CHAPTER - I

INTRODUCTION

1.1 Background of the Study

NOC started using information communication technology (ICT) from last few years for enhancing the recording capability, access to information, timely information dissemination and reducing expenses of operation to some extent. According to the planning of NOC to implement Online Computerized System which is integrated, efficient and comprehensive and utilizing the latest database, communications and networking technologies, study the existing systems/ applications has to be done along with designing, development, implementation and delivery of integrated information system in the given time frame.

The head office of **Nepal Oil Corporation Limited (NOC)** is in Babarmahal, Kathmandu. **Nepal Oil Corporation** was established on 10th January 1970 by the Government of Nepal under the "Company Act, 2021 (1964)" as a state owned trading enterprise to deal with the import, storage and distribution of various Petroleum Products in the country. Government of Nepal owns 98.36% of its share and rest is contributed by four other state owned enterprises, namely Rastriya Beema Sansthan, National Trading Limited, Nepal Bank Ltd. and Rastriya Banijya Bank. In the very beginning, the trading activities of Nepal Oil Corporation were started by storing two products in two drums. His persistent endeavor to develop NEPAL OIL CORPORATION had resulted more than 71,558 Kilo Liters (KL) of storage facilities for petroleum products in different development regions of Nepal.

Nepal, being one of the land locked countries of the South-Asia, has to depend on India for the supply and distribution of various petroleum products as the eastern,

southern and western part of the country is attached with India. The prospect of crude oil exploration in Nepal has not yet been proved a feasible one. So the entire national demand is met by import alone. From the very beginning of NEPAL OIL CORPORATION's trading activities, a special and long-term supply arrangement is made with Indian Oil Corporation Ltd. (IOC), a leading national oil company of India having more than 55% of market share.

NEPAL OIL CORPORATION headquartered in Kathmandu, has over the years expanded and now has five regional office, Branch Offices, Fuel Depots, Aviation Fuel Depots, with total existing storage capacity of 71,558 kilolitres (KL) and employing 411 permanent work force.

In this modern era, Nepal Oil Corporation not missed to use of modern technology computerized system. Nepal Oil Corporation Limited started using these system to prevent time and minimize costs.

The organization chart and the Board of member of Nepal Oil Corporation recognized it is strong and able to grab the opportunity from external environment. It is not far from the SWOT analysis. The level of management is also able to do the operational function and tactical to achieve the goal.

Nepal Oil Corporation Limited is a monopoly in practice till date. It is little conscious about competition. It is run more or less in a traditional way. The company's dependency upon the only supplier, Indian Oil Corporation is perhaps not an appreciable situation. It has still to look after more reliable and more economic sources of supply from the international market to gain more benefits of international trade. The modern technology is yet to be applied in performing management functions and depot operations. It has to develop its present work force and recruit young professionals. Thus gaining well equipped the company

can survive in a competitive environment. Otherwise it is likely that the oil business would go in foreign hands. So it is high time to make the business sustainable. And also it is high time to invest a sizable capital to make itself up to date. An autonomous Nepal Oil Corporation Limited only can make profit and make the business to survive and sustain. Starting in the late Twentieth Century, Nepal Oil Corporation Limited (NOC) started using computerized systems.

NOC started using these systems to save time and reduce costs. Even though these computerized systems are rather expensive, in the long run they saved companies money. The companies saved money by making or purchasing a computerized system by reducing paper usage and employee overtime. Since employees did not have to spend their time doing paper work, they could do their jobs faster and more efficient systems can be a key part of organization success. Simple solutions, like using mobile phones, can allow people to communicate on the move and therefore increase productivity. Networked computers help people work together more effectively, while integrated IT systems cut costs and improve customer service, helping our business grow. Many growing businesses soon find that fragmented systems slow their growth. This can be avoided by planning IT and communications needs from the outset and getting the right infrastructure in place.

Vision of an integrated oil energy corporate body under the national leadership with a strong commitment to meet people's expectation maintaining ecological balance.

Mission to generate/develop/establish a strong corporate identity as a premier energy supplier to the people for their utmost satisfaction.

Head office of NOC is in Kathmandu and other branch offices are in different regions. They are also listed below.

i. Dipayal Branch Office

ii. Dhangadi Regional Office
iii. Surkhet Branch Office
iv. Nepaljung Regional Office
v. Dang Branch Office
vi. Bhalwari Regional Office
vii. Pokhara Fuel Depot
viii. Kathmandu Main Office
ix. Birgunj Regional Office
x. Amlekhgunj Fuel Depot.
xi. Janakpur Branch Office
xii. Biratnagar Regional Office
xiii. Charaali Branch Office

Objectives of Nepal Oil Corporation

- To manage for the import of petrol, diesel, kerosene, lubricants, grease, aviation fuel, etc. and other oils from different countries of the world.
- To complete the job mentioned in clause (1), manage for necessary place and technical assistance for the construction of storage tanks.
- To obtain the sole agency and distributorship of different countries for the marketing of petroleum products in Nepal.
- Import crude oil from different countries and refine the crude oil either in association with other foreign oil companies or setup own refinery.
- To setup industries for the exploration of oil and gas reserves of the country.
- To manage for the storage facilities of imported petroleum products in the country.
- To manage the supply & distribution of petroleum products in the country either by own arrangement of tank trucks or through private parties as per the requirement.

- To work on the other supporting activities required to fulfill the objectives of Nepal Oil Corporation.
- To establish other subsidiary companies and invest either in and or the business.

1.1.1 Management Information System

Management information systems are primarily meant for providing information from the data after processing them. The information systems do not generate data. The data are generated collected, recorded, stored, processed and retrieved after it has been generated by business operations in an organization. Management information systems (MIS) are information systems typically computer based, that are use within an organization. World net describes an information system as "a system consisting of the network of all communication channels used within an organization". A management information system may also be defined as "a system that collects and processes data (Information) and provides it to managers at all levels who use it for decision making, planning, program implementation, and control." An information system is comprised of all the components that collects, manipulates, and disseminates data or information. It usually includes hardware, software, people, communications systems such as telephone lines, and the data itself. The activities involved include inputting data, processing of data into information, storage of data and information, and the production of outputs such as management reports. Information systems are designed for supplying information to managers in the areas of marketing, finance, production, personnel, materials, etc.

The information system is playing vital role for decision making in Nepal Oil Corporation Limited. The information system of NOC is huge and board. The soft ware which is using by NOC for price determination is expensive. NOC paying 24 to 25 lakhs per year.

1.1.2 Introduction to NOC and Inventory System

Nepal Oil Corporation Limited (NOC) started using computerized systems. NOC started using these systems to save time and reduce costs. Even though these computerized systems are rather expensive, in the long run they saved companies money. The companies saved money by making or purchasing a computerized system by reducing paper usage and employee overtime. Since employees did not have to spend their time doing paper work, they could do their jobs faster and more efficient. Nepal Oil Corporation Limited allows their systems to grow gradually, adding new equipment or software as the need arises. Sometimes different functions, such as marketing and finance, each enter the same or related data into a system separately, duplicating effort. Separate information 'silos' can each hold some information – but bringing it together to get the whole picture can be difficult. This can cause confusion or frustration for customers, suppliers or employees. Integrated online computerized system has not only brought the NOC closer together, but it has allowed the nation's economy to become a single interdependent system.

However the inventory system of NOC is working effectively. Which is under of engineering and planning department of NOC.

1.2 Focus of the Study

Fuel crisis happening time to time in Nepal. Nepal is land lock country. If the petroleum prices is constant in world market but our neighbored country (India) increases the price of petroleum then suddenly NOC also increased the price of petroleum. That’s why the quick decision and accurate decision need to calculate the effective decision which makes the surplus.

Over viewing the above focus of the study alert for NOC have to increase the storage capacity. If the storage capacity is increased then NOC can charge low rate then word market price. And it can recover loss in recently.

1.3 Statement of the Problem

i. Lack of Quick decision is the main problem of NOC
ii. Storage, leakage, strike, political influence are the main factor which makes NOC in weak and sick.
iii. Relation between Quick decision verses late decision effect surplus.

1.4 Objective of the Study

The main objective of the study is to show the relationship between the quick decision and surplus of the NOC and how leakage effect this business. The following are specific objectives of the research.

- To know how a rational manager use MIS and get information for decision.
- By the help of MIS, we can handle a large amount of data.
- To know how nowadays MIS finds application in all functional areas of every type of business organizations at all levels.
- To know how MIS Capturing data from various internal and external sources.
- From the study we know that MIS is a computerized business processing system.
- Know that how practically, theories are implied in this project work.
- Decision making is the essence of management.

1.5 Rational of the Study

Complicated task is easier today become of Information Technology. IT makes its really. Quick decision is also complicate task. I present a decision making modules and some strategic decision which should be taken in right time that’s why NOC can fulfill the subside.

1.6 Limitation of the Study

Every things have limit on this world but in case of there is no limitation even if , What I feel while preparing this thesis ,Limitation of Time factor , cost factor and lack of understanding the key term of subject matter makes more difficulties to study about any case or research. Which I mention below in point-wise as much as I fell in difficulties.

- Limitation of Time factor
- Limitation of Cost factor
- Limitation of collecting data not in whole coverage.
- Limitation of collecting data by Primary and secondary method.
- Limitation of understanding of Technical term
- Can not replace the whole managerial activities.
- Out put is directly proportional to the inputs.
- This can not replace non quantitative data.
- User can not enjoy with his exportizum.

1.7 Organization of the Study

The organizations of the Study are divided in five chapters which are mention as follows.

Chapter I: Introduction

This is the initial chapter of this research .The first chapter is Introduction of the NOC having seven subchapters includes Background, Introduction to MIS, Focus of the Study, Statement of the Problem, Objectives of the Study, Significance of the Study, Limitations of the study and Organization of the Study.

Chapter – II : Review of Literature

After the introduction of the study the Second Chapter is Literature Review that studies theories and practices. The conceptual Framework of this study which

gives overall concept, review form journals and articles that studies some journals and articles relating to the study and last one review from previous thesis that reviews the thesis done in the relating subject are the main components of this chapter. Literature Review is most important part for the study of this research which gives the knowledge about how people mark right decision and quick decision from the NOC.

Chapter – III Research Methodology

This is the most important chapter .The third Chapter is Research Methodology. The chapter has shown the Research Design, Sources of Data, Data Collection Technique, Data Processing, Tools used for data analysis (E-R Diagrams, DFDs, and Flow Chart) etc.

Chapter – IV System Analysis, Design and Data Presentation

After the research methodology the fourth chapter is System Analysis, Design and data Presentation. The chapter presents all the data available and analyses it using different analytical tools. It deals with the facts found in the organization in organized and sequential manner. E-R diagram showing multiple entities of the system, their relationship with each other and their attributes are analyzed and described. To enhance understanding of data flow, contest level data flow diagram and zero level data flow diagram is presented. The chapter also illustrates the current position of the Information Technology in Nepal, the government policies and available infrastructure facilities about the fuel.

Chapter – V Summary, Conclusion and Recommendations

The final or last chapter of the study is Summary, Conclusion and Recommendation of the case study. Summary of the research, the conclusion that the researcher found in the research period and the recommendations for the betterment of the system are included in this chapter.

CHAPTER - II

LITERATURE REVIEW

From literature review, one should come to know that my topic on problem of research is new one or not, what concepts or ideas have been already found, what type of modification is necessary to the deficiency if it exists to the research etc. Thus, review of literature is essential to develop concepts. Information or ideas about the selected topics by studying the relevant materials.

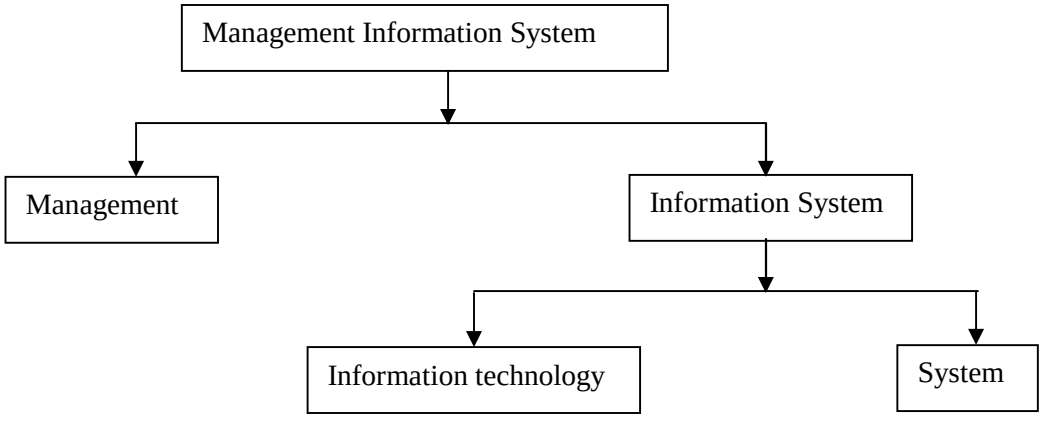
2.1 Conceptual Review

Management Information System

Management Information System is that system that helps to collects information and generates consolidate and comparatives reports to facilitate the decision making. System that integrated management and information system (hardware, software, database etc.)is called management information system. In another hand MIS is a tools that provide right information at right time to do right decision on the instruction. Conceptual frame work of MIS is presented below (Adhikari, 2007).

Figure 2.1

Conceptual Frame Work of MIS

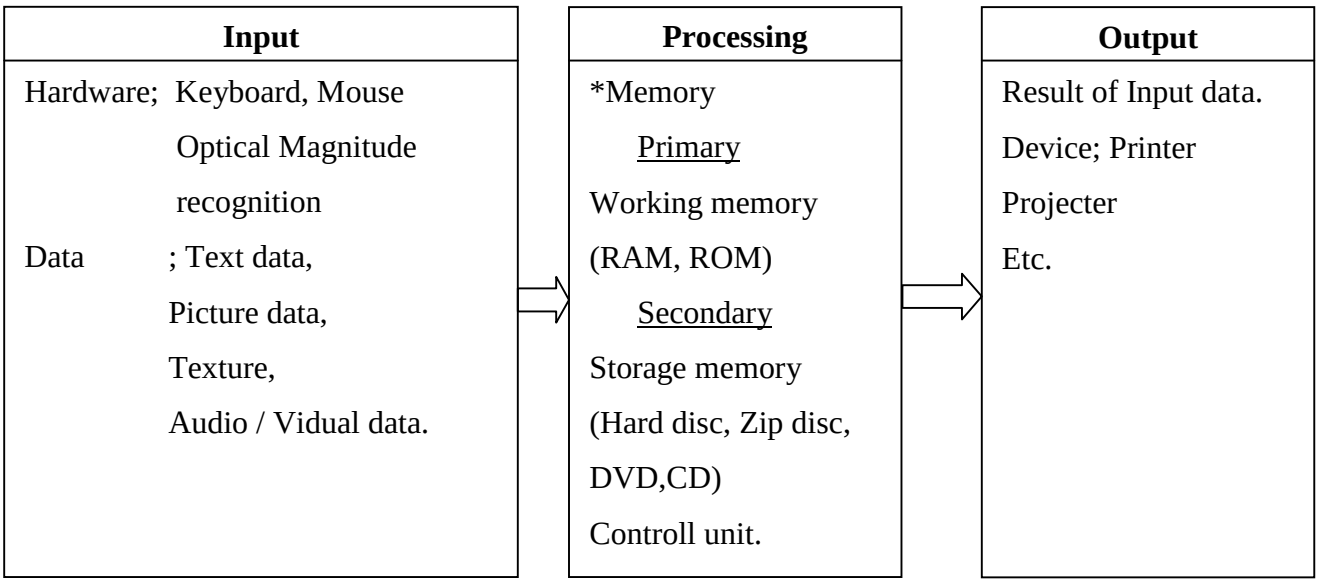


Component of Computer System

A physical structure is hardware. What types of hardware used in input section, processing section and output section (result deliver system).

Figure 2.2

Component of Computer System



Software; Operating system of software

Application system software

Computer language

Translation

Enterpreater

Assembel

These are the system software which are used in MIS for decision making on the basis of computer system.

Drafting and Negotiating Oil & Gas Contracts and Avoiding & Resolving Disputes

Develop strategies to resolve disputes and arbitrate professionally and with maximum end results. Learn various methods for dispute resolution and the key

considerations when choosing appropriate dispute resolution mechanisms and forums. Analyze dispute avoidance techniques in oil and gas transactions. Learn about dealing with disputes in upstream oil and gas contracts. Understand international contract law ramifications for your organization. Develop efficient drafting and negotiating skills. Gain insights and training on the advocacy of claims and defenses in international oil and gas disputes. Identify the key issues of arbitration procedures as they interrelate with discreet issues arising in the oil and gas industry. Address the pitfalls due to subtleties in arbitrations and the complexities of oil and gas contractual provisions. Analyzes the rules of the game, which ones matter and which can be altered by agreement. Avoid expensive litigation and downtime in operations due to uncertainties in contractual terms. Address the latest trends in contract risk management strategies. Learn essential negotiating techniques and avoid common mistakes & pitfalls in oil and gas contracts. Know the rights and obligations of the different negotiating parties. Consider Host Country concerns and negotiating stances during negotiations. Improve your understanding of oil profit sharing, taxation, cost recovery and abandonment costs. Master successful negotiation skills for all types of oil and gas contracts. Consider problems when working in multiple jurisdictions. Understand the rights and obligations of the contractor. Highlight what clauses should be included in oil and gas contracts. Recognize the importance of risk identification and allocation. Learn how to resolve the intricate areas of possible dispute in such a contract. Assess when and why you might want to revise standard or customary oil and gas contract provisions to avoid potential pitfalls in dispute resolution (Prabhat, 2066).

Oil imports and the NOC

Firstly, there is a need to re-think and if needs be re-negotiate and reconstruct current arrangements for oil imports and begin to develop a mechanism for purchasing oil at low prices and stockpiling reserves for times when the price

rises. This implies a capacity not only to purchase when actual market price is low but also to buy futures at discount rates. It also implies developing storage capacity.

There are many questions surrounding the viability of the Nepal Oil Corporation (NOC), the government agency that currently has a virtual monopoly on the purchase and distribution of petrol, diesel and kerosene. The NOC is said to have been losing around Rs 2 million a day. The NOC has explained the losses in terms of high international oil prices combined with considerable subsidies as regards the domestic market. But this is not the whole story, and in any case the NOC appears not to have been able to take advantage of the collapse in oil prices that brought the cost down to around $40 a barrel towards the end of last year.

The Nepal Petroleum Dealers' Association (NPDA) argues that, in any case, the subsidized kerosene that the NOC provides does not reach the consumers it is supposed to benefit; rather it is making its way to industries.

Domestic Oil and Gas Production

Nepal also needs, however, to be actively considering and rapidly investing in domestic energy production and developing an appropriate array of energy sources. At present, Nepal relies heavily on petroleum-based products (oil, petrol, kerosene) and fuel-wood. One possibility is domestic oil and gas production.

The government has already established the Petroleum Exploration Promotion Project (PEPP) which will involve undertaking exploratory surveys to discover oil and gas reserves. But the cost of exploration is high. Dr Rajendra Bahadur Shrestha, project chief of the PEPP, has admitted that "Petroleum exploration is high risk and capital intensive. It needs sophisticated technology and the drilling process is much more expensive that Nepal cannot afford." The Petroleum Act is

designed to attract foreign investment in this field, and some foreign companies have shown an interest in the terai. Shell, for example, did some drilling at block 10 in Biratnagar, between 1986 and 1990. But the results were not promising. Now Cairns that has taken blocks 1,2,4,6,7 for exploration and is working on the site. “However, it will take at least eight years for them to get some result,” says Dr. Shrestha **(**Prof. David Seddon, 2010).

Indial Oil to supply POL to Nepal

Indian Oil signed agreements recently with Nepal Oil Corporation (NOC) for supply of petroleum products and sharing of technical expertise, which will be valid for five years till March 2012.In line with the supply agreement, Indian Oil will be meeting Nepal's entire requirement of Petrol, Diesel, Kerosene, LPG, Aviation Fuel, Furnace Oil and Light Diesel Oil from Indian Oil Depots and Terminals bordering Nepal.

As per the technical services agreement, Indian Oil will provide technical knowhow to NOC in Petroleum Marketing activities covering Operations, LPG, Engineering and Aviation fields. It will also include training of NOC officials, inspection of aviation fuel stations and assistance in setting-up new Petroleum Depots, LPG Plants and Laboratories.

The agreements were signed by Mr. M. Nene, Executive Director (Supplies), Indian Oil, and Mr. V. N. Goel, Managing Director, NOC, in the presence of Mr. G. C. Daga, Director (Marketing), Indian Oil; Mr. B. B. Thapa, Chairman, NOC & Secretary, Industry, Commerce & Supplies, Nepal; and other senior officials of NOC / Indian Oil. Indian Oil and NOC are also planning to set-up a product pipeline between Indian Oil’s Depot at Raxaul and NOC’s Depot at Amlekhgunj. The 40 km (approx.) pipeline will help NOC in overcoming the logistics constraints and improve supplies to Nepal (New Delhi April 16, 2007).

2.2 Review of Articles

Integrated Online Computerized Systems

Starting in the late Twentieth Century, Nepal Oil Corporation Limited (NOC) started using computerized systems. NOC started using these systems to save time and reduce costs. Even though these computerized systems are rather expensive, in the long run they saved companies money. The companies saved money by making or purchasing a computerized system by reducing paper usage and employee overtime. Since employees did not have to spend their time doing paper work, they could do their jobs faster and more efficient systems can be a key part of organization success. Simple solutions, like using mobile phones, can allow people to communicate on the move and therefore increase productivity. Networked computers help people work together more effectively, while integrated IT systems cut costs and improve customer service, helping our business grow. Many growing businesses soon find that fragmented systems slow their growth. This can be avoided by planning IT and communications needs from the outset and getting the right infrastructure in place.

Recently, the NOC relative demand for skilled labor has increased dramatically. Advances in information technology (IT) are among the most powerful forces bearing on the economy. Employers who use IT often make complementary innovations in their organizations and in the services they offer. These co-inventions by IT users change the mix of skills that employers demand. Specifically, complementary changes involving IT, workplace organization and services that is the key skill-biased technical change. IT use is complementary to a new workplace organization which includes broader job responsibilities for line workers, more decentralized decision-making, and more self managing teams. In turn, both IT and that new organization are complements with worker skill, measured in a variety of ways. As organizations employ information technologies to facilitate business process redesign and other organizational changes, they are

not consistently observing the high levels of group performance touted by proponents of this technology. To achieve the breakthrough performance desired, organizations need a clearer and more systematic understanding of how to effectively use the technologies in specific group environments (Er. Srijana Panthee, Manager (NOC), 2066).

The benefits of Integrated Systems

Nepal Oil Corporation Limited allows their systems to grow gradually, adding new equipment or software as the need arises. Sometimes different functions, such as marketing and finance, each enter the same or related data into a system separately, duplicating effort. Separate information 'silos' can each hold some information – but bringing it together to get the whole picture can be difficult. This can cause confusion or frustration for customers, suppliers or employees. Integrated online computerized system has not only brought the NOC closer together, but it has allowed the nation's economy to become a single interdependent system. This means that we cannot only share information quickly and efficiently, but we can also bring down barriers of linguistic and geographic boundaries. The nation has developed into a global village due to the help of Information technology. With the help of information technology, communication has also become cheaper, quicker, and more efficient. We can now communicate with anyone around the globe by simply text messaging or sending an email for an almost instantaneous response. Information technology has helped to computerize the business process thus streamlining businesses to make them extremely cost effective money making machines. This in turn increases productivity, which ultimately gives rise to profits that, means better pay and less strenuous working conditions. Effective planning minimizes these problems by allowing to, we think ahead about how our needs will change and how our systems will need to grow.

Design systems that share information, for example by using software applications that work together. Build a computer network to let people share access to information and hardware. Consider customer and supplier requirements and the systems they use. This kind of planning helps develop well-integrated systems and delivers major benefits, including: systems that grow with our business rather than needing to be replaced, improved efficiency and fewer errors, better access to information, leading to a more responsive service and better relationships with customers and suppliers, better use of staff time and greater job satisfaction for employees, reduced costs. Ideally, business systems should link every part of our business. In practice, many businesses find it helpful to concentrate on a few areas that will provide the greatest benefit Sales, marketing and customer service are prime contenders for integration. Holding a central database gives everyone easy access to key customer information. A customer relationship management system like this also helps us identify new opportunities. Forecasting and ordering systems can be linked to help to control stock and cut waste. An enterprise resource planning system lets plan and schedule across our business. Integrating our system with customers and suppliers allows automated ordering and accounting. Integrated systems can improve manufacturing efficiency. For example, businesses can link computer-aided design and computer-aided manufacturing systems.

This allows design specifications to be turned directly into manufactured components, dramatically speeding up the development of new products. Alternatively, we might decide on to link existing systems. For example, accounting software can link with orders, purchasing and stock control. This approach requires less investment and allows us to continue using existing systems. However, we will need to buy the software and may need specialist support to help set it up to meet our needs. Manage a systems integration project First step is to decide what we want the system to do. For example, we may want

to focus on: improving key processes in our business, for example order fulfillment or supply chain management, dealing with bottlenecks, for example where our network's lack of bandwidth is slowing down our business applications, we also need to think about the constraints our work is subject to, such as: what technical skills our employees have - to use, develop and support the system, what existing systems we want to keep and what our budget is.

Once we know what we are trying to achieve, we can assess the different technical options. Try to take into account all the costs and benefits. For example, retraining can be a significant cost, while developing closer relationships with customers could be a major benefit. Large amount of petroleum product transaction is made from these offices generating large amount of transaction data and information products. It is very important to preserve these invaluable data and information for high quality service delivery, better business functioning and decision-making. As such, NOC has made several efforts to manage these invaluable information products with computerized information management systems. To cope with the new business challenges and issues, coordination among various NOC offices, an online integrated computerized information management system has been initiated and implementation process is in progress. At this point of time, for better management of the information products and ensure successful implementation and sustainable management of the system and long term IT management sustainability, need of an information technology policy framework has been realized.

The framework shall comprise best practices, principles, methodologies, tools and standards that were identified and which provide solutions to project management. The framework shall continue to evolve as new ideas and tools become available. Opportunities to incorporate new best practices and knowledge and experience

will be sought continuously in the future. NOC is committed to deliver its services more efficiently and effectively through the use of information technology.

Product Pipeline from Raxaul- Amlekhgunj

Product pipeline from Raxaul to Amlekhgunj across Indo-Nepal International border is a lifeline for the overall activities and backbone of the economic growth of the country. Hence, the product pipeline is identified as strategic pipeline to meet the petroleum products requirement of Nepal. First MOU on proposed product pipeline from Raxaul, India to Amlekhgunj, Nepal was signed between NOC and IOC on 10.09.1996 at junior executive level and on 08.09.2004 at CEO's levels (Er. S.K. Agrawal, Director, 2066).

Features of Product Pipeline

- Tentative total length of the pipeline is 40.00 Kms, will traverse 2 Kms. In Indian territory and rest in Nepal
- Almost the entire pipeline shall be laid underground.
- Products to be pumped to NOC Amlekhgunj depot are MS, HSD, SKO and ATF
- Forest of about 12 Kms. Length (Parsa Wildlife Forest) which the proposed pipeline has to cross.
- Strip of land 18 meters width "Right of way" along the pipeline route to be acquired.
- Tentative Cost of construction of the pipeline was considered at around IRs. 41.00 Crores for budgetary purpose at 1996 price level. The present cost of the project is likely to be IRs. 100.00 crores.
- Tentative time required for completion of the project approx. 2 years from the zero date.

- Tankage at Amlekhgunj needs to be enhanced, extent of tankage to be enhanced is not been materialized.
- NOC Amlekhgunj depot needs to acquire more space in the range of approximately 100 m x 100 m.
- Power requirement for the pipeline terminal is in the range of 150 KVA.
- Product ATF could also be pumped in through Pipeline. As there is no tankage for ATF at Amlekhgunj, tankage for ATF have to be built at Amlekhgunj Depot. Capacity of tankage required yet to be formulated.
- Independent communication system between Raxaul and Amlekhgunj to be installed for pipeline operation.
- Congestion at the customs office at Indo-Nepal border will be reduced and a separate Nepal customs Office has to be set up at Amlekhgunj depot to ascertain the quantity and levy the revenue on products received.
- This product pipeline will be open to Third Party Access.
- Construction of Product pipeline will be funded by GON and NOC will operate it.

IOC and NOC have a very long association over three decades in petroleum trade. In view of Nepal Government plan to deregulate the petroleum business, IOC and NOC should further strengthen and facilitate this trade by providing product pipeline from Raxaul to Amlekhgunj. A joint team of IOC and NOC carried out a feasibility study on laying of a cross country pipeline between Raxaul and Amlekhgunj.

Identified Areas for Joint Ventures:

- Cross-country pipeline between Raxaul and Amlekhgunj in phase – I
- Provision for extending the pipeline to Bharatpur/ Kathmandu in phase – II

Present Supply and Distribution System

- IOC meets 100% requirement of major products of POL to Nepal through NOC
- Total sales in 2008-09 is approx., 1.0 MMt.
- IOC supplies to NOC under successive Supply Agreements.
- Current Agreement effective 01.04.2007 is valid for 5 years.
- Agreement emanates from Govt. to Govt. understanding of 1974.
- NOC uplifts the products from IOC viz.MS, HSD, SKO, LPG, ATF, LDO, and FO.
- Lubes, Bitumen any other special POL products are freely imported in Nepal.
- No railway system exists; all depots of NOC are road fed.
- Max. Consumption in Central region = 60%, Eastern = 19% and Western = 18%.
- IOC supplies from 8 Depots/ terminals (Raxaul=60%)
- NOC has 5 Depots along the Indo Nepal Border.

Importance of Raxaul-Amlekhgunj Sector

- Raxaul- Amlekhgunj is most important route.
- More than 60% of total major POL products pass through this sector.
- Feeds all important Central Region which includes Kathmandu valley.
- Maximum volume growth anticipated through Raxaul-Amlekhgunj sector.
- Adequate tankage available at Amlekhgunj depot.

Need and Justification for Raxaul-Amlekhgunj Product Pipeline

Present Business Scenario

- NOC sole importer of POL products.
- Nepal Govt. may allow private players.
- Cost of transportation form Raxaul to Amlekhgunj is high.

Strategic options for NOC

- Retention of existing business and customers
- Create facilities on common user principles.
- Provide cross-country pipeline (Raxaul- Amlekhgunj).

Salient Features of Product Pipeline

Phase – I

40 Kms long, 0.60 MMTPA pipeline from IOC Raxaul Depot to NOC Amlekhgunj Depot.

Phase – II

a) 100 Kms. Long, Pipeline from Amlekhgunj depot to Bharatpur/Ktm and delivery station cum marketing terminal at Bharatpur/Ktm (to be set up).

Feasibility study of laying pipeline from Raxaul depot to Amlekhgunj Approx. 40.00 Kms was carried out in 1996 with an approx. cost of IRs. 41.00 crores. Present cost of the project could be around IRs. 100.00 crores (Excluding the costs of acquiring of ROW and Land). Project cost recovery on 5-6 years apart from intangible benefits.

The advantages of pipeline over present movement through Tank-Trucks

In the case of transportation of products by tank trucks, the container itself moves from one destination to another and returning of the empty containers to the loading point, resulting wastage of energy consumed and extra time involved. In the case of pipeline the container remains static while cargo is moved. Transportation of POL through pipeline is safe and dependable mode and the product reaches to destination with the minimum chances of interruption in the supply. Environmental impact of pipeline is negligible. Transportation loss of products through pipeline is considerably lower as compared to other modes of

transportation. Quality and quantity is assured by eliminating all en-route malpractices. By providing connectivity to Amlekhgunj Depot through pipeline, products can be supplied to Amlekhgunj fed areas in a cost effective manner which in turn, would also reduce dependence on road. The handling of products at Amlekhgunj depot will be drastically reduced in terms of manpower and saving in time, which will ultimately lead to overall saving. The movement of POL products will be safe, clean, and smooth. There will be no safety hazard by way of spillage and accidents of tank-trucks enrooted. The laying of pipeline will also help to keep clean environment due to no smoke coming out of the tank-trucks while transporting POL products by road from Raxaul depot. Pipeline will be environmental friendly. Enhanced customer satisfaction for NOC

1. Reliable supply source within country.
2. Diversification of business.

NOC's threat perception from transporters lobby addressed. NOC's concern for heavy stock losses at Amlekhgunj addressed. Delivery of products at competitive prices due to economic mode of transportation as the operating costs of P/L system is very low. There is heavy congestion and regular traffic jams at the International Border causing delays in the turnaround time for tank trucks. These constraints will increase further with growth in the POL volume to be transported from Raxaul in future. The pipeline will help decongestion on the road from Raxaul to Amlekhgunj and shall cater the required growth of POL in future. Support for NOC's other business plans or retail marketing.

- Enabling NOC uninterrupted supplies.
- Knowledge and technology sharing
- Ensuring energy security
- Long-term commitment

The pipeline will also facilitate reduction in tank-trucks presently deployed for movement of POL products between Amlekhgunj and Raxaul, which will also help in curbing the movement of drivers/helpers at Amlekhgunj. The present tank-trucks fleet will be utilized to transport the products from Amlekhgunj to Biratnagar depot, Amlekhgunj to Kathmandu depot, Amlekhgunj to Pokhara depot, and Amlekhgunj to Bhairahawa depot. In case of disruption in supply of POL products from any other source, the POL products can be conveniently supplied from Amlekhgunj to other locations of Nepal because of the cost reduction ranging from 30%-40%. The pipeline will also take into account the future growth in the POL consumption in Nepal without the movement of additional tank-trucks. The POL products could be transported from Amlekhgunj depot to Biratnagar I the Eastern Zone and up to Bhairahawa depot in the Western Zone economically by road through tank-trucks thus saving the cost involved for Indian road permit, Indian Toll taxes, Indian local taxes, Insurance etc.

Transportation cost of the products through tank-trucks from Indian locations like Raxaul to Amlekhgunj, Barauni to Biratnagar and Betalpur to Bhairahawa is costlier than the cost involved in transporting of the products from NOC one depot to another within Nepal. Product Pipeline would ensure availing of other inherent advantages like reliability. Safety, flexibility low energy consumption, negligible transit losses etc. Pipelines are normally not affected by natural calamities like floods, breaches etc., and manmade hurdles like strike, Bandhs, Chakkajams etc., which disturb the surface transport system.

Need of Streamlining NOC: Some Suggestions

I Capital re-structuring

NOC needs capital streamlining because present capital structure is not justifiable. The paid up capital including bonus shares is about hundred million. The total fixed capital investment of any company has to be backed up by shareholder's

fund. Some part of annual turnover, for comfortable running of a company also has to be backed by shareholders' fund. The authorized capital was increased from hundred million to five hundred million. The Asian Development Bank (ADB) had provided loan few years back. The government received the loan for NOCL from the bank to spend in constructing additional storage depots at different parts of the country. The loan thus received is yet to get approval to be converted as share investment from government. The government is requested to increase share investment substantially besides above mentioned loan amount. Presently NOCL has an annual turnover of about fifty thousand million. The corporation has obtained government guaranteed loan from financial institutions and the government itself. The company thus is able to meet its working capital needs. The cost of interest thereon is very high, perhaps consuming major part of the profit if there were any. So there is very little chance of capital formation or retained earnings accumulation. Loan has to be paid back one day. Present day need is to raise enough funds to settle loan and the outstanding amount of import.

The pricing autonomy in fixing selling price when cost of sales increases or the price of petroleum in the internal market increases will help to raise internal capital. Now the board of directors can increase selling price only after Government approval. The government rarely approves timely increment and hence the company incur heavy loss (Shiva P Pudasaini, Director)

II Globalization

Globalization is a universal phenomenon of twenty first century. After 2010 international companies are to enter into Nepali market. The central bank has announced arrangements to give license to foreign banks to operate in Nepal. There is high possibility that international oil companies also may come into Nepal. NOCL having a heavy negative net worth had had to compete with the new comers from international markets. It is very much sure that those companies will be well equipped in many respects. They will bring enough capital. They will

bring latest technologies, management skill and so on. NOCL is a monopoly in practice till date. It is little conscious about competition. It is run more or less in a traditional way. The company's dependency upon the only supplier, Indian Oil Corporation is perhaps not an appreciable situation. It has still to look after more reliable and more economic sources of supply from the international market to gain more benefits of international trade. The modern technology is yet to be applied in performing management functions and depot operations. It has to develop its present work force and recruit young professionals. Thus gaining well equipped the company can survive in a competitive environment. Otherwise it is likely that the oil business would go in foreign hands. So it is high time to make the business sustainable. And also it is high time to invest a sizable capital to make itself up to date. An autonomous NOCL only can make profit and make the business to survive and sustain.

III Supply Hurdle

Occasionally there are serpentine queues of vehicles demanding oil from the petrol stations. The reason general public understand, is that the only supplier NOCL is not supplying enough. There is need to analyze the reasons behind this frequent short supplies. The real reasons behind NOCL's inability to deliver oil as per demand may be due to inadequate import of oil from India. The settlement of import dues in scheduled time only helps to get normal supply. The supply hampering reasons also may be simple traffic jams, strikes of tank truck drivers or the cleaners etc. Some times the supplier also contribute to short supply as they have limited delivery infrastructures at their depots. The supply depots in India are to export to Nepal along with their local supplies. Land locked geography and absence of means of transportation like railway or the petroleum pipeline is the major reason for insufficient supply of petroleum products.

IV Benefits of International Trade

It would not be exaggeration to say that the gain of international trade in oil import is still a matter of desire to Nepal. The national import bill of oil covers nearly two third of total export bill. This shows the very poor scenario of Nepal's international trade. Total import of oil is made from Indian Oil. The exporting depots in India are meant for local supply also. The product is obtained in tank trucks that means in small quantities. One can get benefit of international trade when there are choices among many suppliers and the goods are purchased in bulk. NOCL has no alternative supplier and very little effort is made to find a new one. The geographical location and the absence of railway or the petroleum pipeline or any other suitable transportation medium in the country has compelled to accept import from a single exporter in small quantities.

V Public Sector: first and Final Priority

The oil import and distribution function should be in government sector in a country like Nepal. Government ownership of oil business is necessary because the Nepalese population is poor and need government support in essential goods like petroleum. On the other hand Nepal is still a traditional society. Nepalese economy is not governed by market. In a society where the market is not governed by market principle, the private sector naturally is concerned to profit. The profit motive in such a situation rarely sees public welfare. The volume of loss however big it may be is tolerable in government ownership. The major part of public distribution of oil in India is in government hands despite the Indian economy is one of world's largest economy and also it is one of the fastest growing one. In Nepal the infrastructures like pipeline etc. are to be built by the government. Hence the government ownership is justified at least for a period that the economy is self sustaining.

Conclusion

Petroleum pipeline construction is in the program of NOCL. The project is not in progress as desired due to different reaasons. It will be a beginning of smooth supply when the pipeline comes to shape. After the construction of pipeline from Raxaul to Amlekhganj the door to bulk import from India or from the international market will open. Petroleum is the most essential thing of modern society. America (the USA) is America because this country found oil for the first time. Now also America and other developed countries make efforts to get cheap and regular supply of oil to maintain and further develop their economy. Similarly the developing and under developed countries also need oil to fuel their development efforts. Nepal needs regular fuel supply in a competitive rate. Nepalese public enterprises need streamlining. The changing society has many new ideas and practices. Adoption of these new ideas and practices is necessary to survive in a changing environment. NOCL cannot survive or grow practicing all the traditional methods and beliefs. Adoption of new ideas and technologies is the need and demand of modern time. NOCL should get autonomy in running the business according to modern concepts to sustain and grow in future. Aviation fuelling is done in a traditional way.

Modern Globalization

Globalization refers to the absence of the walls of matchboxes that every country had, between themselves based on suspicion, mutual distrust and ambition. We were different countries, in fact divided into worlds, and therefore could never manage to deal with natural holocausts and deadly epidemics, which time and again challenged us. Globalization has strengthened the nexus and has helped us to know each other's need in a better way. It has helped to demolish those walls that separated us and curbed our natural identity of being fellow human beings. Globalization has primarily become a fiscal term but its impact is not limited to the economy of the countries only, the term globalization actually refers to every

aspect of life like cultural, social, psychological and of course, political. It is true that the impact of globalization is visible and affects largely the politics and the economy of the country but its effect on the mindset and the culture is noticeable gradually in the way people think and react. It's like the Iceberg theory wherein what we do and say are at the tip and what we think and believe is at the base. The base is not visible but manifestations at the top are conspicuous. It applies here as well where people do not change abruptly but may be after a decade the change starts showing and seems radical.

Pro-globalization

Globalization is not a new phenomena, the base was laid long back when the Dutch East India Company and the British East India Company started trading with India. In history there were trade relations between different countries like Arab and Egypt and now in modern times that has translated into Globalization or Free Trade. It's true that ultimately all the free trade resulted in the white man taking the burden proactively but then globalization leads to more employment and higher standard of living, especially among the developing countries. Theories suggest that globalization leads to efficient use of resources and benefits all who are involved.

According to libertarians, globalization will help the whole world to deal with crises like unemployment and poverty. It will help us to raise the global economy only when the involved power blocks have mutual trust and respect for each other's opinion. Globalization and democracy should go hand in hand. It should be pure business with no colonialist designs. The way we have developed in the last 10 years, globalization seems to have given us good returns. Globalization has made the life of the third world citizen completely a different story. There are so many foreign companies that have made way to Orient and have made India a brand name all over the world.

Pros and Cons of Globalization

The pros of Globalization are many and they are as follows:

- Now there is a worldwide market for the companies and for the people there is more access to products of different countries.
- There is a steady cash flow into the developing countries, which gradually decrease the dollar difference.
- Due to the presence of a worldwide market, there is an increase in the production sector and there are lots of options for the companies now.
- Gradually there is a world power that is being created instead of compartmentalized power sectors. Politics is merging and decisions that are being taken, are actually beneficial for people allover the world.
- There is more influx of information between two countries, which do not have anything in common between them. There is cultural intermingling and each other is trying to know about the other's cultural preferences and in the process of doing so, we are actually coming across things that we like and in the course of time adopt it.
- Since we share financial interests, corporate and governments are trying to sort out ecological problems for each other.
- Socially we have become more open and tolerant towards each other and they who live in the other part of the world are not aliens as we always thought. There are examples like now Indian girls work in call centers and work nights, which was a taboo even two years back. We are celebrating Valentine's Day, scraping on Orkut, watching the Idol series, Fear factor, the Indian version Big Brother.
- There is a lot of technological development that we have undergone over the years. There are fewer brain drains since Asians are working in their own country though for a foreign company but are earning foreign exchange for their country.

It is true that Europeans are losing jobs and that is posing a problem for them since the companies are outsourcing work to the Asian countries since the cost of labor is low and profits the company considerably. There is immense pressure on the employed Europeans who are always under the threat of the business being outsourced. Corporates are building up units in other countries equally well equipped as they have done at their own country, thus transferring the quality to other countries. There are some experts who think that globalization; along with the positive aspects is also leading to the incursion of negatives like communicable diseases and social degeneration. There is also a threat of corporates ruling the world because there is a lot of power, which is invested in them due to globalization. For nations that are at the receiver's end are also giving up the reins in the ends of a foreign company which might again lead to a sophisticated form of colonization.

Impact of Globalization

Globalization has made way for free trade and business and has communication between various parts of the globe. It has potential to make this world a better place to live in. It is changing the political scenario thus deep-seated problems like unemployment; poverty and shift in power are coming to the picture. The marginal are getting a chance a to exhibit in the world market. The term "brand" is catching up in the Asian countries. It, however, is not only modernizing but also westernizing and to an extent also sanitizing the native cultures. The power play is leading to the linguicide or linguistic, cultural and traditional genocide. That is probably where we need to keep a check and not let diffusion go wild. There has been significant de-localization that needs individuals to be more tolerant since face-to-face interaction is no more the order of the day. One American is trying to sort out his billing issue of his mobile phone with an Indian who is not a direct employee of the service provider. Now that sounds complicated and is complicated and has to be dealt carefully.

2.3 Review of Related Research Studies

Exactly the same topic I didn't find any thesis but I try to connection the concept of decision to the Nepal Oil Corporation Limited.

One important factor underlying systems is that information is a corporate asset and should be recognized as such. In classical economic terms the factors of imports were viewed as land, labor and capital in the modern age, thee have become the five M'S : man , money, machine , material and management. TO integrated these factors successfully, it is necessary to use information as a sixth factor of imports of petroleum. Although MIS tried to integrate an organization's resources together in a coherent and effective manner, there were shortcomings.

A definition of decision - making activity is often taken for granted and is associated with making a choice among alternatives. Decision – making is the process by which the decision maker moves from a current position to the position in which she or he wants to be. So Decision – making process can be defined as a series of steps that start with an analysis of the information and ultimately culminate in a resolution a selection from the several available alternatives and verification of this selected alternative and verification of this selected alternative to solve the problem understudy (Er. Shankar Nath Adhikari, 2066)

Levels of Decisions

Fundamentally managerial activities and decisions can be segregated in to three categories: those that relate to top. Middle and lower managerial Decision managing at these levels of management has varying degrees in futurity. Strategic palling, Management Palling and Operational Palling.

Because the output of and information system is directed toward assisting management in planning and controlling organization activities, it is beneficial to relate the following types of information:

- Strategic

- Tactical
- Operational

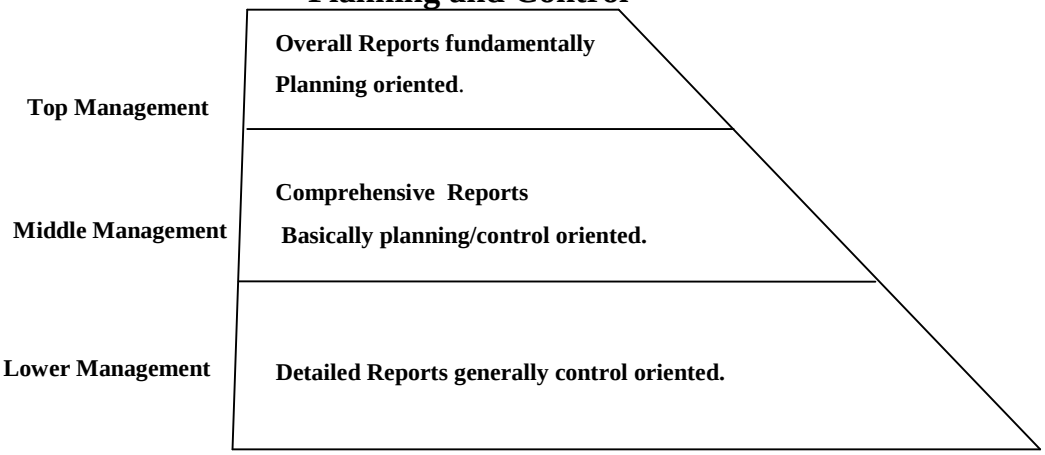
To the managerial levels for decision making. Generally. Lower management conc3erned with operational informational for decision making, while tactical information and strategic information are useful to middle and top management , respectively, for making decision . The type of information supplies has to do with the activities with which the information is concerned to interna environment of the organization and the external environment which the organization operates.

Information need for Decision

It is general fact that internal information should be more and more summarized as the level of management for which it is prepared rises in the hierarchical structure, with top management receiving overall reports operations for future planning.

Figure 2.3

Types of information reports needed by management levels for Planning and Control



On the other hand, lower echelons of management, being control oriented, receive the most detailed reports. Between top and low management is middle management, which is planning oriented. All three levels of informational need are illustrated in Figure above.

The relationship of types of decisions to the managerial Level – support functions.

Figure 2.4

Examples that depict the relationships of types of decisions to the Managerial Level – Support Function

Managerial Level: Support Function	Types of Decision	Examples.
Top management: concerned with strategic planning.	Structured semistructured unstructured	Plant and warehouse locations Mergers and acquisitions Future produces .
Middle management: concerned with managerial control.	Structured semistructured unstructured	Flexible budgets and cost analysis Forecasting and sales promotion Subcontracting and motivation of personnel
Lower management: concerned with operational control.	Structured semistructured unstructured	Accounts payable and payroll preparation Accounts receivables and purchasing Customer waiting lines and situations involving group behavior.

(Source: Robert J. Thierauf, Ph.D, XavierUniversity)

Types of Decision

Earlier we have mentioned that decision-making activity is associated with making a choice among alternatives- in fact-making a reasoned choice among alternatives. This activity consists of series of steps that starts with an analysis of the information and ultimately culminates in a resolution i.e. making a selection among available alternatives.

Fundamentally, the decision-making Process can be viewed from two major perspectives

- Quantitative Approach
- Qualitative Approach

Quantitative Framework

In this, the stress is on determining specific values of all parameters of the problem and solving for a specific value or range of values.

Qualitative Framework

State the factors in general term and solve the problem on that basis No attempts to quantify the factors. Both approaches have their own merits and demerits and importance in decision-making. The fundamental approaches of viewing decision-making processes, viz. quantitative and qualitative, can be discussed on three different viewpoints.

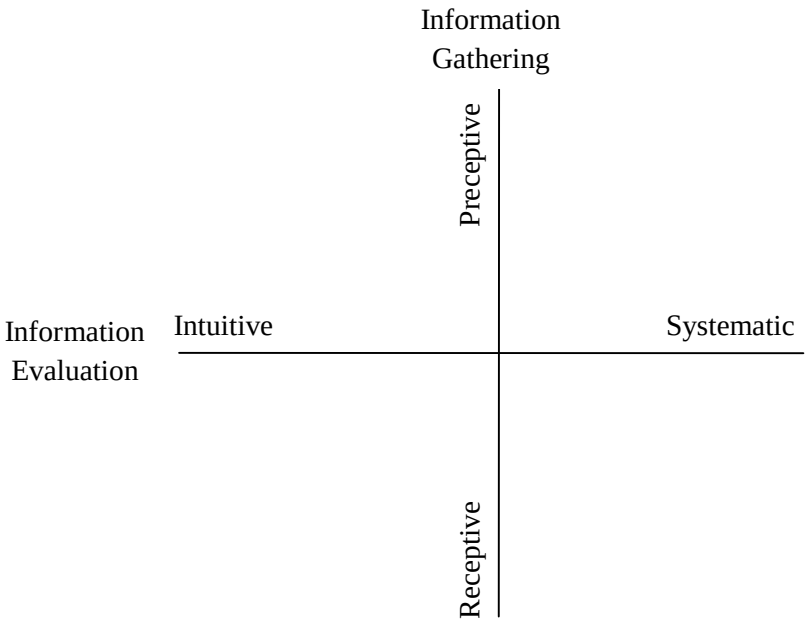
Systematic –Intuitive Approach

Thinking – Feeling Approach

Normative – Descriptive Approach

Systematic –Intuitive Approach

Problem solving and Decision making can be viewed in terms of processes through which individuals organize the information they perceive in their environment, bringing to bear habits and strategies of thinking. James McKenney and Peter Keen's this view of decision-making is based on:
Information gathering and Information evaluation.



Thinking – Feeling Approach

This second way of viewing decision-making approach is by C. G. Jung Thinking types base their decision logical modes of reasoning. In effect, they do not feel comfortable unless they have an analytical, mathematical basis for decision-making. Feeling types make their decision based on extremely personal considerations – their feeling about a particular situation. Thinking types want to depersonalize every situation, objects and person by "explaining them, where as Feeling type want to personalize every situation by stressing their individuality. An individual takes in data by intuition or sensations.

The person may come to conclusion about the data by either a logical, impersonal analysis – thinking, or by subjective, personal process- feeling. Combining the two input modes with two decision-making modes we get four Jungian personality types. Which are mentions below.

Sensing – thinking types,

Sensing - feeling types,

Intuitive - thinking Type,

Intuitive – feeling type,

Each type depicts a different mode of operation regarding decision-making process.

Normative- Descriptive Approach

The third approach of viewing decision-making is based in terms of two general types of decision models. These two decision models are now commonly in use. These are normative Model and descriptive model.

The ***normative framework*** describes the traditional decision making situation in which a decision maker faces a known set of alternatives and selects a course of action by a rational selection process.

This approach presumes, a decision maker is objectively optimizing a quantifiable measure of decision quality. (This may be a statistical measure because future is never completely known). There is, in other words, a normed scale against which decision can be measured - and it is often assumed, unlimited time and resources to devout to analyzing the decision.

The ***descriptive framework*** incorporates adaptive or learning features and the act of choice spans many dimension of behavior, rational as well as non-rational.

Descriptive models, by contrast, attempts to describe the way people really do make decisions. We don't always have agreed upon measures of decision quality,

we don’t usually have unlimited time and resources to devout to analyze a decision and we often have motivations that can be hard to explain or justify.

Approach to Problem Solving

Traditional Problem Solving Steps are

Step 1: Observation

Step 2: Definition of the Problem

Step 3: Formulation of Hypothesis

Step 4: Experimentation

Step 5: Verification

Herbert Simon’s three steps of Problem Solving

Step 1: Intelligence

Step 2: Design

Step 3: Choice

Approach to Decision Making

There exist several approaches to decision making. Instead of exploring and comparing each one of them we mainly focuses on two approaches viz. Quantitative Approach to decision Making and Decision centered Approach to decision making.

Quantitative Approach to Decision Making

Step 1: Observation

Step 2: Definition of the real Problem

Step 3: Development of alternative solutions

Step 4: Selection of optimum solution using experimentation

Step 5: Verification of optimum solution through implementation

Step 6: Establishment of proper control over solution

Decision Centered Approach to Decision-making

Step 1: Intelligence

Step 2: Design

Step 3: Choice

Step 4: Implementation

Step 5: Control

(Class Hands Out From Thapa, DSS)

2.4 Research Gap

This research is slightly different then other research or research due to I use here different types of tools like ERD and DFD and model for linear programming which helps to forecast the maximum profit or minimum cost for any company when we take quick decision.

All other reaming parts of reaches are same. Except above mention some particular tools. On the basis of ERD types I give one example.

CHAPTER - III

RESEARCH METHODOLOGY

3.1 Research Design

"Research design is a plan, structure and strategy of investigation conceived so as to obtain answer to research question and to control the variance" (Kerlinger, 1999). Thus, research design is an overall pan or frame work for the collection and analysis of data which provides the frame work for the study, guidelines for the collection and analysis of data

I designed the research by the help of IT Manager of NOC Er. Shrijana Panthee and Annually Magazine Prabhat, 2066. I collected knowledge of venture of NOC detail data flow diagram and Module of forecasting for maximization profit or minimization of cost, secondary data of NOC. Others more information I collected from authorized dealer and from head office.

3.2 Population and Sample

If the researches take huge mass is population study. The population study is not provide accurate decision, thus we have to take sample study. Sample study is one of them selected from population mass is sample study. Sample study tends to accurate study or test. All together thirteen branches depo are in Nepal. The head office or the main controller office is in Kathmandu Babarmahal. The population study is huge mass of study and the sample study is Nepal Oil Corporation Limited. Sample study is one of the selected study from the population study.

3.3 Sources of Data

I collected data from different places and differences sources like, visiting on its office Babar Mahal, Website, Primary sources and also secondary sources which all are listed below on point wise. The data and information have been collected from different sources. The sources of data and information used in this study are as follows. Without any data, nothing can be studied. So, for any statistical investigation, the collection of data is most important. The importance of data collection lies in the following facts:

That collected numerical facts can be utilized to examine the problems concerning a field of enquiry in their true prospective, to find out the cause of change and to estimate their probable effects, The statistical methods are also employed as a tool for the comparison between past and present events to throw light on the reason o f change on the social system and for future plans and programmers.

3.3.1 Primary Data Collection

The data which are originally collected by an investigator or an agent for the first time for the purpose of statistical enquiry are known as primary data. The data is thus original in character. These types of data are obtained in the survey and enquiries conducted by government, some individuals, institutions and research bodies. The data which are originally collected by an investigator or an agent for the first time for the purpose of statistical enquiry are known as primary data. The data is thus original in character. These types of data are obtained in the survey and enquiries conducted by government, some individuals, institutions and research bodies.

Data Collected Methods

- Observations
- Questionnaires
- Interview etc.

3.3.2 Secondary Data Collection

The main difference between primary and secondary data is only of degree one. Data which are originally collected but obtained from some published or unpublished sources are secondary data. The main difference between primary and secondary data is only of degree one. Data which are originally collected but obtained from some published or unpublished sources are secondary data. Prabhat 2009/2010. Authorized Web site: www.nepaloil.com, Case study Primary Sources: According to NOC primary data are collected by different related sources like opinion poll , sampling , visiting , accuracy study. Primary Sources: Internal sources , Data are found within a NOC. External sources, Collected from sources outside the Corporation.

Data Collected Methods

- Prabhat 2009/2010
- Authorized Web site

3.4 Analytical Tools and Technology

Out of so many tools and technology some appropriated tools and technology I used in this research which I presented below with diagrams and names. Data are collected by using different tools and technique like flow chart, Data flow, Entity relationship etc. For the programme presentation we can use some tools which are mention below.

i. Algorithm
ii. Pseudo code/ structured English
iii. Flow chart
iv. Data flow diagram

Algorithm

Manually use tools is algorithm. Step – by – step method of programe is called algorithm.

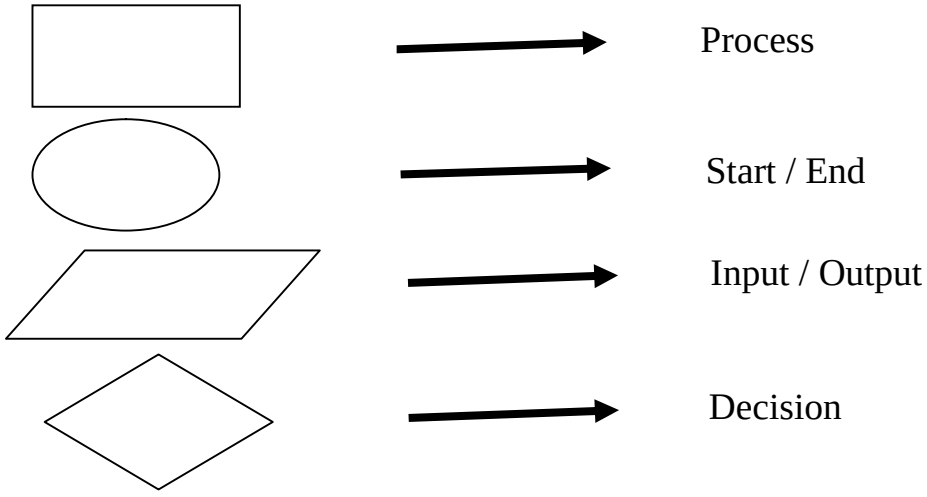
Pseudo Code

To represent the program by using English with some logical expression like the programs. For an example; If condition, loop streeck, etc.

Flow Chart

Program are reported in diagrammatically by using standard symbols is called flow chart. This provides the skeleton of the programmers. The rectangular box represent the process of the flow chart or the system. Circular shape or ovel shape represent the Start or end the process or the system of flow chart. Parallelogram type symbol represent the input or output of data. Similarly the kite symbols represent the Decision. On this way the flow chart is planned by the information manager or IT manager or engineer. The symbols of Flow charts is presented below:

The symbols of Flow Charts



Data Flow Diagram (D.F.D.)

Diagram that represent the flow of information from external entity to the system and vice-versa.

i. Context level DFD

ii. DFD systematic flow level.

- 0 level DFD
- 1 level DFD

Context Level DFD

This is one of the most important technique or tools for data collection methods . While preparing this project work or models, I use interviews, questionnaires, and other techniques to gather facts about the system, and they learned how the various people, department, data, and processes fit together to support business operations.

The first step is constructing a set of DFDs is to draw a context diagram. A context diagram is a top-level view of an information system that shows the system's boundaries and scope. To draw a context diagram, I start by placing a single process symbol in the center of the page. The symbol represents the entire information system, and you identify it as process 0. Then I place the internal entities around the perimeter of the page and use data flows to connect the entities to central process. I do not show any data stores in a context diagram because data stores are the internal system. How do I know what internal entities and data flow to place in the context diagram? I begin by reviewing the system requirements to identify all internal data source and destination. During that process, I record the name of the entities the name and the context of the data flows, and the director of the data flow. If I do that carefully, and I do the good job of fact-finding in the previous stage.

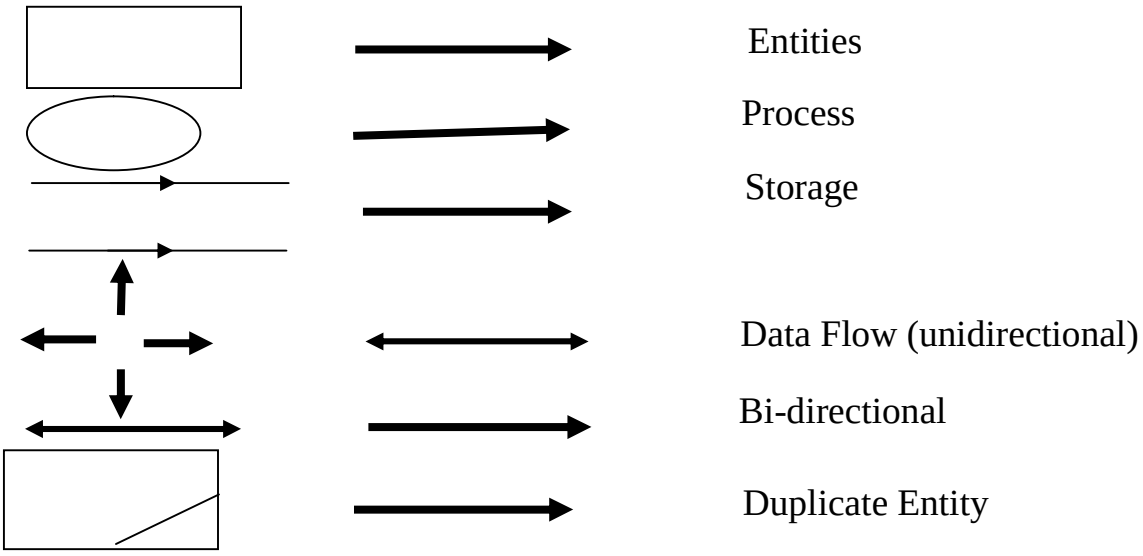
Zero Level Data Flow Diagram

A context diagram provides the most generals view of an information system and contain a single process symbol, which is like a black box. To show the detain inside the black box, I create DFD diagram 0. Diagram 0(the digit 0, and not the

letter0) zoom in on a context diagram and show major processes, data flow, and data stores. Diagram 0 also represents the eternal entities and data flow that appear in the context diagram.

Process Symbol

A process receives input data and product output that has a different content, form, or both. For instance, the process for calculating pay users two inputs (pay rate and hours worked) to produce one output (total pay). Processes can be very simple or quite complex. In a typical company, processes might include calculating sales trends, filing online insurance claims, ordering Inventory from a supplier's system, or verifying e-mail address for web costumers. Processes contain the business logic, also called business rules that transform the data and produce the required results. The process name identifies a specifies function and consists of a verb (and an adjective, if necessary) followed by a singular noun.



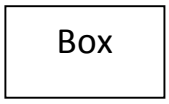
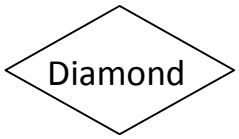
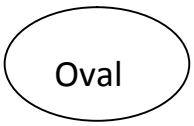
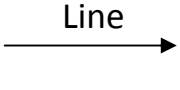
Entity Relationship Diagram (ERD)

Diagram that represents entity set at single entity. Diagram that perform the object modeling. (Entity = Objective). In the given table below represents the name of entity and comments .This in one most important technique for data collection which is use in widely in Management Information System. To understand the

relationships concepts, we have to understand the terms used in explaining the same. They are: entity, attributes, values, key attributes and records.

To provide the control and work with multiple fields certain relationship are generated and present with a diagram called the entity relationship diagram.

Symbols

S.no.	Symbols	Comments
1.		It is used for **entity** representation. It contains objects used in relational database.
2.		Diamond represents **relationship.**
3.		The oval or ellipse is used to represent **attributes** of entities.
4.		It is used to **link** attributes to entity sets and entity set to relationship.

There are three types of relationships between entities. They can be shown in and entity-relation diagram. Also known as E-R diagram.

- One – To – One
- One – To – Many
- Many – To – Many

3.4.1 Tables and Figures

Some tables and figures are so important for the correct evaluation of the business or the position about the corporation if they are correct. Some important tables and

figures are presented here. Which are so important for the decision making or this research.

Decision Tables

A decision table shows a logical structure, with all possible combinations of conditions and resulting actions. Analysts often use decision tables, in addition to structured English, to describe a logical process and ensure that they have not overlooked any logical possibility.

To create a decision table, follow these steps:

- Place a heading at the top left that names the table.
- Enter the conditions under the heading, with one condition per line, to represent the customers status and availability of products.
- Enter all potential combinations of Y/N (for yes and no) for the conditions. Each column represents a numbered possibility called a rule.
- Place an X in the action entries area for each rule to indicate whether to accept or reject the order.

Table 3.1

Decision Table

Subject Title	1	2	3	4
Subject 1	Y	Y	N	N
Subject 2	Y	N	Y	N

On this way decision table is created by computerized system.

CHAPTER - IV

SYSTEM ANALYSIS, DESIGN AND DATA PRESENTATION

4.1 Organization Structure

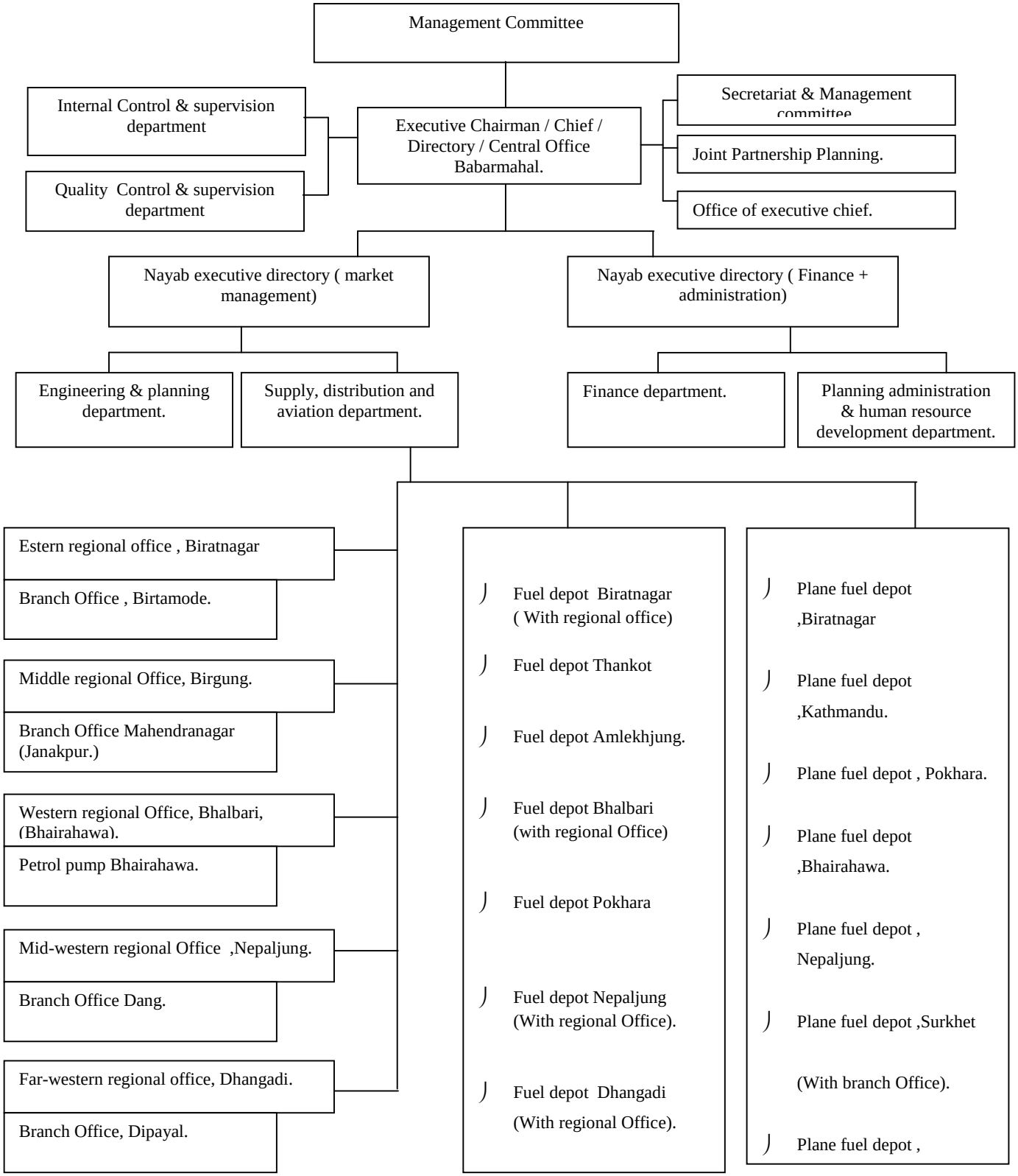
The Organization structure of NOC is divided in to two category. One is Nepal Oil Corporation Board of Director and another one is Management group. Eight post are classified in Board of director and Nine post are classified in management group.

i. Board of Director
ii. Management Team

Corporate organizational structure has changed in recent years. As Part of downsizing and business process re – engineering, many companies reduces the number of management levels and delegated responsibility to operational personnel. Pyramid structure depends on no of employers. The bottom functions is day to day work. No any inputs from tactical level excepts operational management. Day to Day activities handles on operational levels.

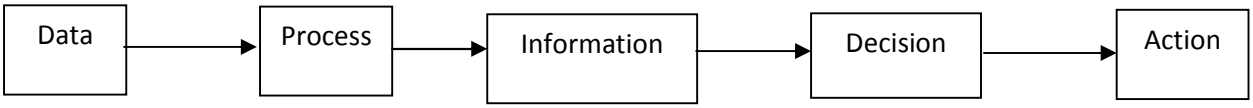
organizational structure has changed in recent years .As part of downsizing and business process re-engineering many companies reduced the number of management levels and delegated responsibility to operational personnel. Although the organization chart tends to be somewhat flatter a traditional hierarchy still exists in most companies.

The Organizational Chart of Nepal Oil Corporation Limited



4.2 Sources of Information

Information can be defined as the data, which can be organized and presented so that the decision maker may take the necessary action. In other word, information is the result of processing data. The conversion process of data into decision is shown in the figure below:



From the above figure, it is clear that information consists of data that has been retrieved, processed or otherwise used, for informative purposes. Information contains an element of surprise, reduces uncertainty and triggers off action.

The main sources of information are primary information and secondary information. Which is listed in below:

- Primary information
- Secondary information

Primary Information

Such information which I collected from different sources without direct visiting is primary information. I collected information from Prabhat magazine issued from Nepal Oil Corporation Limited. Other information from daily newspapers like “Karobar”, The Himalayan Times, Gorkhapatra , Kantipur, The economist Post , Times Nepal and Indian news papers where there published about NOC. Primary information are really untruth may be truth which are conformed by the help of secondary information.

Secondary Information

Those information which are collected through directly visited to the related office is secondary information. Secondary information which I collected information through direct visited to NOC. Er. Shrijana Panthi who is manager of NOC in department of Information technology helped me providing information in detail form.

Some Questionnaires kept with the IT manager of NOC and she provide me so important data which are presented below.

Q, What Nepal Oil corporation limited is using computer system?

Of course It is using Computerize system.

Q, What role is playing MIS in NOC?

MIS is the frame work or road map of decission making, which is applicable in NOC and computer is necessary for it.

Q, Now these days NOC facing deficit why?

Due to the increasement of political crisis, strike and increment price of petroleum product in world market.

Q, How we overcome this problem?

If we aleart about the political crisis , increase the **storage capacity** of petroleum product and if we develop the price determination software (we are paying 23 to 24 lakhs permonths).

Q, what we have some relevant data about storage capacity of NOC?

Table 4.1 (a)

Fuel	KL
Petrol	5135
Diesel	41610
Kerosene	16314

Jet A1	8499

Storage Capacity of Petroleum Product in Nepal

4.3 DFD of Existing System

The data flow diagram of the existing system related to the storage system of petroleum products in Nepal Oil Corporation in different depots. The data flow diagram of the existing system is presented below.

4.3.1 Context Level DFD

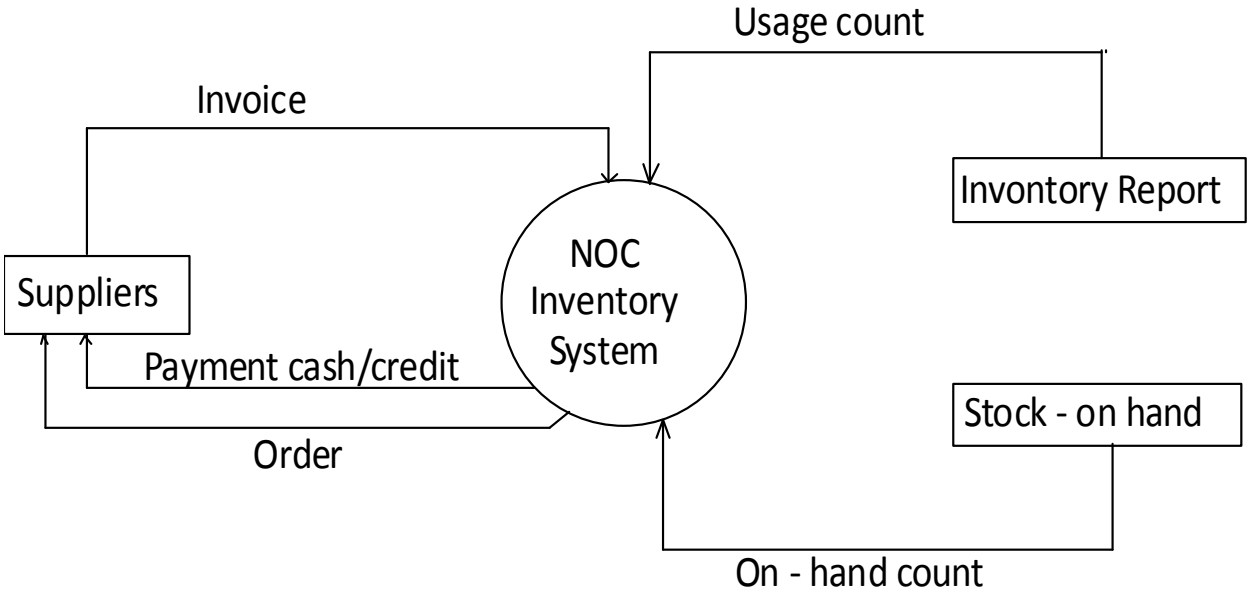
In this level the frame work of inventory system is presented. The storage system of NOC is clearly shown in the given context level diagram. The single process is Nepal Oil Corporation limited. Three external entity are there suppliers who supply petroleum products from India and others depots or branches who keep the record of inventory and stock on hand are presented below.

In this context level system suppliers invoice to the Nepal Oil Corporation Limited and NOC made payment cash or credit keep the record and follow up the order. Inventory reports usage count and stock on hand count on hand count to the Nepal Oil Corporation Limited. In this way NOC formed the context level DFD.

The given diagram clear the above information how it work and how it keep records.

Figure 4.1

Context level DFD of Inventory System



4.3.2 System Level

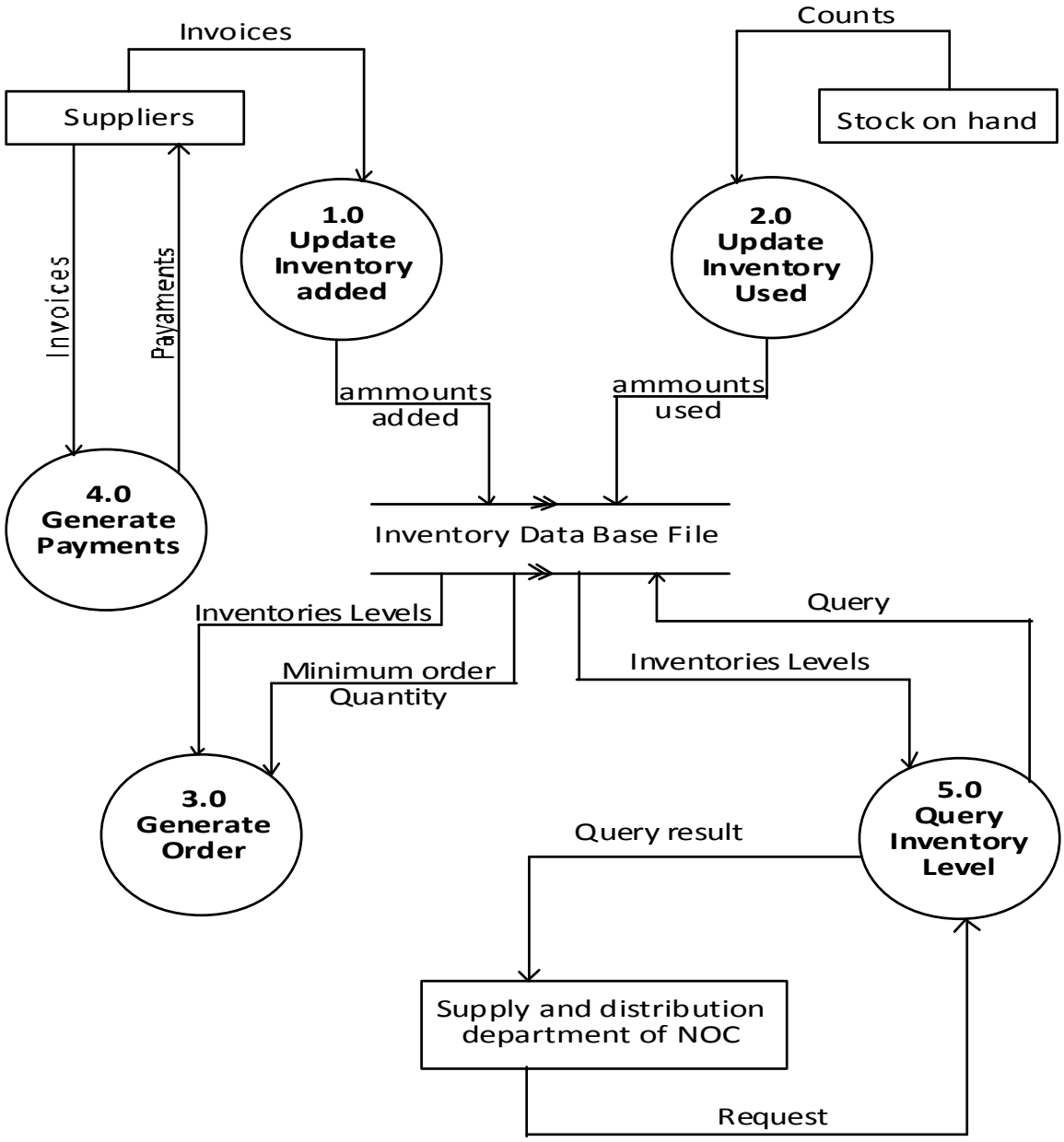
The system level of inventory management system is based on the suppliers external entity and Nepal Oil Corporation Limited. Here are three external entity and five process, these three external entities related to these five process in own respect and correlated to the data based file Inventory data base file.

In this system level data flow diagram the inventory data base file keep the record through different entities and process and provide data as per required. The most important part is query process which is shown in the given figure. A context diagram provides the most generals view of an information system and contain a single process symbol, which is like a black box. To show the detain inside the black box, I create DFD diagram 0. Diagram 0(the digit 0, and not the letter0) zoom in on an context diagram and show major processes, data flow, and data

stores. Diagram 0 also represent the external entities and data flow that appear in the context diagram. Which is shows the below diagram.

Figure 4.2

System Level DFD



4.4 Analysis of Existing Technology

Technological innovation can take several forms. However NOC is using different technologies which helps to gets the advantages in a particular way.

Supplier – Technology

This technology gives knowledge on how these new technologies might transform business processes in their part of the value chain. This remains the current challenge for organizations in may different sectors in exploiting computer hardware and software developments.

Scale – Technology

Advantages is gained from economies of scale and learning results from that scale.

Information – Technology

Such as in financial services, retailing or transporting – where the exploitation of IT is the central strategic issue.

Science – Based Technology

It is still important in many sectors such as pharmaceuticals, electronics, materials and engineering. The strategic challenges are to monitor academic research, develop imports and acquire the resources to achieve commercial – scale production (biodiesel).

Service – Technology

This type of technology is rigid in nature providing standardized service to customer. The main focus of this technology is development and scheduling of human resources for provident service to customer.

Computer technology is most important technology which is used in this corporation.

- Personal computers
- Software
- Communication networks greatly effective for the corporation.

NOC paying 23 to 24 lakhs for the price determination software technology to the plats on net software.

4.5 Limitation of Existing System

Some limitations are mentioned as point based below:

- These technology can not reduces costs expenses.
- These technology can not matches the equilibrium point with customers.
- Influences by the politics.
- These technology can not predict the actual shrinkage, leakage and loss quantity.

4.6 Major Finding of the Existing System

The storage capacity of petroleum product in different depots are collected and represented as below. From secondary data collection.

Table 4.1(b)

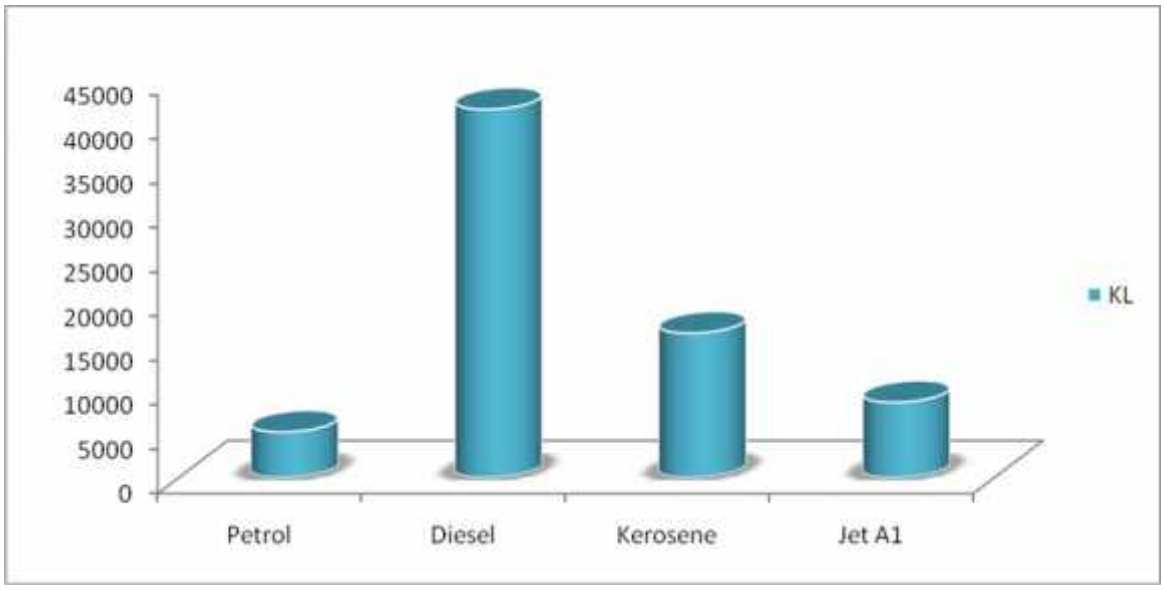
Storage Capacity of Petroleum Product in Nepal

Fuel	KL
Petrol	5135
Diesel	41610
Kerosene	16314
Jet A1	8499

The table shows the storage capacity of petroleum product in Nepal. Which is represented in bar diagram below.

Figure 4.3

Total Storage Capacity of Petroleum Except LPG



Storage Capacity in Pokhara

The table is showing the storage capacity of petroleum product in Pokhara. And the bar diagram is also prepared below.

Table 4.2

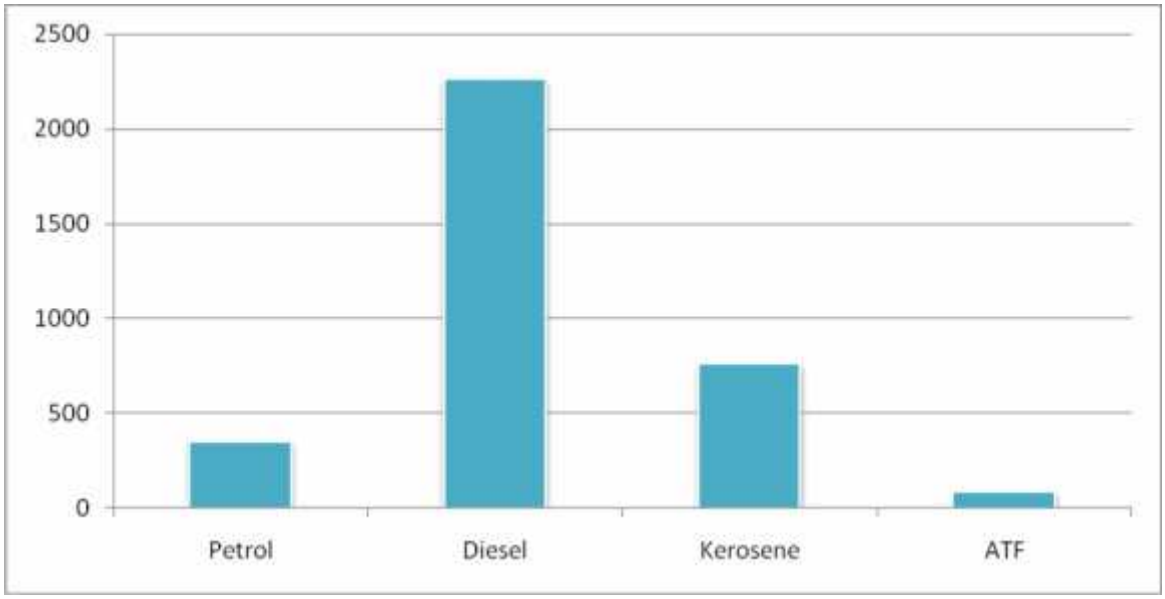
Fuels.	**KL**
Petrol	350
Diesel	2260
Kerosene	760
ATF	84

Storage Capacity of Petroleum Product in Pokhara

The storage capacity of Pokhara for the petroleum product which is given above table and the bar diagram is given below.

Figure 4.4

Storage Capacity in Pokahara



4.7 Concept of new system or modify the System

The new system is modified system of existing system. The new one can measure the actual data of leakage and shrinkage of petroleum product which in imported from India.

In the new system there is also context level DFD and system level DFD. Which is presented below.

The new system is defined under the similar to the existing but, order quantity in supply time and the quantity in storage time is different due to temperature and other miscellaneous things. Which overcome can be reduced by this new system.

4.8 Comparison between New and Existing System

I took a data which is best for the comparison between existing system and the new system. The overcome is written below first observed data. The data is related to the imports of petroleum products and sells of petroleum product on Pokhara depots.

Table 4.3

Imports of petrol and sells record of NOC Limited Gagangauda (2062 to 2066)

Time	Imports +balance	Total	Sales	Balance
2062/2063	8280	8280	6323	1957
2063/2064	7252+1957	9209	7718	1491
2064/2065	7488+1491	8979	7749	1230
2065/2066	9500+1230	10730	9157	1573

The given data table is primary data. These data are related to the imports of petrol and sells records of Nepal Oil Corporation Limited Gagangauda (2062/2063 to 2065/2066). Here we clearly observed the **balance quantity of petrol in K.L. is 1573 K.L.** But the total **storage capacity** of petrol in Gagangauda is **only 350 K.L.**.There is one important question to the NOC is where is the other balance quantity of petrol in Gagangauda?

The new system can solve this problem. The new system can determine the actual data of recorded.

Comparative study of sells in petroleum on 055/056 and 065/066

Comparative study of sells of petroleum on 055/056 and 065/066. NOC purchasing all demand of petroleum from IOC. Some times NOC use fuel from storage also.

Table 4.4

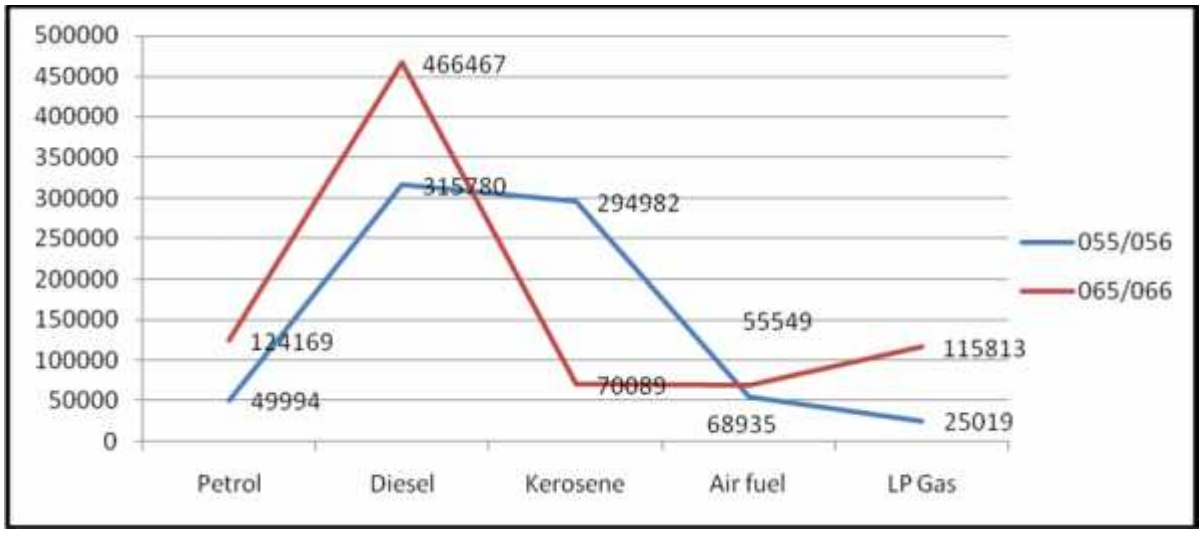
Comparative study of sells in petroleum on 055/056 and 065/066

Fuels	055/056	065/066	Increase in demand %	Consume of current 5 months	On the basis of sells of 5 months	Consume of the last year %
Petrol	49994	124169	148	64700	155280	25.05
Diesel	315780	466467	48	210546	505310	8.33
Kerosene	294982	70089	-76	22424	53817	-23.21
Air fuel	55549	68935	24	33469	80352	16.52
LP Gas	25019	115813	363	58474	140337	21.17
		8454773			935069	10.60

The line graph of this study is presenting below.

Figure 4.5

Comparative Study of Sells in petroleum on 055/056 and 065/066



From the above table shows the petroleum matter is excess increased in sells. About 25% increase in sells is excess sells. Last year the price of kerosene and the price of diesel is same and the demand is suddenly increased.

No. of Tank/Truck use for carriage of Petroleum

Both Nepali and Indian uses for carriage petroleum to Nepal from different depo of Indian Oil. The table is given below.

Table 4.5

No. of Tank/Truck use for Carriage of Petroleum

S.no.	Capacity (K.L.)	Nepali no.	Indian No.	Total	Total quantity (K.L.)
1	9	4	1	5	45
2	12	95	30	125	1500
3	14	4	-	4	56
4	20	35	16	51	1020
		138	47	185	2621

Eastern part of corporation up to 2066 Magh last all together 63 carriage contractors .They have 185 Tank/Truck. Which are represented above.

Import of Petroleum Products [in KL except LPG]

The given table shows the import of petroleum products (in kilo letters except LP gas). The study is taken from BS 2050/2051 to 2066 Poush.

Table 4.6

Analytical table of Import of Petroleum Products within 16 Years

SN	Fiscal Year	MS	HSD	SKO	ATF	LDO	FO	LPG in MT	MTO
1	2066/067 upto Poush 2066	77400	252508	24370	38048	80	1012	63799	0
2	2065/066	128372	489219	77799	74306	380	2188	115813	0
3	2064/065	101624	303212	152168	68534	308	2940	96837	0
4	2063/064	98435	299419	192576	63650	180	4624	93562	0
5	2062/063	81817	292381	225007	66100	292	3754	81005	0
6	2061/062	76097	308076	23463	68340	88	2651	77594	0
7	2060/061	67965	302644	313127	64394	590	12672	66142	36
8	2059/060	68482	301672	351696	53546	610	14502	56079	48
9	2058/059	63578	287657	930113	47274	2413	18255	48757	120
10	2057/058	60653	333791	325198	65620	3418	20999	40102	132
11	2056/057	55570	327427	350196	59123	4005	26876	30627	132
12	2055/056	51584	319158	298351	56010	547	34245	25019	132
13	2054/055	47507	302063	287595	51700	967	27776	22961	132
14	2053/054	46621	259358	244546	48722	1983	17296	21824	132
15	2052/053	41736	254323	213830	40776	4449	18293	1860	0
16	2051/052	35019	228016	176963	37886	3794	32003	13049	0
17	2050/051	31476	195474	162324	30438	1530	27319	9308	0

(Source: Secondary Data Collection)

Sales of Petroleum Products [in KL except LPG]

The above table represents the only imports of fuels except LPG and this table is showing the sales of petroleum products in kiloliters except LPG. We can comparatively study from this table also how many petroleum products imports and how many sales. We are now importing all demand only from India not from other countries like china.

Table 4.7

Analytical table of Sales of Petroleum Products within 16 years

SN	Fiscal Year	MS	HSD	SKO	ATF	LDO	FO	LPG in MT	MTO
1	2066/067 upto Poush 2066	75973	252679	28168	41122	79	1001	63799	0
2	2065/066	124169	446468	70089	68935	377	2171	115813	0
3	2064/065	100842	302706	155216	68938	306	2919	96837	0
4	2063/064	101912	306687	197850	63778	179	4558	93562	0
5	2062/063	80989	294329	226637	64335	290	3695	81005	0
6	2061/062	75989	315368	239328	66825	88	2696	77594	0
7	2060/061	67586	299730	310826	64041	577	12653	66142	36
8	2059/060	67457	299973	348620	52839	610	14496	56079	48
9	2058/059	63271	286233	286593	47453	2413	18255	48757	120
10	2057/058	59245	326060	316381	63131	3416	20934	40102	132
11	2056/057	55585	310569	331120	56849	3989	26811	30627	132
12	2055/056	49994	315780	294982	55549	547	33860	25019	132
13	2054/055	46939	300604	282026	51412	967	27776	22961	108
14	2053/054	44709	257910	243810	47864	1983	17296	21824	108
15	2052/053	41193	250500	208715	40619	4449	18293	18600	0
16	2051/052	34983	226622	180900	37524	3794	32003	13049	0
17	2050/051	31061	195689	162157	30650	1530	27319	9308	0

(Source: Secondary Data Collection)

Total Storage Capacity of Petroleum except LPG

Here, I present total petroleum storage capacity except LPG. Petrol, Diesel, Kerosene, Jet A1 are storage in Nepal.

Table 4.8

Total Storage Capacity of Petroleum Except LPG

Fuel	KL
Petrol	5135
Diesel	41610
Kerosene	16314
Jet A1	8499

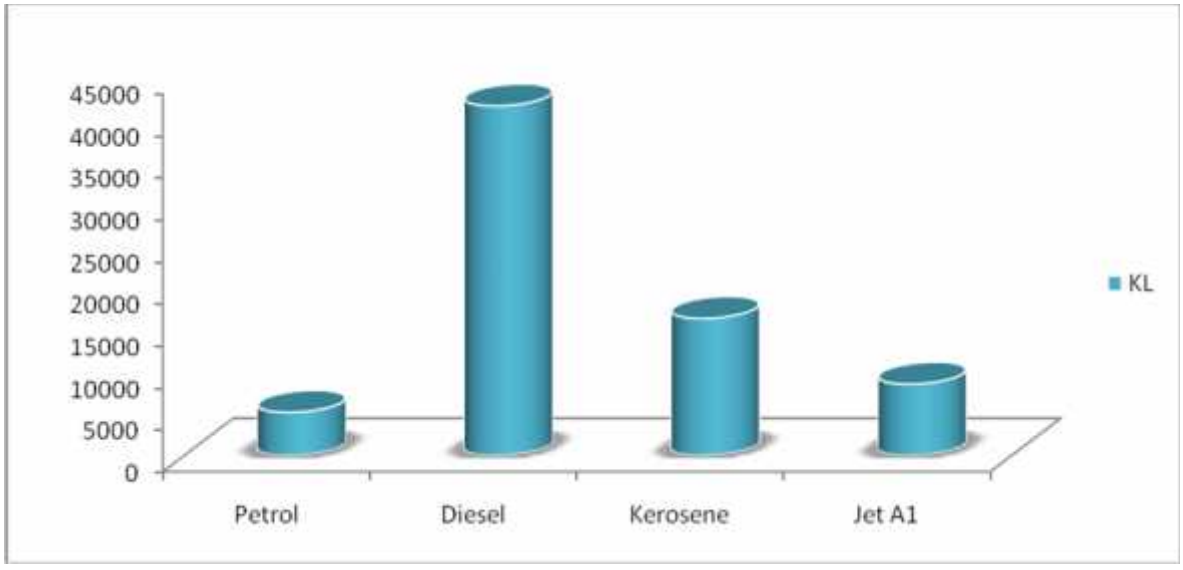
(Source: Secondary Data Collection)

Diagrammatic representation of the above data or storage capacity.

The cylindrical bar diagram of storage capacity is presented below which can easily expose to us how much storing fuel in our country and which is the greatest storage capacity.

Figure 4.6

Total Storage Capacity of Petroleum except LPG



Supply Points

The region wise demand of NOC is met through the purchase of petroleum products from the IOC depots, Terminal and Refinery located near the border with Nepal.

Table 4.9

Supply Points

For Eastern Region	Barauni Refinery
For Central Region	Raxual Depot
For Western Region	Betalpur Depot, Mugalsari Terminal
For Mid Western Region	Allahabad Ternimal, Gonda Depot
For Far Western Region	Banthara Depot

The above table shows the supply point of petroleum from Indian Oil depots.

4.9 Application Modeling

To estimate the value of economic variable trend line can be use in terms of mathematics form i.e.,

where,

Y = unknown economic variable

a & b = constant

b = trend line

a = intercept of y

x = Known time variable.

We can use least square method in equation

$\Sigma y = na + b\Sigma x$……(i)

$\Sigma xy = a\Sigma x + b\Sigma x^2$ ……(ii)

As $\Sigma x = 0$,

$a = \frac{\Sigma y}{n}$

$$b = \frac{\Sigma xy}{\Sigma x^2}$$

On this way we can determine the value of a and b and subustitute the value of a and b in to the y = a + bx equation and we can forecast the value of required time period.

I represent here a mathematical model related to this trend line projection or time line, which is belongs to the total imports of petroleum products in Nepal and NOC have to manage the huge storage capacity in different depots. The models forecast the imports of petrol in 2014 A.D.

Table 4.10

Forecasting model of petrol need to import in 2014 AD

Nepal Oil Corporation Limited

Imports of Petrol from (1995-2009)

Years	Petrol(KL) (Y)	X = X – 2002	X^2	xy	y_c
1995	35019	-7	49	-245133	30453
1996	41736	-6	36	-250416	35865
1997	46621	-5	25	-233105	41277
1998	47507	-4	16	-190028	46689
1999	51584	-3	9	-154752	52101
2000	55570	-2	4	-111140	57513
2001	60653	-1	1	-60653	62925
2002	63578	0	0	0	68337
2003	68482	1	1	68482	73749
2004	67965	2	4	135930	79161
2005	76097	3	9	228291	84573
2006	81817	4	16	327268	89985
2007	98435	5	25	492175	95397
2008	101624	6	36	60744	100809
2009	128372	7	49	898604	106221
Total	**ΣY=1025060**	**Σx=0**	**Σx^2 = 280**	**Σxy = 1515267**	

(Source: Secondary Data Collection)

Let the trend time be

$Y = a + bx$……(i)

As $\Sigma x = 0$.

$a = \frac{\Sigma y}{n} = \frac{1025060}{15} = 68337.333$, approximately a = 68337

$b = \frac{\Sigma xy}{\Sigma x^2} = \frac{1515267}{280} = 5411.666$,approcimately b = 5412.

From the trend line $Y = a + bx$

$Y = 68337+5412(-7) = 30453$

$= 68337+5412(-6) = 35865$

$= 68337+5412(-5) = 41277$

$= 68337+5412(-4) = 46689$

$= 68337+5412(-3) = 52101$

$= 68337+5412(-2) = 57513$

$= 68337+5412(-1) = 62925$

$= 68337+5412(0) = 68337$

$= 68337+5412(1) = 73749$

$= 68337+5412(2) = 79161$

$= 68337+5412(3) = 84573$

$= 68337+5412(4) = 89985$

$= 68337+5412(5) = 95397$

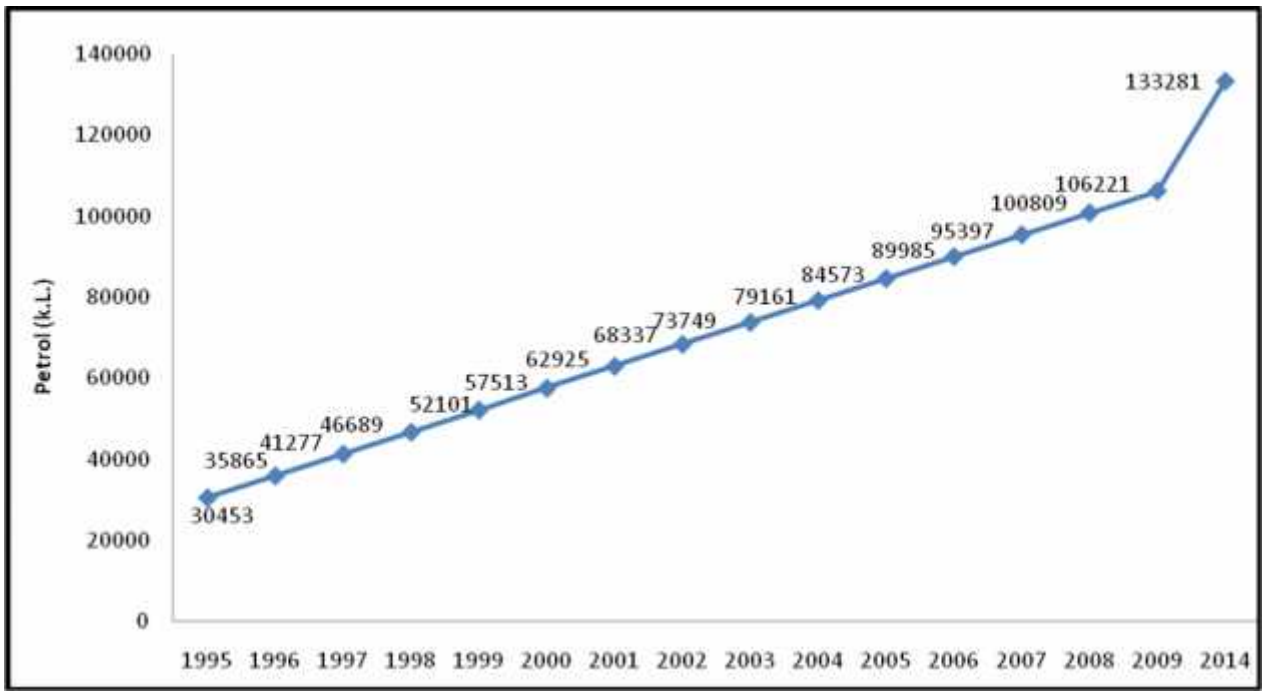
$= 68337+5412(6) = 100809$

$= 68337+5412(7) = 106221$

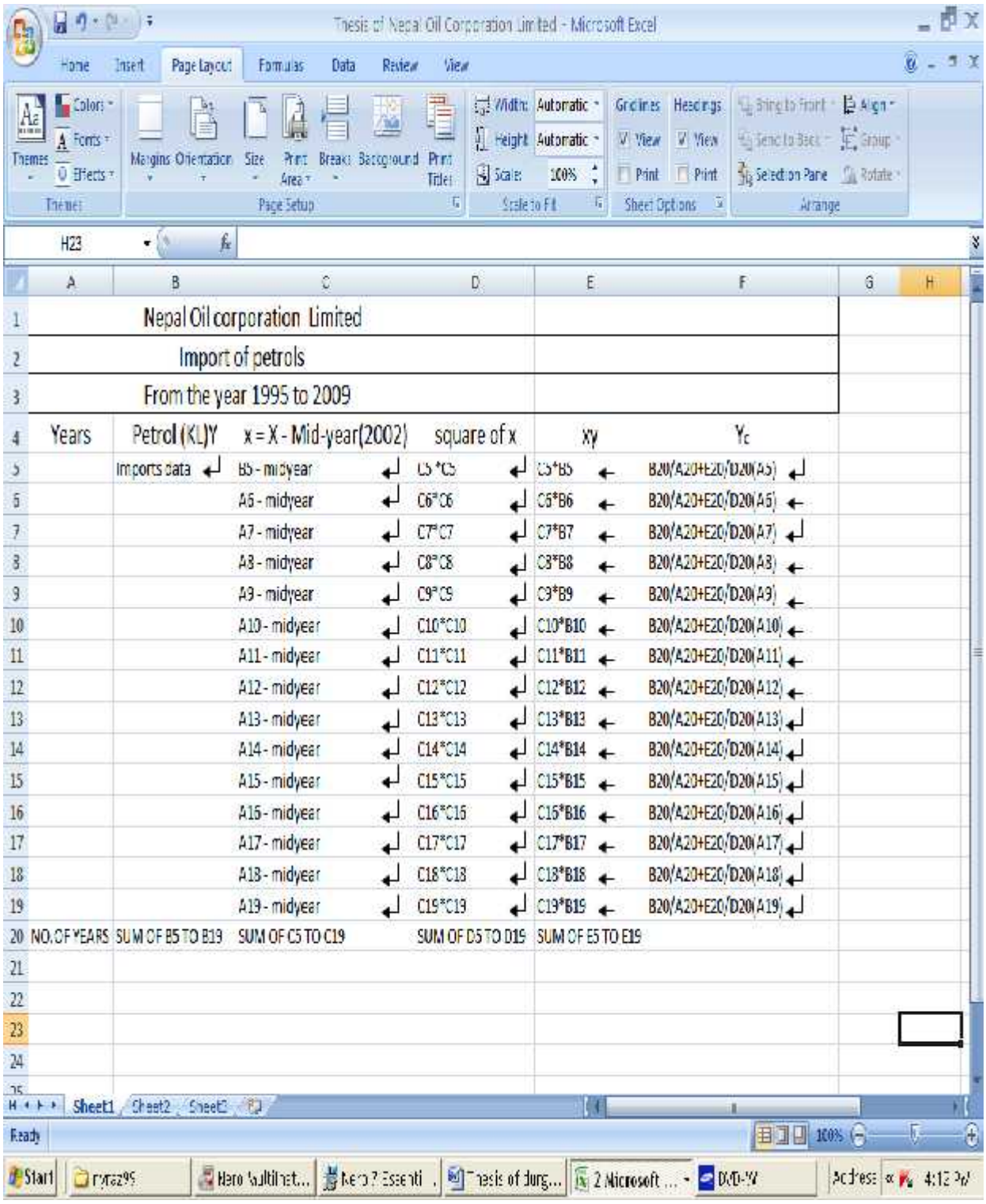
Now for the 2014 A.D. = 68337 + 5412(2014-2002) = 133281 KL.

Figure 4.7

Trend line projection of petrol imports in Nepal up to 2014 AD



The line graph forecast the quantity of petrol in KL for the year 2014 AD.



	A	B	C	D	E	F	G	H
1		Nepal Oil corporation Limited						
2		Import of petrols						
3		From the year 1995 to 2009						
4	Years	Petrol (KL)Y	x = X - Mid-year(2002)	square of x	xy	Yc		
5		Imports data	B5 - midyear	C5 *C5	C5*B5	B20/A20+E20/D20(A5)		
6			A6 - midyear	C6*C6	C6*B6	B20/A20+E20/D20(A6)		
7			A7 - midyear	C7*C7	C7*B7	B20/A20+E20/D20(A7)		
8			A8 - midyear	C8*C8	C8*B8	B20/A20+E20/D20(A8)		
9			A9 - midyear	C9*C9	C9*B9	B20/A20+E20/D20(A9)		
10			A10 - midyear	C10*C10	C10*B10	B20/A20+E20/D20(A10)		
11			A11 - midyear	C11*C11	C11*B11	B20/A20+E20/D20(A11)		
12			A12 - midyear	C12*C12	C12*B12	B20/A20+E20/D20(A12)		
13			A13 - midyear	C13*C13	C13*B13	B20/A20+E20/D20(A13)		
14			A14 - midyear	C14*C14	C14*B14	B20/A20+E20/D20(A14)		
15			A15 - midyear	C15*C15	C15*B15	B20/A20+E20/D20(A15)		
16			A16 - midyear	C16*C16	C16*B16	B20/A20+E20/D20(A16)		
17			A17 - midyear	C17*C17	C17*B17	B20/A20+E20/D20(A17)		
18			A18 - midyear	C18*C18	C18*B18	B20/A20+E20/D20(A18)		
19			A19 - midyear	C19*C19	C19*B19	B20/A20+E20/D20(A19)		
20	NO. OF YEARS	SUM OF B5 TO B19	SUM OF C5 TO C19	SUM OF D5 TO D19	SUM OF E5 TO E19			
21								
22								
23								
24								

I prepared model on excel which is given above. On the basis of this model trend line projection work and forecast the value of 2014 AD.

4.10 DFD, DD, ERD for New System

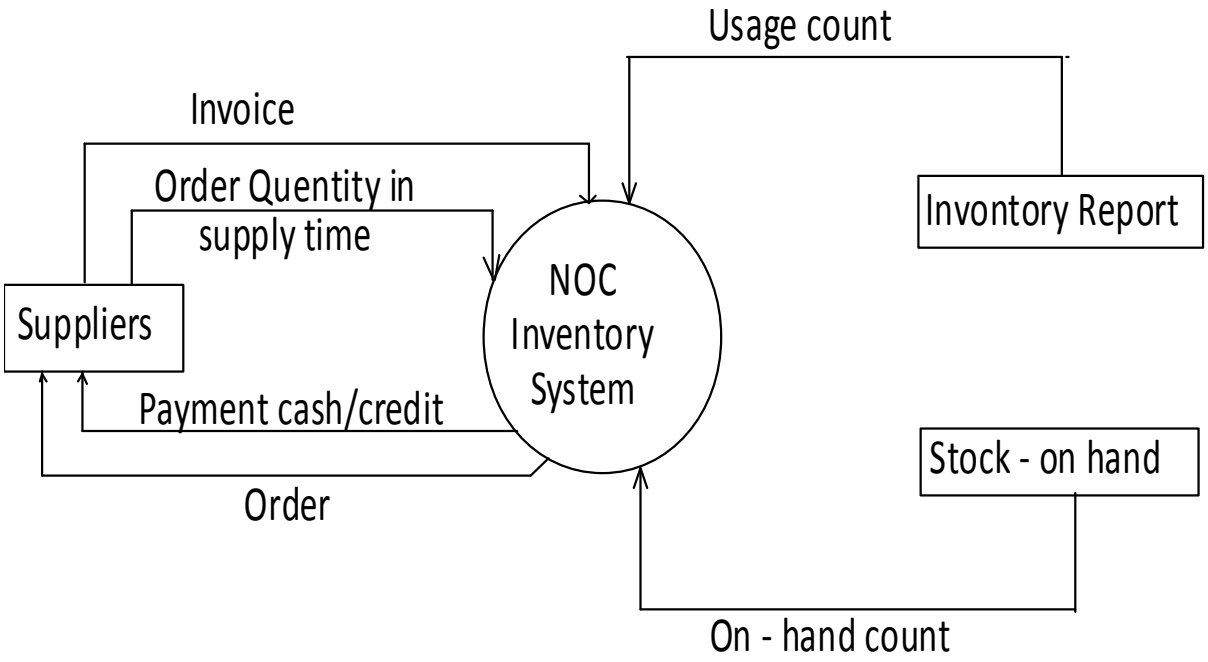
The DFD of New system is presented below both context level and system level diagram.

Context Level DFD of New System

Suppliers keep the order quantity records and give to the NOC and NOC studied to the further process in this system.

Figure 4.8

Context Level DFD of New Inventory System



System Level DFD of New System

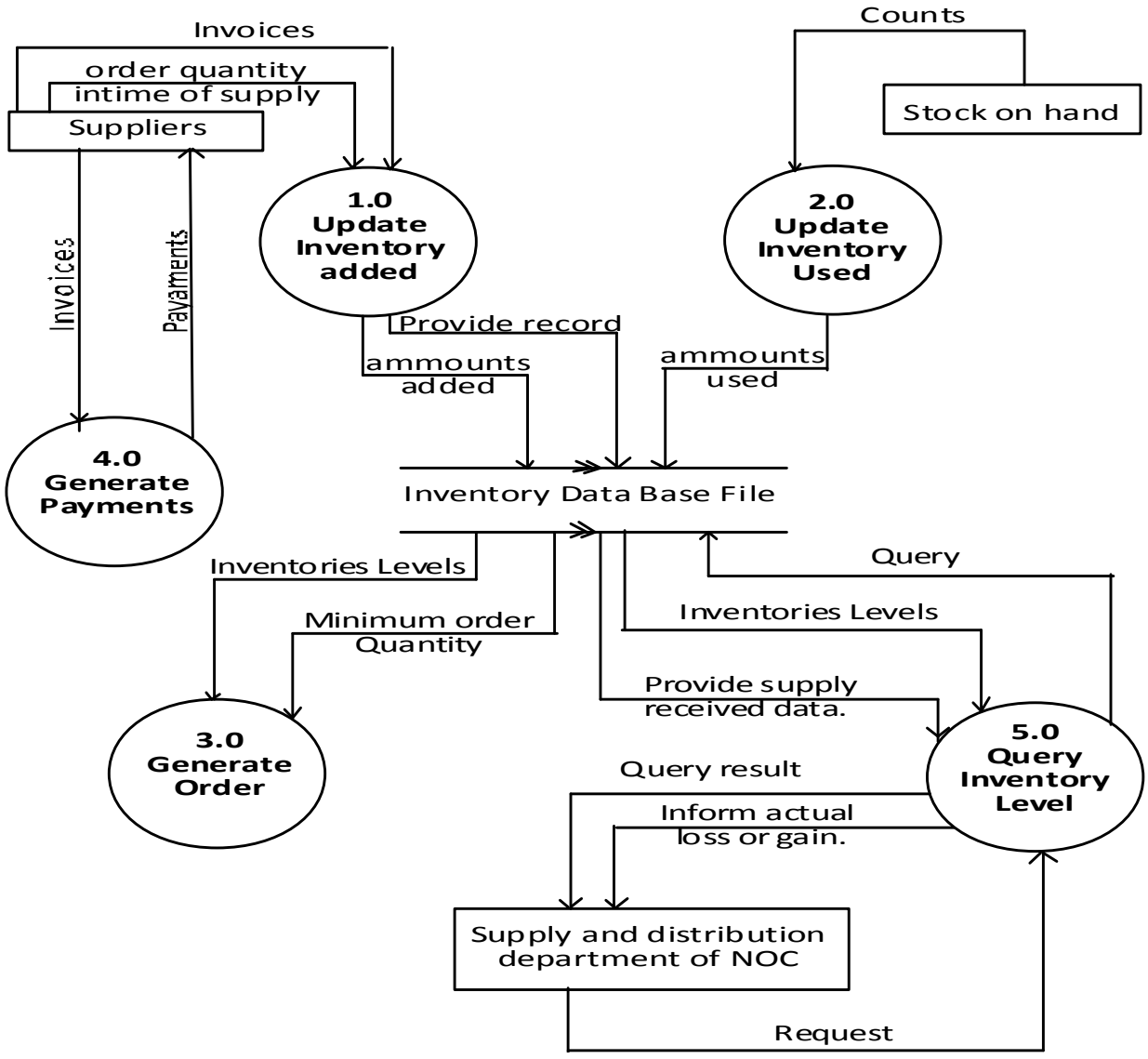
The system level DFD is same as the existing system except the actual loss or gained quantity. There are relation to the suppliers which is external entity of the NOC to the update inventory added system. The update inventory added system provide record to the inventory data base file. And the data base file provide

records to Query inventory system levels and this levels provide correct information to the supply and distribution department.

On this way the new system keep actual losses or gained record from different depots.

Figure 4.9

System Level DFD of New System



Data Dictionary

The data dictionary serves as the central storehouse of documentation for an information system. In addition to describing each data element, data flow, data store, record, external entity, and process, the data dictionary documents the relationships among these components. I can obtain many valuable reports from a data dictionary, including the following:

An alphabetized list of all data elements by name

i. A report by user departments of data elements that must be updated by each department
ii. A report of all data flows and data stores that use a particular data element.
iii. Detailed reports showing all characteristics of data elements, records, data flows, processes, or any other selected item stored in the data dictionary.

Some attributes use and their variable are given below.

Table 4.11

Data Dictionary

Attributes	Variables
Name	Character (40)
Address	Character (40)
Government license no:	Number (5)
Supply Date	Character (10)/Number(10)
Quantity in KL.	Number (12)
Type of petroleum product	Character (40)

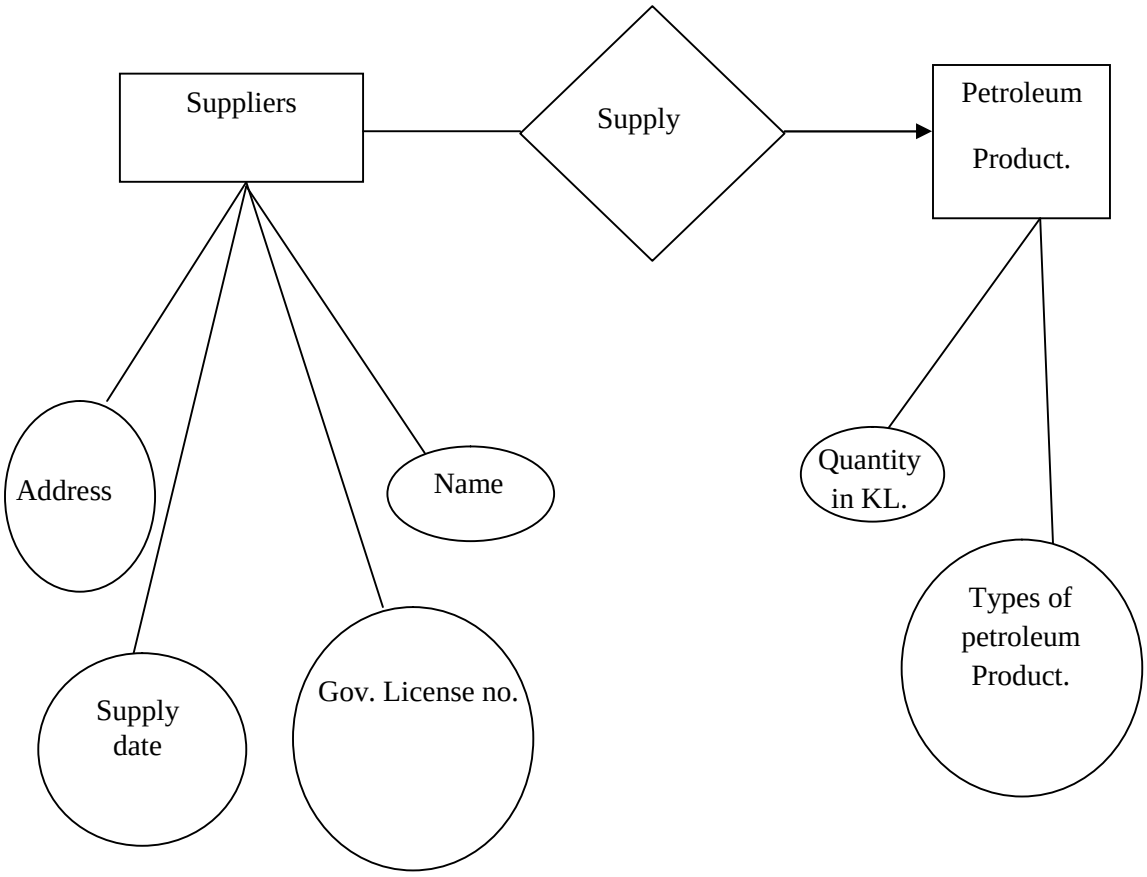
ERD for the Petroleum Suppliers

There are two entity between a relation. Which is given below. Suppliers and petroleum products are entity and supply is a relation between them (entities).

ERD for Petroleum Product Supply

Figure 4.10

ERD for Petroleum Supply

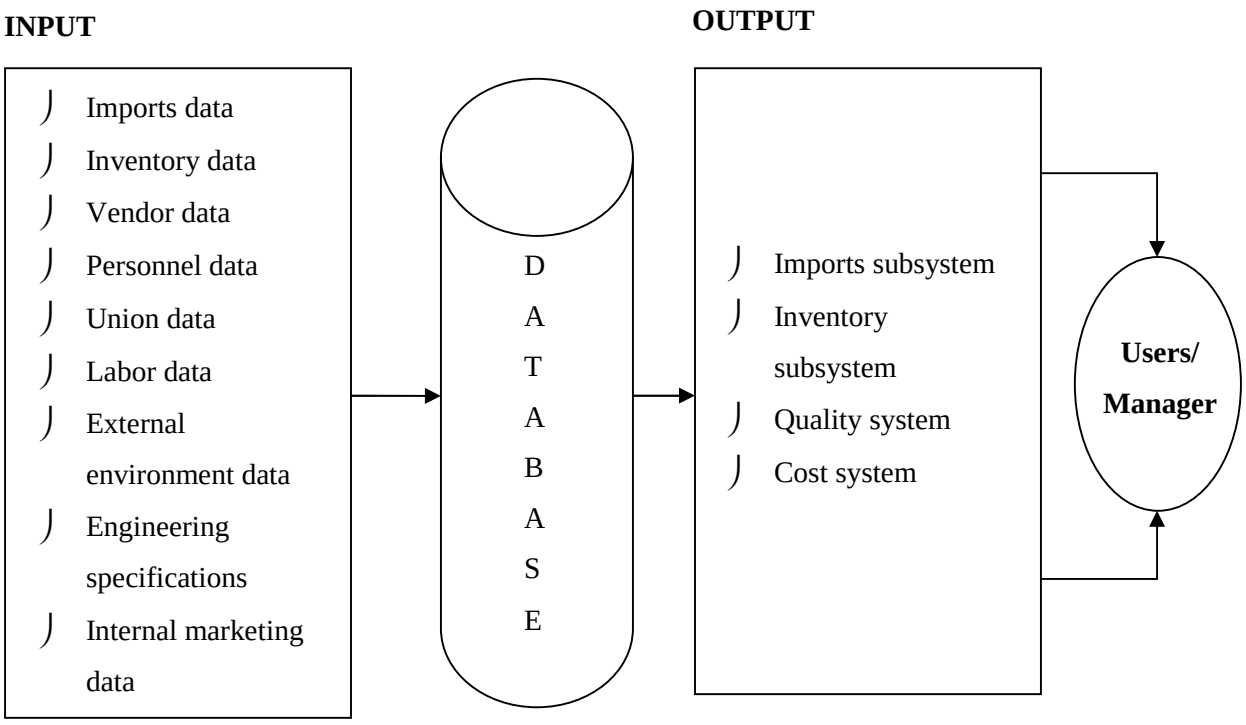


4.11 Input, Database and Output Design

The objective of statistical process controls to closely monitor imports units at various stages of the imports process, identifying potential problems before they result in defects and adjusting the imports process accordingly through observations. Another promising role for the computer in quality controls is in the area of vision inspection systems, whiter robotics eyes replace humans in the quality control inspection process.

Figure 4.11

Input, Database and Output



4.12 Justification of the New System

What about an overall strategy for developing a set of DFD's ? .A set of DFD's is a graphical, top-down model, so most analysts first create the context diagram, then diagram 0, then all the child diagrams for diagram0, and so on.

Other analysts, however, follow an alternative bottom – up strategy. With a bottom – up strategy, we first identify all functional primitives, data stores, external entities, and data flows. Then we group processes with others related symbols to develop the lowest – level diagrams. Next, we group those diagrams in a logical way to form the next higher level. You continue to work our way up until we reach diagram.

Regardless of which strategy we use, we should apply the suggestions and guidelines. The main objective is to ensure that our model is accurate and easy to understand. Reviewing data and process models with users allows we to obtain their feedback and approval for the logical design of the systems.

This new system work on the basis of above description and can predict the actual loss of units while the time of supply and while the time of sells. It predicate the units of shrinkage and leakage.

4.13 Cost benefits analysis and feasibility analysis of New System

Cost-benefits analysis is the process of comparing the anticipated costs of an information system to the anticipated benefits. Cost-benefit analysis is performed throughout the SDLC to determine the economic feasibility of an information system project and to compare alternative solutions. Many cost-benefit analysis techniques exist. This section covers discussion of only the three most common methods:

i. Payback analysis.
ii. Return on investment analysis.
iii. Present value analysis.

Each of the approaches analyses cost-benefits figures differently, but the objective is the same: to provide reliable information for making decisions.

Payback Analysis

This is the traditional but important method of screening the projects. Normally, investor thinks that when it will receive its investment and compares the period required receiving the investment with project life. Sometime, investor itself set the period within which it had to recover the investment. In the case of debt financing, investor may consider the maturity period of debt as the period within

which has to recover the investment. Thus, the payback period is the expected number of years required to recover the investment of the project.

$$PB = \frac{I}{CF_A}$$

Where,

I = investment cash outlay

CF_A = annual cash flow

PB = payback period

Return on Investment

Return on investment is book rate of return on investment. It is based on the average accounting profit and average investment and it is calculated by dividing the average accounting profit by average investment. It is calculated as:

$$ARR = \frac{\overline{EAT}}{\bar{I}}$$

Where,

$$\overline{EAT} = \frac{\sum_{t=1}^{n} EAT_t}{n}$$

$$\bar{I} = \frac{I_0 + I_n}{2}$$

$\overline{EAT}$ = Average Income

$\bar{I}$ = Average Investment

n = Project Life

EAT_t = Earning after Tax for t number of years.

I_0 = Book Value of the investment at the beginning

I_n = Book Value of the investment at the end of n number of years.

Net Present Value

This is widely used discounted cash flow technique of capital budgeting. The previously discussed methods – payback period and accounting rate of return – co not takes the time value of money in to consideration. But this technique does. While evaluating the capital projects , in this technique, benefits of the project measured in term of cash flow is discounted, in this technique, benefits of the project measured in project is deducted. The remaining value is known as net present value . More precisely net present value of the project is the difference between present value of cash inflow and outflow. Mathematically, it is given by:

$$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \cdots\cdots + \frac{CF_n}{(1+k)^n} - CF_0$$

Where,

NPV = Net present value.

CF_1 , CF_2, CF_3 are expected cash flows in first years, second years and third years respectively.

K = cost of capital.

n = project life.

CHAPTER - V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The Information technology is wide and board in Nepal Oil Corporation Limited and the inventory system which I introduced by data flow system and models which is takes the main subject of this thesis. Nepalese Government should compulsorily introduce the advance operating system like Indian Petrol Pump have already introduced, for quality and quantity assurance from Nepalese Petrol Pump to consumer. The only Nepalese Oil Supplier named Nepal Oil Corporation should provide quality checking instruments and handling training and updated manuals to its dealers (Petrol Pump). It should provide density register in free of cost to its dealer and should check its record on periodical basis. Make Training central to career development Prepare three years medium-term training plan. Equip training centers with modern training facilities Conduct all training/workshop/seminar /interaction/talk programs of NOC thorough the involvement of CTI and RTCs Develop training curricula for each group of staff categorized for their career path development on the basis of training need assessment.

Nepal Oil Corporation Limited was established on 2027BS Poush 26th under Nepal company act .In current scenario of NOC total capital is 50 corers and paid capital is 9 corers 68 lakhs. Nepal government sharing 98.38 %. After 2062 B.S. the import of gas and selling process is privatizing . Lack of proper Act and laws Nepal Government taking the responsibilities of imports and distributes of petroleum even if it is also open for privatization from 2065BS. In fiscal year 2065/2066 BS the total selling of petroleum is Rs. 48,65,62,66,792.87. NOC paying Rs.10 arab to Nepal Government as Revenue. From 2064/2065 BS NOC is

unable to sells petroleum as cost price that’s why NOC facing loss Rs. 17 arab 16 corer.

5.2 Conclusion

I conclude finally after making this thesis some systems are definitely have to conclude themselves. Which are most important for Nepal Oil Corporation Limited.

Quality Checking System

Supplier Own Checking System Indian Oil Corporation, Bharat Petroleum, Hindustan Petroleum and Reliance have a system of frequent quality checking of their petrol pumps for their products for quality assurance.

Consumer self Checking System

Every consumer has the right to check the quality of petroleum products as and when they felt doubtful for the products they want to consume. For this, it has been made compulsory for these petrol pumps to arrange necessary quality checking facilities such as hydrometer, thermometer, mother sample, pump's sample and testing papers. They must provide or it is mandatory for them to provide such facilities to consumers.

Every petrol pump should maintain the density register for all the products separately which shows every density parameters of different batch of products, unloaded at different point of times as well. Generally, it is necessary to show density parameter in daily basis with average result; average density should be mentioned by monthly basis in this register as well. Every variation of density is guided by the variation in temperature scientifically at 15oC. Density Register is provided by the Supplier Company in free of cost to their respective dealers (Petrol Pumps). Supplier Companies frequently provide trainings to the manpower

of their respective petrol pumps to maintain density register as well as to check quality of Petroleum Products. In addition, Supplier Companies have developed their own both Aviation and Non Aviation updated Quality Control Manuals based on Indian Government Petroleum Act as well as Explosive Act.

Environmental Impact of Adulteration

Fuel adulteration impacts in both environmental and economical sector. Adulterated fuels are very harmful in terms of ambient air quality. For example, diesel and kerosene mixed fuel is directly concern to produce high volume of shoots, sulphur dioxide and hydro-carbon those are major pollutants to increase air pollution. Similarly, adulterated petrol and kerosene resulting high volume of leads and carbon monoxide in surroundings. These are also pollutants for environmental deterioration over the surrounding. Adulterated fuel destroy vehicle engine causing to shorter and shorter life span of vehicle. Similarly, we can say that it loses individual and national property as manner as dramatically loss. Finally, human health hazard in urban area are increasing due to the air pollution resulting in a huge losses of productivity.

Quantity Assurance

Individual dealers should ensure the quantity of products they provided to consumer by calibrated dip rod, totalize and pots sealed and signed by concerned department of Indian Government. The records of daily sales and receipts are maintained separately for each product in the prescribed format. The facilities such as dispensing pumps, storage tanks and fire fight equipments are properly maintained and recorded on periodically basis. Every Retail Outlets should keep record of quantity of water and product separately by water dip and product dip.

Notification

Every Retail Outlet should manage a notice board, which is shown clearly and availability for every consumers. Such notices are available for quality checking so that every consumer can check.

5.3 Recommendations

Training of new staff should be Practically

Conduct pre-service training to the new comers before placing them in a practical job. Conduct on- the- job training for those staff that needs to enhance their skills and attitude for qualitative customer service delivery. Provide job related training to the staff before assigning them the higher responsibilities and the responsibilities other than their career path. Provide training to those staff that are not able to perform their responsibilities properly due to the lack of knowledge and skill in that particular designation. Conduct mass orientation program massively in all regions so as to disseminate the massage of change NOC in terms of capital structure and operation modality. Conduct exchange programs with national and international training institutes. Nepalese Petrol Pumps have not yet installed quality checking equipments in their Petrol Pumps. Because of this cause, Nepalese consumers have raised the issue of quality of Petroleum Products frequently.

Facilities of refreshment should be maintained in Nepal

Recently, the consumers of Biratnagar cities have faced their vehicle efficiency losing and they have blamed less quality of Petrol. If consumers self quality checking system, which is introduce in India, is provided to Nepalese Petrol Pumps, Biratnagar will not have this types of protesting against quality by all consumer. Further, Nepalese Petrol Pumps have no facilities of refreshment and workshop for the vehicle maintenance as well.

BIBLIOGRAPHY

Adhikari, S.N. (2007). *Introduction of Management Information System.* Kathmandu: Buddha Academic Publishers and Distributors Pvt. Ltd.

Global Nepal (Monthly Magazine). *Special Reports; Energy Crisis*: (Jan-Feb 2009)

Indian Oil to Supply Petroleum Products to Nepal Oil Corporation. (April 16, 2007). New Delhi.

Jawadekar, W.S. (1999). *Management Information System.* New York: Tata McGraw Hill.

Johnson, G. & Scholes, K. (1998). *Exploring Corporate Strategy*. New York: Pearson Prentice Hall.

Prabhat (2066). *Nepal Oil Corporation Limited.*

Sthapit, A.B., Yadav R.P., Tamang, G., Dhital, S. & Adhikari, P. (2003). *Production and Operation Management.* Kathmandu: Asmita Books Publishers and Distributions.

The Boss (15 March – 14 April 2009). (Monthly Magazine). *Gathering Concept of Harvard Business Review Articles, Study- Which is Applicable in NOC or not.*

Thierauf, R.J., (1997). *Decision Support Systems for Effective Planning and Control. A Case Study Approach.* Englewood Cliffs: Prentice- Hall.

Turban, E. & Aronson, J.E. (2001). *Decision Support Systems and Intelligent Systems*. Upper Saddle River, NJ: Prentice Hall.

Website

www.nepaloil.com

APPENDIX

Act: The rules in which all are limited and bounded.

Benefits: Membership – based, non – financial rewards offered to attract and keep employees; payments in addition to pay based on employment and position in the organization.

Computer modeling: A complex computer program that simulated the work environment.

Decision: A conclusion through brainstorming or discussion from group.

Data: A collection of numerical sample study from population or exact

Dictionary: Where, the meaning we find or the collection of meaning of words.

Effectiveness: Attainment of the goal.

Efficiency: The ratio of inputs consumed to outputs achieved.

Feedback: Knowledge of results.

Globalization: A performance appraisal method that lists a number of traits and a range of performance for each.

Information: A message collecting in management in circle.

Process: Collection of activities that take inputs and create outputs.

Query: Investigation about the matter or inquiry.

Research: A systematic and goal – oriented investigation of facts that seek to establish a relationship between two or more phenomena.

System: A network of interrelated components.

Technology: A scientific study which become accurate and performs new tests for user or consumer.

Time study: Analysis of task to determine the elements of work required to perform it, order in which the elements occur, and the time required to perform them.