

UNIVERSITY OF PETROLEUM & ENERGY STUDIES

DEHRADUN



A Dissertation report on

“Supply Chain Issues in Retailing of POL Product”

Submitted in

Partial fulfillment of

Master in Business Administration in

Logistics and Supply Chain Management

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DECLARATION

This Management Research Project has been submitted for examination for the award of MBA degree with my approval as a dissertation guide.

Signature.....

Date:

(Prof. Kaushik Paul)

Industry Fellow

Department: QT, RM and Operations

I the undersigned, declare that this Management Research Project is my original work and that it has not been submitted for any Degree qualification in this or any other University or Institution for academic purpose.

Signature.....

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ABSTRACT

The supply chain issues in retailing of POL products impose enormous challenges to the SCM. The study was done in both qualitative and quantitative survey, with purpose of identifying issues related to retailing of POL products and what could be the best practices adopted to manage these issues. The findings shows that issues occur in one or more components: transportation, equipment's, communication, labor and finance.

In an effort to manage their SC and reduce costs, OMC's are outsourcing their logistics functions to 3PLs to manage their SC. Oil companies also engage in strategic planning, e-procurement, EDI, holding safety stock, subcontracting, use of external Consultants and SC benchmarking.

The OMC's need to train their Personnel so as to appreciate the concept of SCM and the best practices and systems that are significant in mitigating the challenges of SCM. They also need to develop customer relationship management, supplier relationship management and engage them in closer cooperation with other companies and government. And encourage them to invest in IT systems.

LIST OF FIGURES

1. Crude Oil Imports of India
2. Supply Chain manages by companies
3. Systems currently used by companies
4. Future measures to Retailing companies in supply chain management

LIST OF ABBREVIATIONS

1. Supply Chain Management(SCM)
2. Just in Time(JIT)
3. Third Party Logistics(3PL)
4. Electronic Data Interchange(EDI)
5. Supplier Relationship Management(SRM)
6. Customer relationship Management(CRM)
7. Warehouse Management Systems(WMS)
8. Enterprise Resource Planning(ERP)

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1. INTRODUCTION

1.1 Background

Supply chain has grown global; as a result they have increased their exposure and the frequency of disruption. Minor missteps and wrong calculation can have major consequences and impacts throughout complex supply chain networks. Throughout many information's and supplies flows multiply, which makes it more costly, bulky, costly and complicatedly. Organizations finding it more difficultly to respond to these challenges, especially with conventional supply chain strategies and designs.

Supply chain: It is defined as set of three or more activities directly involved in upstream, midstream and downstream flow of products, services, finances, information from source to customer. However it leads to complex planning, with multiple products, produced at multiple locations with multiple site production systems.

In a supply chain, an organization will link to its suppliers in order to serve its customers. Since the goal of the firm is to maximize revenue, which can be getting through minimize cost along the supply chain. The main motive behind formation of supply chain is cost leadership and differentiation. Improve firm profitability by enhancing overall customer satisfaction.

SCM in oil marketing companies contains various challenges, specifically in logistics area, that are not present in most other companies. These are the major on the cost of oil and its derivatives.

1.2 The oil marketing companies in India

The oil industry is usually divided into three major components: upstream, midstream and downstream. Midstream operations are usually included in the downstream category (U.S Energy Information). The first part covers the exploration, production and transportation of crude oil and gas to the point of transformation into final products (mainly refineries). The downstream activities deal with the processing of crude oil in refineries, the distribution and the marketing activities. A typical oil supply chain begins with the crude oil producer, next, the oil moves to the refiner, the transporter, the retailer and finally to the gas pump where a customer receives the product (U.S Energy Information). The Organization of the Petroleum Exporting Countries (OPEC) controls major crude oil by setting production quotas.

1.3 Statement of problem

Modern supply chains are very complex, with many parallel physical and information flows occurring in order to ensure that products are delivered in the right quantities, to the right place in a cost-effective manner (Chopra.Miendl). The key supply chain management challenges for life sciences supply chains include supply chain visibility, increasing customer demands, risk management, globalization and cost.

Despite the importance of petroleum industry in daily life, the topic of Supply chain issues in retailing POL products has very little attention in operations and Supply chain management literature. Applying the knowledge from little source may be limited but it may help in future to know or pointed out the issues related to POL products. This study therefore, sought to answer SC issues in retailing of POL products and up to what oil marketing companies can adopt best practices to manage the challenges facing in their supply chains?

1.4 Research objectives

- ✓ To Study Supply Chain issues in Retailing of POL products.
- ✓ To determine the extent to which the OMCs and Retail outlets are adopting best practices to manage challenges in their supply chain.

1.5 Significance of study

1. The oil marketing companies in India

The study will go a long way into providing information on the challenges of supply chain management in the oil marketing companies in India considering that India is affected by real issues which include highly political environment, challenging logistical problems, poor road network. It is hoped that the study will be useful for the policy makers and the recommendations shall be useful to the managers.

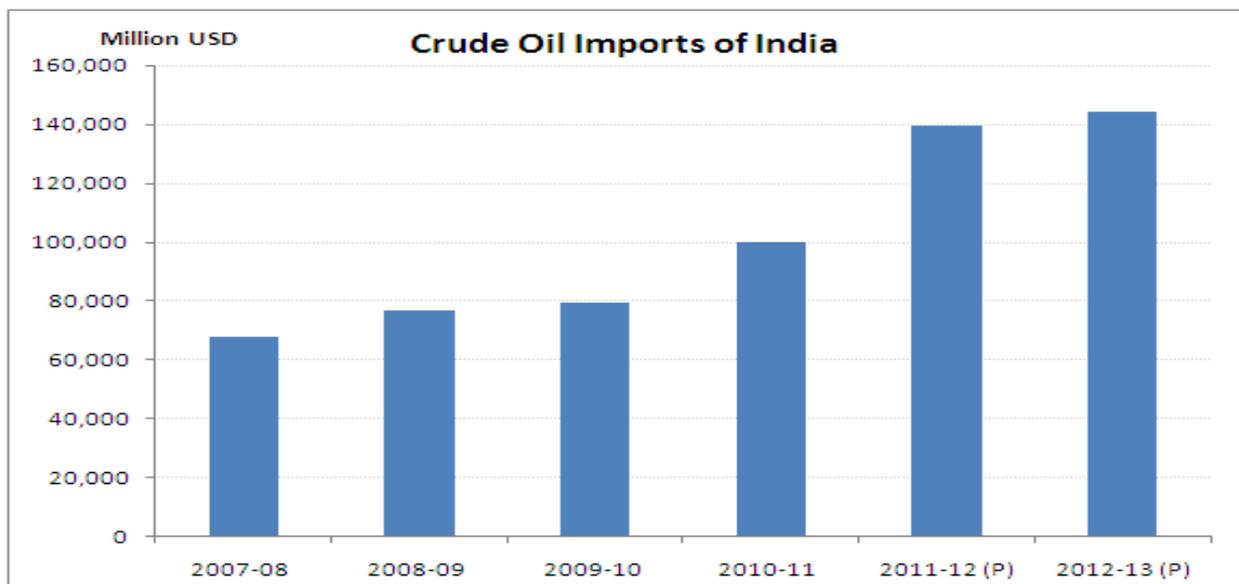
2. Academics

The study is expected to contribute to the existing literature in the field of challenges affecting supply chain management in the oil industry. It's also hoped that the study will form the basis for further research in the area of challenges in the supply chain management.

2. LITERATURE REVIEW

2.1 Background

The demand of oil and gas and the ease of international trade made the supply chain more complex. Due to this it's still in the developing stage and there is a lot of room in the cost reduction by effective and efficient supply chain. Middle East, which is the largest oil producing area, requires a good supply chain. The constraints involved in the supply chain are longer lead times, manufacturing capacity and longer lead times. The commodities produces in the limited regions of the world, but demand all over the globe is high. The crude oil imports of India also possess great impact on the supply Chain.



Sources: Ministry of Petroleum & Natural Gas

Fig1.Crude Oil Imports of India

Supply chain of oil industry is as follows: Exploration, Production, Refining, Marketing, and Distribution. Exploration includes seismic survey, geological operation, Production includes drilling. Refining is a complex operation and marketing include retailing of POL products.

2.2 SCM Structure

The supply chain includes not only the processor, but also the transportation, warehouses and retailers (M.Chima 2007). Efficient SC helps companies to make good savings and revenue growth. An important part of supply and its reserves in the hand of OPEC (Organization of petroleum and Exporting Countries). The transportation of crude oil is done through big super tankers and then transporting it to the final customer in smaller lots. Consumers are car owners and the wholesale consumers are the power stations using heavy oils.

2.3 Distribution and Marketing

Petroleum supply chain includes comprises the transportation of finished fuels from the refinery to consumers and sales in bulk and small quantities at stations. The quantities transported are smaller typically 50 to 50,000 tons than in the case of crude oil generally 1000000 tons, therefore economies of scale are less in the case of bigger crude oil tankers. Sales may get through the direct delivery to big consumers. Fuel retailing is similar in some aspects of consumer's products industry, which possess different challenges in supply chain than refining.

2.4 Challenges facing in the supply chain

To maximize SCM goals and to integrate the various nodes within the Supply Chain. The oil business as a whole faces a challenges. The quality issues are main constraints and the expensive investment in equipment. How well firms and suppliers manage resources and responding to the challenges of greenness (Aspentech June2009). Also the government policies, exchange rates and labor laws. The environmental regulations making the operation of existing facilities more

expensive. Finally, the geopolitical factors and the high volatility of crude oil of petroleum prices in the international markets.

One of the most challenges facing the SC is the bull-whip effect. Even small fluctuations in the demand or inventory levels create huge complexities. Because each company has incomplete information, it has to respond with good knowledge of SC network and the irregularities in network.

Human factors also taken in considerations such as decision making and the lack of information and personal issues. The logistics network in the petroleum industry is highly inflexible: longer lead times and the limitations of mode of transport. The long distance between supply chain partners and slow modes of transportation induce not only high transportation costs and in-transit inventory, but also high inventory carrying costs in terms of safety stocks at the final customer location. Such constraints in this type of industry create inflexibility in the SC. (Daniel litwin2009) IT systems, information sharing, process management, cultural differences are equally important. Due to globalization in petroleum industry, IT systems are essential for smooth information.

2.5 Conclusion

In an efficient supply chain many companies are outsourcing the logistics. This is done to collaborate with competitors. More efficient and cost effective supply chain helps to maintain continuous supplies of crude oil with less lead times, and low production and distribution costs. Integrated process management, Information Systems is equally important. One major area in the improvement in the SC lies in the transportation.

3. RESEARCH METHODOLOGY

3.1 Research

The research is done through survey. The method used is the questionnaire during survey. Respondents are provided with brief introduction of the objective. The questioning consisted of both open and closed ended questions.

3.2 Data Collection

Questionnaires were designed to find the issues in retailing and to know the best practices employed by companies. The survey research method was chosen because it offers best way to interact and to know the specific details that requires for study.

The method helps to generate the in depth knowledge and good level of understanding to draw reasonable conclusion. The questions were focused on the knowledge towards the SCM concept, inventory management, application of information technology and customer service. The data collected was both qualitative and quantitative, secondary data was obtained through literature review of various supply chain management and operation management.

3.3 Analysis

In the analysis, the use of MS excel was applied in analyzing the responses gathered during data collection. The research findings were presented by use of graphs, charts and tables for easier interpretation. The final report was compiled using MS word.

4. Data Analysis, Findings and Interpretation

4.1 Introduction

The data collected was analyzed and interpreted with the objective of supply chain issues in retailing of POL products and the best practices adapted to managing their supply chains. Data was collected by using questionnaire. There is lot of hesitation by the personnel to give responses of the questionnaire designed.

Below is the data analyzed which was collected through the questionnaire.

4.2 Background of respondents

The target population was 6; one from the exploration and production company and 4 from the petro retail outlets. They were either the sales people, engineers, owners, purchasing. There were not any personnel from the Supply Chain Management which shows there is less role of SCM in the oil retailing.

4.3 Background

The questionnaire defined by me is whether it is upstream, midstream or downstream.

The study found that oil marketing is done through retail outlets.

4.4 The concept of Supply Chain Management

This research also used to find out the understanding of the supply chain management. But the study found not any responses of Supply chain. A broad range of business functions like

forecasting, logistics, sales, IT and customer service. While the oil company shows interest in supply chain. In general, almost all defined SCM as warehouses and distribution centers for the purpose of distribution in right quantity, at right locations and in right time in order to minimize cost and to meet service level and customer satisfaction.

4.5 Issues in managing retailing

1. Transportation:

Rail: Limited Capacity, old railway network, governance issues

Road: Poor road network, products transported by pipelines and rails are distributed by road tankers to reach the cities and towns not linked to the pipe line/ railway and the final customers, tankers charges are fluctuating; which mainly depends on the fuel used and the condition of roads.

Pipeline: Capacity constraints, less expansion, initial installation charges are very high but economically modes of transportation are very good.

2. Information Technology:

Outdated systems and no EDI (Electronic Data Interchange).

3. Equipment's:

Old outdated equipment's, procurement of parts is very difficult.

4. Market:

Oil cartels, unfair allocation of tenders.

5. Storage facilities:

Due to fluctuations in demand companies have different storage capacities

6. Government Policies:

Entry barriers, regulations in fuel prices

7. Cost:

Fluctuating world oil prices

8. Environment:

Unstable political environment, HSE (Health, safety and Environment) standards.

9. Inventory management:

No JIT (Just in Time), inadequate storage facilities.

10. Suppliers:

Uncertainty in supply, oil cartels, fluctuating prices.

11. Customers:

Quality demanded, rush at outlets when there is increase or decrease of fuel prices.

12. Others:

Limited resources, poor visibility of demand

These are the some's points which are barriers to the retailing. Transportation costs, poor information systems, organization structure, process management are one of the key points to strengthen the process. Other challenges told by respondents are the unstable political environment, import dependence in to unbalanced relationship with partners, foreign policies. During transportation the trucks catches fire due short circuiting, pot holes on road.

National Environmental Management Authority standard is the challenge faced by companies to meet the demand. Thus adulteration, quantity measurement and related activities remain challenges facing.

Quality in the petroleum industry is highly regulated, the quality issue in import of oil, refining and storage are blamed and inspection of the petroleum products was identified as a major challenge. The other challenge faced by them is the consumption pattern which is due to the shortages and inadequate supply and ever fluctuating petroleum prices.

The performance of OMCs highly dependent on the trends in the international oil markets. The cartel issues of the multinational oil in petroleum sector affects supply and retail prices.

4.6 Supply Chain manages by companies

The research finds the supply chain manages by companies. The findings were as shown below:

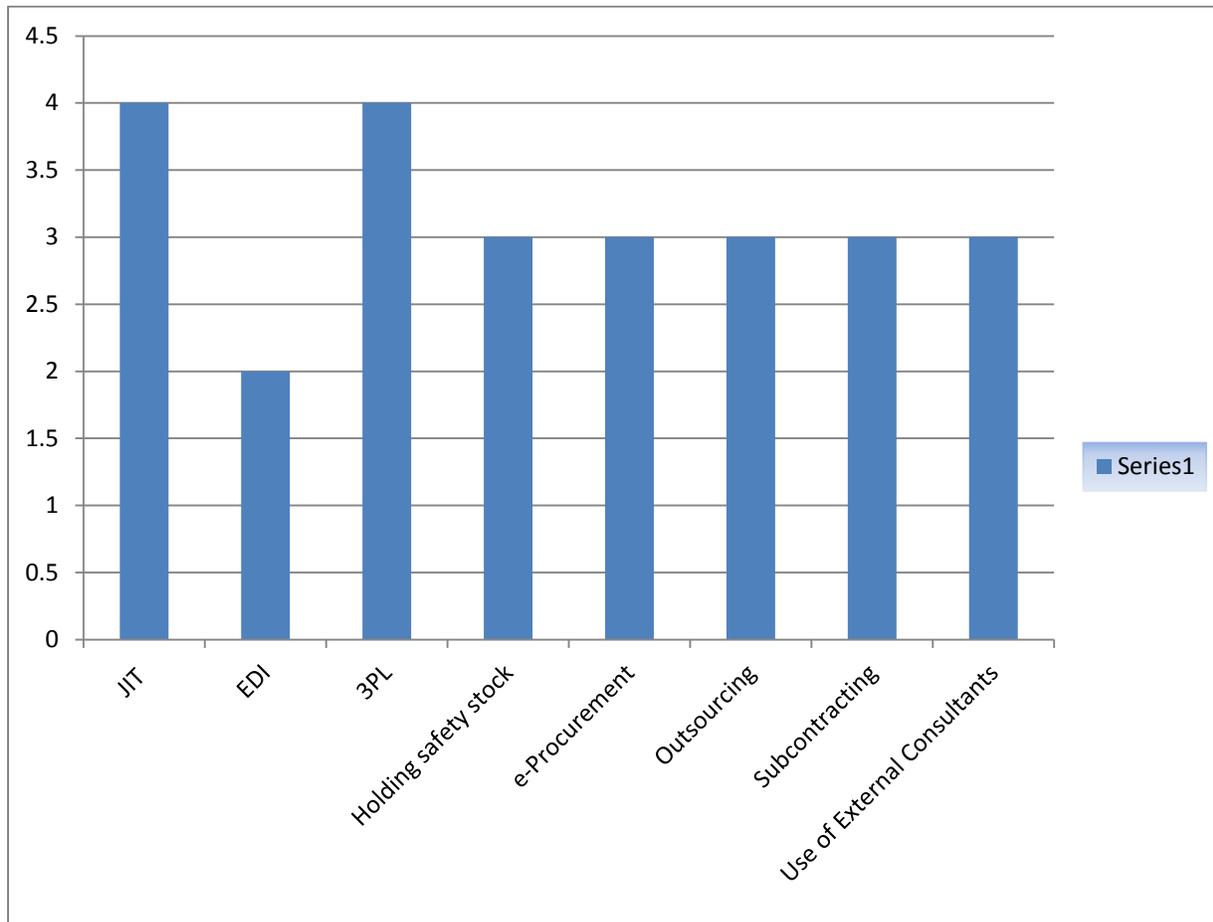


Fig2: Supply Chain manages by companies

Best practices adopted by the companies helps in making most efficient and effective way of doing tasks. The experienced peoples say that the main practice in managing supply chain is done through strategic planning and 3PL services. The other point come to know that companies also engages in e-procurement.

4.7 Systems currently used

The research finds the systems currently used by companies. The findings were as shown below:

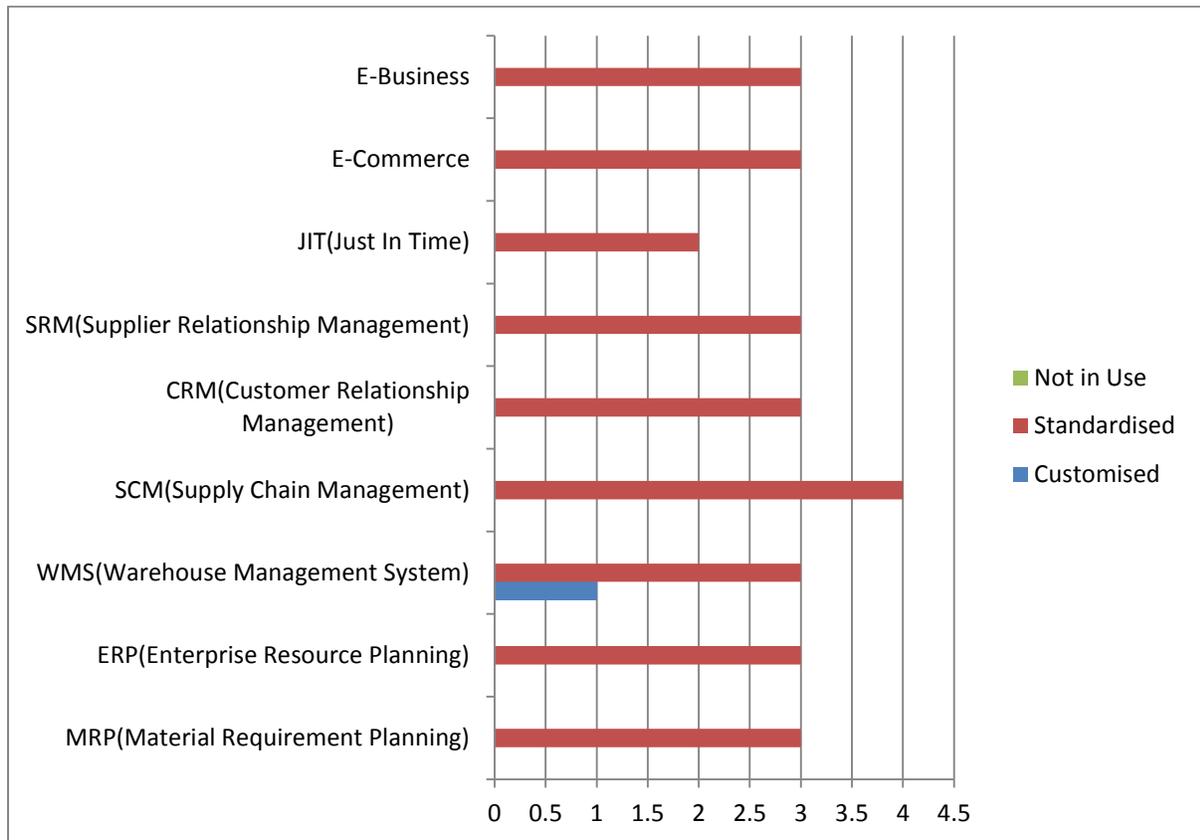


Fig3. Systems currently used by companies

The respondents say that most of the systems were not currently practiced in their organization. They also have the limited knowledge about the systems. Systems However, few systems are used but mainly they are standardized. Just in Time is not probably practical because of lead times and long distances between the suppliers and refining companies. SRM is one of the systems that companies are using helps in making closer network with the source of oil.

4.8 Future measures to support retailing companies in Supply Chain Management

The research finds the future measures to support companies in SCM used by companies. The findings were as shown below:

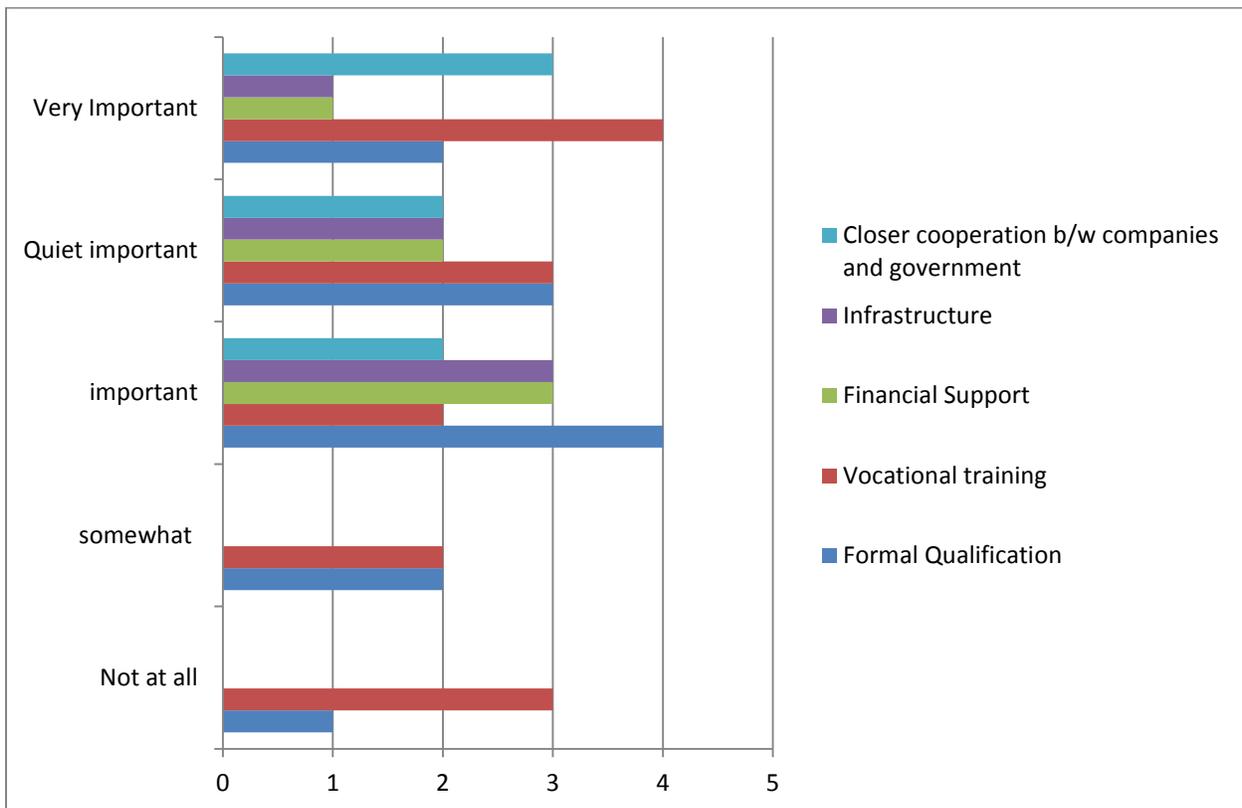


Fig4.Future measures to Retailing companies in supply chain management

It is now accepted that there is a need of formal and global view of different supply chain. Feature of supply chain speeded up with the advancement in the industry. Supply chain is now being a vital part of business. The respondents show the need of domain education and training programs to have better understanding and the concepts of SCM. The improvement in

infrastructure was the most said by the respondents. Which will reduce the Supply chain issues in retailing? Also the closed cooperation and mutual understanding between companies and government regulations.

5. CONCLUSION

The objective of the study is to know the supply chain issues in retailing of POL products. The results show that there is lot of challenges facing the SCM which include challenges in road, rail and pipeline network, political and policies. Oil cartels, outdated equipment's, longer lead times, fluctuation in the global oil prices, demand and supply fluctuation, environmental and health policies. The second objective is to know the best practices adopted by the OMCs. The study found that there is a force on 3PL, strategy planning, outsourcing, and close relations with suppliers.

The effective Supply chain helps in decreasing complexities. There should be a close collaboration between suppliers, refiners, wholesalers, retailers and logistics partners to make effective and efficient Supply chain. Most effective and cost efficient supply chain practices helps in maintaining continuous supply of petroleum and oil lubricants products.

Despite there is lot of issues, opportunities for improvement in cost savings. One major area of improvement is the adoption of best practices and systems. In this one of the major is rely on 3PL companies, outsourcing to manage their supply chains

6. RECCOMENDATIONS

1. Outsourcing and collaboration with competitors to find solutions to their supply chain management challenges.
2. Better training to personnel's.
3. Better CRM (Customer Relation Ship) policies, which helps the companies to make relations with customers.
4. Closer cooperation between government organizations and the oil marketing companies.
5. Up gradation of technology.
6. Investment in IT enabled systems.
7. Expansion of storage capacities.
8. More robust strategy and capacity planning.

Limitations:

The respondents have limited knowledge about the supply chain and have more high restrictions in filling out the questionnaire.

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APPENDIX-I LETTER OF INTRODUCTION

Dear Sir/Madam

I am a Postgraduate student at the University of Petroleum and Energy Studies pursuing MBA in Logistics and Supply Chain Management. As a part of curriculum, I am undertaking research project on **“To Study Supply Chain Issues in Retailing of POL Products”**.

I would wish to collect primary data from your organization. Confidentiality is guaranteed.

Yours truly

Ankur Vyas

APPENDIX-II

QUESTIONNAIRE

I am a student of University of Petroleum and Energy Studies pursuing MBA in Logistics and Supply Chain Management. The purpose of this questionnaire is to seek information regarding Supply Chain Issues in Retailing of POL Products. The data collected shall purely be for academic purpose. Confidentiality is guaranteed. To make it better, it's my humble request to you to fill the questionnaire to the best of your knowledge. Thank you for your willingness to participate in this study.

1. Name of Company
2. Address
3. Contact Person
4. Designation
5. Sector: Upstream Midstream Downstream

6. Does your company have a separate SCM department?

.....

7. What challenges do you facing with respect to following areas?

a) Transportation

.....

b) Equipment's

.....

c) Suppliers

.....

d) Customers

.....

e) IT

.....

f) Inventory Management

.....

g) Storage facilities

.....

h) Environment

.....

i) Others

.....

8. How do you manage your Supply Chain?

- JIT
- 3PL
- Holding safety stock
- e-Procurement
- Outsourcing
- Subcontracting
- Use of External Consultants

9. What type of system currently used in your company?

	Customized	Standardized	Not in Use
MRP(Material Requirement Planning)			
ERP(Enterprise Resource Planning)			
WMS(Warehouse Management System)			
SCM(Supply Chain Management)			
CRM(Customer Relationship Management)			
SRM(Supplier Relationship Management)			
JIT(Just In Time)			
EDI(Electronic data Interchange)			
E-Business			

10. How important the following to support your company in SCM in future?

	Not at all	somewhat	important	Quiet important	Very Important
Formal Qualification					
Vocational training					
Financial Support					
Infrastructure					
Closer cooperation b/w companies and government					