to be 0.009

Conclusion

A better inventory management will surely help the company in solving the problems the company is facing with respect to inventory and will pave the way for reducing the huge investment or blocking of money in the inventory. From the analysis it should have a tight control on maintain high percentage in fast moving items in inventories as per the FSN analysis conducted in the study. If the company could properly implement and follow the norms and techniques of inventory management the company can enhance the profit with minimum cost.

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