



Procurement of Materials in Neyveli Lignite Corporation Limited”



A Project Report

Submitted by

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- 71205409006



*in partial fulfillment for the award of the degree
of*

**Master of Engineering
in
Industrial Engineering**

**DEPARTMENT OF MECHANICAL ENGINEERING
KUMARAGURU COLLEGE OF TECHNOLOGY
COIMBATORE – 641 006**

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JUNE– 2007

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Certified that this project report entitled “Lead Time Analysis for the Procurement of Materials in Neyveli Lignite Corporation Limited” is the bonafide work of

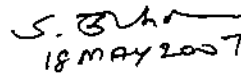
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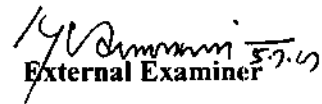
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NEYVELI LIGNITE CORPORATION LIMITED
(A "Mini Ratna" Govt. of India Enterprise)
Training Complex: Neyveli-607 801

CERTIFICATE

This is to certify that the Project entitled " *LEAD TIME ANALYSIS FOR THE PROCUREMENT OF MATERIALS IN NEYVELI LIGNITE CORPORATION LIMITED*" is the bonafide project submitted by

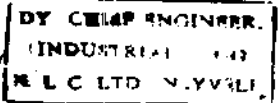
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In the partial fulfilment of the requirement for the award of the Degree of **MASTER OF ENGINEERING (INDUSTRIAL ENGINEERING)** from **KUMARAGURU COLLEGE OF TECHNOLOGY** affiliated to **ANNA UNIVERSITY**, Chennai was done under the guidance of **Smt. GARIMELLA UMA PAPPA**, D.C.E./I.E. WING, N.L.C. LTD. during the period from **06-12-2006 to 05-02-2007** at the *Material Management Complex, N.L.C. Ltd.*

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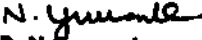
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participated and presented a paper titled LEAD TIME ANALYSIS FOR THE PROCUREMENT OF
MATERIALS IN NEYVELI LIGNITE CORPORATION LIMITED

in the AICTE Sponsored National Conference on "ADVANCES IN MECHANICAL SCIENCES (AIMS 2007)"
during 22 - 24 March 2007.


Mr.R.Sudhakaran & Mr.C.Velmurugan
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Dr.Joseph V.Thangavel
Principal

The Project “**Lead Time Analysis for the Procurement of Materials in Neyveli Lignite Corporation Limited**”, deals with the study and analysis of the existing procurement practices followed in Neyveli Lignite Corporation Limited.

The project throws light on the analysis of total lead time taken for procurement of materials through the purchase department of *Material Management Complex* in NLC. The analysis is based on the manual procedures, which were followed earlier and the existing practice of procuring materials through the “*Online Integrated Material Management System*” (OLIMMS). Further the study compares the analysed lead time with that of the norms already been framed for each activity, both before and after implementing ‘OLIMMS’ in all sections of Material Management Complex and the delay if any, is noted. Recommendations are provided to optimize the Lead time in the existing procurement system. The *Responsibility Centres (i.e.) (contributions of each department)* for the processing of each activity in the procurement of materials is also identified under the study. In the final phase, the project study proposes some suggestions on the “*E-procurement system*” for the effective optimisation of Lead time in the process.

“நெய்வேலி பழுப்பு நிலக்கரி நிறுவனத்தில் பொருள்கள் முயன்று பெறும்போது தற்சமயம் நடைமுறையில் கையாளும் முறைகளை அறிந்து அதற்கான கால அளவை ஆய்வு செய்தலே இத்திட்டத்தின் நோக்கமாகும்”(Lead Time Analysis for the Procurement of materials in Neyveli Lignite Corporation Ltd). நிறுவனத்தில் “மாழிய மேலாண்மை மையம்” பகுதியில் நிறுவனத்திற்கு தேவையான பொருள்கள் முயற்று பெறும் முறையில் கொள்முதல் பிரிவில் எடுத்துக்கொள்ளும் மொத்த கால அளவு ஆய்வு செய்யப்பட்டது. இதற்குமுன் வழக்கத்தில் இருந்த கைசார்ந்த முறை, தற்போதுள்ள “கணிணி இணைப்பு பொருள்கள் மேலாண்மை முறை” (OLIMMS) இரண்டையும் அடிப்படையாக கொண்டு ஆய்வு செய்யப்பட்டது. “கணிணி இணைப்பு பொருள்கள் மேலாண்மை முறை” அறிமுகம் செய்யும் முன்னும், பின்னும் எடுத்துக்கொண்ட கால அளவை ஏற்கனவே நிர்ணயம் செய்யப்பட்டுள்ள விதிகளின்படியான கால அளவை ஒப்பிட்டு அவற்றில் உள்ள கால தாமதங்கள் ஆராயப்பட்டது. கொள்முதல் செய்யும்போது பொறுப்புக்குரிய துறைகளின் ஒவ்வொரு செயல்பாடுகளும், அதற்காக எடுத்துக்கொண்ட கால அளவுகளும் கணக்கிடப்பட்டு ஆய்வு மேற்கொள்ளப்பட்டது. கொள்முதலின் போது செய்முறை கால அளவை கணிசமாக குறைக்க (E - Procurement System) “கணிணி தொலை தொடர்பு பொருட்கள் மேலாண்மை முறை” சிறப்பானதாக இருக்கும் என இத்திட்ட அறிந்தாய்வில் முன் மொழியப்பட்டது.

*DEDICATED
TO MY
BELOVED
PARENTS*

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1	ACM	Assistant Chief Manager
2	AEE	Assistant Executive Engineer
3	CGM	Chief General Manager
4	CM	Chief Manager
5	DCE	Deputy Chief Engineer
6	DCM	Deputy Chief Manager
7	DGM	Deputy General Manager
8	EE	Executive Engineer
9	GM	General Manager
10	GTE	Global Tender Enquiry
11	LI	Lowest Bidder
12	LTE	Limited Tender Enquiry
13	MMC	Material Management Complex
14	NIT	Notice Inviting Tender
15	NLC	Neyveli Lignite Corporation
16	OLIMMS	Online Material Management System
17	PR	Purchase Requisition
18	PTE	Press Tender Enquiry
19	PQR	Pre Qualification Requirements
20	SEE	Senior Executive Engineer
21	SM	Senior Manager
22	STE	Single Tender Enquiry
23	TC	Tender Committee

CHAPTER-1

INTRODUCTION

INTRODUCTION

1.1 BACKGROUND OF THE PROBLEM

The project titled “Lead Time analysis for the Procurement of Materials in Neyveli Lignite Corporation Limited”, deals with the study and analysis of the lead time taken for the procurement of materials in NLC Ltd.

In NLC, materials are being purchased by a separate Material Management department headed by General Manager/MM.

For all bought out specific requirement items, indents are raised by the user department and sent to the Material Control Department for raising the purchase Requisition(PR). All indents are scrutinized and processed by furnishing the past consumption pattern, present stock, pending order/quantity, pending PR quantity, expected date of supply etc.

In this integrated project of huge size, having a sales turnover of Rs.3001.94 Crores for the year 2004-2005, the purchase made is enormous. The total inventory for a month is about 224 Crores as per records.

Hence even a slight improvement in the lead time, will save Crores and it will reduce the Inventory carrying cost also.

1.2 IMPORTANCE

Incase, a single unit of NLC trips for just 45 minutes for want of spares or parts the total loss to the organization is noted to be 6.6 Lakhs as per the studies.

This loss will increase continuously until the spares are available. Here the Lead-time optimization plays a vital role.

1.3 SCOPE

The scope of the study involves Lead Time analysis of purchase files pertaining to various steps of purchase process. The analysis thereby helps to:

- Receive the materials in a shorter period by the indentors
- Reduce inventory carrying cost
- Reduce the other purchasing activities like Local Purchase

Total Purchase Orders released per year: 4000

Period of Study : Before implementing OLIMMS & After
implementing OLIMMS

Area of Study : All sections of the purchase department.

1.4 SEQUENCE OF REPORT

- The project report initially depicts the study made on the Procurement process and its activities carried out in NLC.
- In the next stage, the analysis of the lead time with the help of secondary data obtained records of the Purchase department of Material Management Complex (MMC) is depicted. This analysis is carried out for three months secondary data, before and after implementing the Online Integrated Material Management System.
- Analysis of the Survey study conducted using Questionnaires are given in the following pages.
- This is followed by the Data Interpretations, where all interpretations obtained from the data analysis and survey study are given.
- Suggestions and Recommendations are given in the next stage where the “e-Procurement system” is framed and analysed for the Lead time.
- In the conclusion, advantages of the recommended “e-Procurement system”, is listed.

1.5 LIMITATIONS

- The procurement process involved before and after implementation of OLIMMS, only in the Material Management Complex of Neyveli Lignite Corporation Limited, is studied.
- The analysis is carried out for the pre-award activities (upto the placement of Purchase Order) only.
- Since, the file movements from the receipt of Purchase Requisitions to the issue of Purchase Order, is voluminous, the study is restricted to random cases only.

1.6 LITERATURE SURVEY

According to (MalarMannan, 2001) the Lead Time was analysed for a particular material (i.e.) Bearing used in all plants of NLC Ltd. In the recommendations, the project focused only on speeding up the manual activities like inspection, transit delays by attenders etc. Since, the work was restricted only to a single type of material the study was not broad enough and so an alternative

method could not be proposed to optimize the Lead time. So to make the study effective by proposing new methodologies this project was taken as the reference.

The specific focus is on navigation in the Finance Solutions Platform of EIS and to become familiar with e-Procurement processing used to create and approve requisition of goods and services to be purchased. (Koeing, 2004).

A simulation exercise (Hansfield) is conducted for reducing the internal lead time for the improvements in supply chain performance and the results noted were: Elimination of paper invoicing and consolidation of transport groups into Logistics Service Providers, improved transport efficiency, improved order fulfillment because of reduction in transit delay and global visibility reduced the Bull Whip effect and improved order fulfillment.

Using the offshore development center (ODC) with a state of the art computing facility, the cycle time of delivery capability of TCS was leveraged to 24X 7. (TCS). An introduction to e-Procurement package and the implementations (Thonemann).

Importance of e-Procurement in government agencies and to specify that e-tendering is one of the modules of e-Procurement. (Somasundaram, 2006)

1.7 AN OVERVIEW ABOUT THE ORGANISATION

Neyveli Lignite Corporation, a Government of India enterprise is the biggest open-cast Mechanized Lignite Mines in India. Mining 24 million tonnes of lignite annually and power generating with installed capacity of 2490 MW of power. Neyveli is located at about 200 KM South-West of Chennai

Engaged in exploitation of Lignite Deposits for more than four decades, a resource that is fueling the Nation's development, powering progress & nourishing the green revolution. Exploration of lignite deposits in and around Neyveli region, with due attention to quality, economy and efficiency.

The core activity of NLC is Lignite Excavation and power generation using lignite excavated. NLC is having three lignite mines named as Mine I, Mine II and Mine IA. Also raw lignite is being sold to small scale industries to use it as fuel in their production activities.

MINES	CAPACITY OF MINES
MINE I	10.5 MT / A
MINE I A	3 MT / A
MINE II	10.5 MT / A

Table No: 1.7

NLC is generating power in its Thermal Power Station I, Thermal Power Station -II and in Thermal Power Station I Expansion. All the southern states are beneficiaries of this power generation project. The number of employees in various categories behind the success of the company is

Executives	- 3,642
Non-executives	- 6,743
Labour	- 8,745
Total	- 19,130

1.7.1 Mine-I

Demarcated over an area of 26.69 sq.kms. with a reserve of 365 million tones. Mine-I is situated on the northern part of the field adjacent to the Neyveli Township. This mine has a production capacity of 10.5 million tones of lignite per annum and feeds lignite to the 600 MW capacity of First Thermal Power Station and 420MW Thermal Power Station – I Expansion.

1.7.2 Mine-IA

To meet the fuel needs of the 250 MW Independent Power Project put up at Neyveli and additional requirements of NLC's Thermal Power Stations, NLC has developed a new mine, Mine-IA with a capacity of 3 million tonnes of lignite per annum. The tiny mine with a reserve of 120 million tonnes is spread over an area of 11.6 sq.kms. The excavation of overburden commenced on 30th July 2001 and the lignite production commenced on 30th March 2003.

The Mine-IA project is one of the mega projects of NLC that has been completed without cost and time over run.

1.7.3 Mine-II

In February, 1978 Government of India sanctioned the Second Lignite Mine of capacity 4.7 MT of lignite per annum and in February 1983, Government of India sanctioned the expansion of Second Mine capacity from 4.7 Million Tonnes to 10.5 Million Tonnes. Unlike Mine-I, Mine-II had to face problems in

the excavation of sticky clayey soil during initial stage. The method of mining and equipment used are similar to that of Mine-I.

This Mine is located 5 kms south of Mine-I, spread over an area of 26 sq.kms, with 390 million tonnes reserves. The initial mine cut was started in April 1981. The lignite seam was first exposed in September 1984 and regular lignite mining commenced from March 1985. The overburden thickness varies from 50-100 m and the lignite thickness varies from 8 to 22m. The lignite production in this mine meets the fuel requirements of Thermal Power Station-II. The method of mining and equipment used are similar to that of Mine-I.

1.7.4 Thermal Power Station I

Power Generation: 600 MW -- (6 * 50 MW + 3 * 100 MW) in 9 units

1.7.5 Thermal Power Station I Expansion

Power Generation: 420 MW -- (2 * 210 MW) in 2 units

1.7.6 Thermal Power Station II

Power Generation: 1470 MW (7 * 210 MW) in 7 units

1.7.7 Projects under Implementation

PROJECT	CAPACITY	SANCTIONED COST (Rs.Crores)	COMMISSIONING SCFEDULE
Mine-II Expansion	4.5 MTPA	2161.28	June 2009
TPS-II Expansion	2X250 MW	2030.78	Unit I - Feb 2009 Unit II - June 2009
Barsinsar Lignite	2.10 MTPA	254.07	June 2009
Barsinsar TPS	2X 125 MW	1114.18	Unit I - Dec 2008 Unit II- June 2009

Table: 1.7.7

1.7.8 Projects under Consideration

1. Coal based Thermal Power Plant at Tuticorin-Tamil Nadu.
2. Coal based Thermal Power Plant at Orissa.
3. Jayamkondam Lignite Mine cum Power Project in Tamil Nadu.
4. Bithnok (Barsingar Expansion) Lignite Mine cum Power Project in Rajasthan.
5. Riri Lignite Mine cum Power Project in Rajasthan.
6. Lignite Mine cum Power Project at Valia in Gujarat.
7. Mine -III & TPS-II at Neyveli, Tamilnadu.

1.8 MATERIAL MANAGEMENT COMPLEX

Material Management Complex is a centralized Purchase centre in Neyveli Lignite Corporation. Material Management is a service function and it plays a vital in production and procuring of the material. It is responsible for purchasing and issuing of materials to different units in NLC.

MMC purchases materials and spares worth Rs.300 crores annually and employs around 500 people. On an average, the total number of orders placed per year is nearly 4000 orders.

Material Management has control over three departments:

- Purchase Wing
- Material control Wing
- Stores Wing

- **Purchase Wing:**

Procurement of materials is the main activity in the Purchase Wing. The Purchase Wing plays a vital role in the organization as purchasing has its own effect on every vital factor concerning Manufacture, Quality, Cost, Efficiency and prompt delivery of goods to customers.

- **Material control Wing:**

Material Control Wing is responsible for the control of materials in MMC. Indents are raised through Head of Units. Codification is a process of representing each of the spare by a unique number. These code numbers have been assigned to every material for identification purpose.

- **Stores Wing:**

The functions discharged by stores Wing involves receipt of materials and their storage. They maintain proper records of the track of materials.

1.8.1 Organisational Set-Up

Materials management department consisting of two branches viz., Purchase and Material control & stores, is now headed by General Manager/ Material management, who is functioning under the control of Director/Planning & Projects.

The Purchase branch consisting of more than 20 sections having Assistant Personnel Managers as section heads and Dealing Assistant as supporting staff are grouped into 6 major divisions with Deputy General Manager/Chief Manager as

division heads. Under the control of Deputy General Manager/Chief Manager group of executives in the hierarchy of Assistant Chief Manager, Deputy Chief Engineer, Senior Executive Engineer, Executive Engineer, Assistant Executive Engineer are working. Material control & Stores Branch is headed by DGM.

The total number of employees in Material Management Complex is 468. Out of this total population there are 111 Executives, 208 Non-Executives (regular), 149 Non-Executives (Labour).

1.8.2 Role of Industrial Engineering Department in Material Management Complex

The important role of an IE wing in MMC is Planning and Decision Making. Periodical sample studies of the different activities of the MM wing are conducted by the IE unit/MM as feedback information to the Unit Heads and the functional Directors. Wherever possible, norms may be fixed. The unit will assist in fixing control levels for the items and also review the existing control levels periodically. Conducting schedule studies, special studies, maintaining inventory reports and Man power Planning are some of the other activities performed in the IE Wing in MMC. Also, they will conduct system improvement studies, wherever necessary toward efficient functioning of the department.

1.9 OBJECTIVE OF STUDY

The main objective of the project study is to analyse the total lead time for the procurement of materials in the Material Management Complex in NLC Ltd.

The study includes analysis of all types of enquiry viz, Limited Tender Enquiry, Single Tender Enquiry, Press Tender Enquiry and Global Tender Enquiry, from the receipt of Purchase Requisition to the issue of Purchase Order.

- To analyse lead time
 - (i) Before implementing Online Integrated Material Management System (OLIMMS)
 - (ii) After implementing Online Integrated Material Management System (OLIMMS)
- To optimise the Lead Time in the procurement process
- The Responsibility centre for each activity of the process is identified.
- Suggestive methods are provided for the optimisation in lead time.

1.10 METHODOLOGY

- The files were analysed for the study through the “*Stratified Random sampling method*”. The secondary data for a period of 3 months, before and after implementing (Online Integrated Material Management System) OLIMMS is considered for the study.
- The types of enquiries considered for the study are: STE, LTE (less than Rs.50, 000, less than Rs.5 Lakhs, more than Rs.5 Lakhs) & PTE.
- Random numbers were generated ,for the selection of files, using the following program:

```
/* Random number */
#include <stdio.h>
Void main ()
{
int x, y, z,i;
Printf ("Enter two numbers");
Scanf ("%d%d", &x, &y);
If (x>y)
{
z=x;
x=y;
y=z;
}
While (x<y)
{
For (i=1; i<=20; i++)
{
x+=7;
printf ("\n %d", x);
}}
getch ();
}
```

- The average values were calculated using the formula:

$$\sum X = xi/n$$

Where, i → 1, 2...

n → number of values

- A survey study was conducted using questionnaires.
- Pie charts are used for the survey analysis and data analysis.

CHAPTER-2

PURCHASING PROCEDURE



2.1 INTRODUCTION

The purchasing function covers broadly the following activities:

P - 2069

Receiving of purchase requisitions, Issue of enquiries, Receipt and evaluation of the bids received, obtaining approvals as needed and concluding purchase contracts after negotiations if necessary with suppliers of goods and services, within the limits of powers delegated and based on the guidelines of the system stipulated. Only purchase department shall do all the correspondence with the suppliers in a transparent and time bound manner

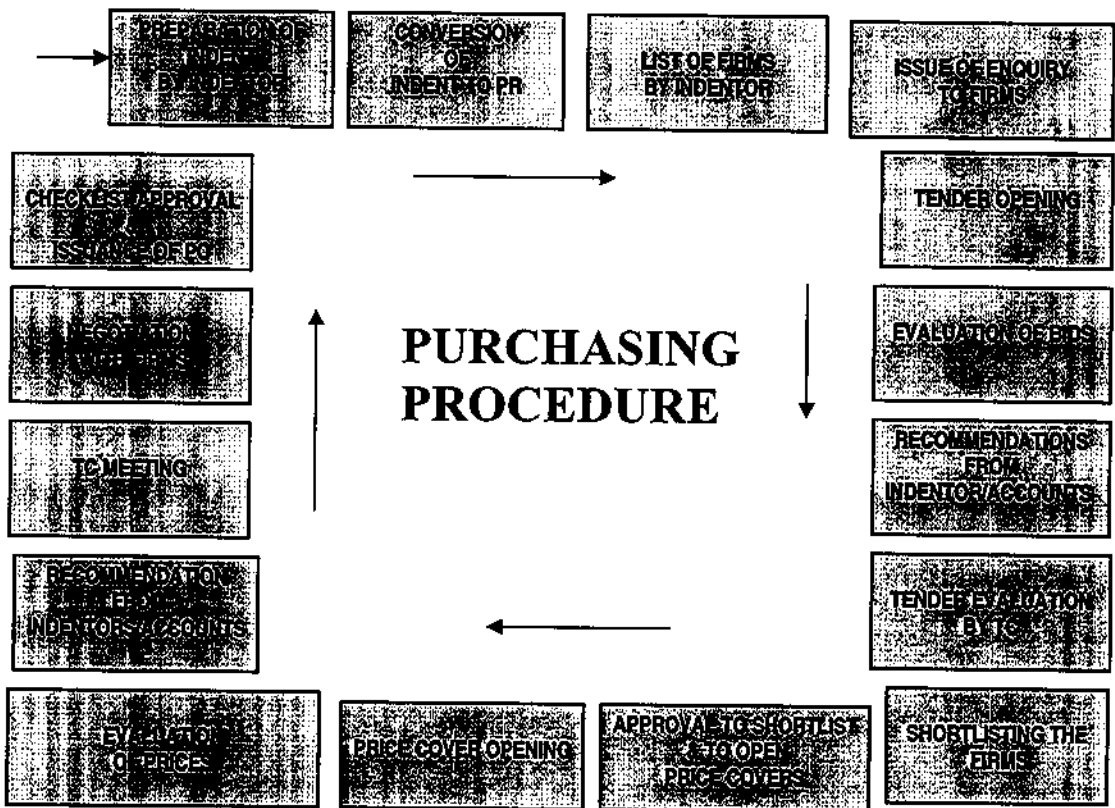


Fig.2.1 Purchasing Procedure

2.1.1 Process of Indenting:

Indenting is the process of raising a request for procuring items. The indenting can be based on an immediate requirement or predicted requirement. All the indenting process starts from the field user level as requirements and these requirements are approved by the unit head, passed through Material Control wing and are converted into a Purchase Request.

- Low value purchase requisition
- High value purchase requisition

- ***Low value purchase requisition:***

Low value Purchase Requisitions are those items with estimated value of each item not more than Rs.1, 00,000. Such Purchase Requisitions shall contain upto a maximum of 25 items.

- ***High value purchase requisition:***

High value Purchase Requisitions are those items with estimated value more than Rs.1, 00,000. Each Purchase Requisition shall contain one item only.

Chief Material Controller will process the indent and issue Purchase Requisitions, taking into account stock position in stores, quantity in process and the requirement of the User department.

Section Heads of the Purchase sections will receive the Purchase Requisitions and distributes them to the concerned dealing assistants. Section Heads & Dealing assistants shall maintain registers for having received Purchase Requisitions for further processing.

Purchase Requisitions shall contain the following details:

- PR number.
- Date
- Classification like (Normal, Critical)
- Details of materials with full and clear specifications
- Quantity required
- Estimated cost
- Last purchase details such as Purchase Order number, date, price and past consumption.
- Head of account to which cost is debatable.
- Indentor department code
- Reference to provision in the budget
- Material code

in nature, full address of the supplier, with justification by the User department

- Whenever required, sufficient copies of drawings
- For issue of press tender, approved Pre-qualification requirements for bidders shall be furnished.
- Technical questionnaire wherever required.
- Information regarding samples, test certificate, third party inspection, spares etc.
- Delivery Schedule
- List of new firms if recommended by the Indentor shall be with the approval of Unit Head.

2.2 SYSTEMS FOR ISSUE OF ENQUIRIES:

2.2.1 Mode of tendering:

On receipt of Purchase Requisition, the Purchase Branch shall make Time bound arrangements for issue of enquiry for the purchase of items as per the Purchase Requisition. Purchase shall be arranged in one of the following ways:

- Single Tender Enquiry (STE).
 - Limited Tender Enquiry (LTE).
 - Press Tender Enquiry (PTE).
 - Global Tender Enquiry (GTE).
 - By operating on Rate Contracts
 - Purchase through Price Agreements.
 - Repeat Orders.
 - Local Purchase.
- **Single Tender Enquiries (STE):**

This method of enquiry is resorted to here it is clearly established that items requires are available only from one manufacturer(proprietary in nature) or supplier or source and no other alternative material/source is acceptable.

Entered tender enquiries shall be resorted to, when the estimated value is up to Rs. 20 Lakhs. LTE is also sent to all the registered vendors with NLC supplying the required item and whose capability has been satisfactory to the indenter with the proper approval.

- **Press Tender Enquiries (PTE):**

All enquiries exceeding 20 Lakhs are necessarily to be put for press tendering. Any order exceeding this amount and still to be put up for LTE will need the clearance from the approved authority depending upon the delegation of power.

- **Global Tender Enquiries (GTE):**

A Global Tender involves the calling of quotations by advertisement in the leading dailies. In addition, a copy of Notice Inviting Tender is directly sent to the foreign consulate/Embassies in India as well as Indian Embassies in foreign countries who are likely to respond to tender, and Indian Trade Journal for wide circulation through their commercial sections.

- **LTE shall be resorted to, when the estimated value is up to Rs. 20 lakhs**
- **LTE -Single Cover system - Estimated Value is upto Rs.50, 000 /-.**
- **LTE -Two Cover system -Estimated Value is above Rs.50, 000 /-.**
- **All S T Es shall be processed under Single Cover system.**
- **All PRs (including clubbing of PRs of similar items), with Estimated value is above Rs.20.00 lakhs, shall be advertised in the Press to get competitive offers.**
- **Press Tender / Global Tender shall be processed under two cover system only.**

- **Operating On Rate Contracts:**

Entered into by DGS&D or placing Purchase Orders on Rate Contract holders at rate contract rates with NLC's terms & conditions.

- **Purchase Through Price Agreement:**

For stores, the consumption of which is recurring and continuous nature, price agreements are entered into with manufacturers/suppliers. The end user

- **Repeat Orders:**

In case of emergency, Repeat Order may be resorted to, subject to approval of authority, who is competent to approve such quantum of purchase (i.e. Value of Original Order plus Value of Repeat Order) provided there is no downward trend in the prices. All such Repeat Orders shall be processed as per Delegation of power.

- **Local Purchase:**

Local Purchase (LP) is the purchase made by Indentor to meet the emergency requirement. LP indent shall be raised by Indentor, and clearance shall be given by the concerned stores authority after scrutinizing for stock status. LP Indent shall be processed, finalized and Local Purchase Order (LPO) shall be placed by the Indentor with the approval of Competent Authority. Materials shall be received directly by the Indentor or through Regional Manager/Chennai and routed through the respective stores for regularizing accounting procedure.

2.3 PROCESSING OF TENDER ENQUIRIES

The Tender Enquiry shall, be carefully prepared, setting out in clear terms details such as quantity, quality, delivery schedule, payment term, evaluation criteria, etc. The Tender Enquiry form will have to be necessarily different for STE, LTE, PTE and GTE.

Suppliers are requested to submit their offers in sealed covers within the stipulated time.

2.3.1 Tender Documents:

The following shall be enclosed along with all the enquiries.

- Terms and conditions of enquiries
- Special conditions of purchase if any
- Invitation to the Tender and instruction to the Tenderer
- Technical specifications including testing requirements, quantity, etc.
- Bank guarantee for warranty formats if applicable.

Global Tender.

- Price schedule
- Deviations format
- Loading factors for deviated commercial terms
- Technical loading, if any
- Govt. Guidelines if any.

In case of PTE/GTE the following information shall be furnished in the Notice Inviting Tender (NIT) and special instructions to the tenderers shall be enclosed along with the tender documents.

The NIT shall contain the following information:

- Tender reference
- Scope of supplies and quantity required
- Cost of tender documents
- Last date for sale of tender documents
- Bid guarantee amount
- Date and time of receipt of quotation and opening
- The mode of remittance of tender cost is to be indicated.

Tender documents shall be sent free of cost in the case of STE and LTE. For PTE/GTE, the cost of tender documents shall be fixed based on the estimated value in the Purchase Requisition.

APPROVING AUTHORITY	STE	LTE	PTE/GTE
GM	All Values	All Values	All Values
DGM/CM	All Values	Above 10 Lakhs	---
ACM	---	5 – 10 Lakhs	---
SEE/EE	---	Upto 5 Lakhs	--

TABLE: 2.4.1 Enquiry Approving Authority

The tenders are opened by the Tender Opening Committee with the presence of representatives of bidders. The date, time and the venue of opening of tenders are intimated priorly.

2.4.1 Two cover systems of tendering

In this system Cover-I shall contain:

- Bid guarantee
- Detailed technical specifications
- Technical questionnaire
- Deviation schedule to NLC's technical and commercial conditions
- Commercial questionnaire if any
- Qualifying requirements questionnaire with supporting documentary evidence wherever applicable
- Profile of the company
- List of machinery of the company if called for
- Any other information if called for, in the Tender

Cover-II shall contain only the price schedule

2.4.2 Preparation of comparative statement

In case of STE and LTE, after opening 1st cover, the purchase branch shall prepare a comparative statement. One set of offers with comparative statement shall be sent to indenter for technical evaluation. The purchase file with comparative statement shall be sent to finance branch for scrutiny.

In the case of PTE/GTE, separate comparative statement for Bid Guarantee and Pre-qualification requirement, technical aspects, commercial terms and conditions shall be prepared after opening the 1st cover.

Generally, Comparative statement shall contain the following information.

- Tender reference
- Number of enquiries issued
- Due date of opening
- Number of offers received
- Late quotations
- Unsolicited offers, if any

Persons Competent to Open Tenders are as follows:

Below Rs.1.00 Lakh	--- One Executive from Purchase Dept.
Above Rs.1.00 Lakh uptoRs.20.00 Lakhs	--- Two Executive from Purchase Dept.
Above Rs.20.00 Lakhs	--- One Executive from Purchase & Finance Dept.

2.5 SELECTION OF OFFER

No deviation from the terms and conditions with regard to the qualifying requirement and basic technical requirements will be allowed. In the case of purchase where the value is upto Rs.5 Lakhs, will be finalized by the Purchase Executives with the delegated powers after obtaining Indentor's recommendation with respect to the technical suitability and concurrence from Finance. In case of Purchase where the value is above Rs.5 lakhs, the tender shall be decided by a **Tender Committee**. The Tender Committee will normally consist of members from Purchase, Finance and Technical member as specified in the table

2.5.1 Recommendations of Tender Committee:

- Deliberation of the Tender Committee shall be recorded clearly
- The Tender Committee shall give its recommendations taking into consideration all technical and commercial aspects of the offers
- Reasons for rejecting the offers if any, are to be recorded clearly
- Vital aspects(of selected offer) like payment terms, guarantees, inspection, insurance, dispatch details, samples, test certificate clause, liquidated damages clause, third party inspection etc., if any are to be discussed in detail and recommendations shall be recorded in clear terms.
- The tender shall ensure the reasonableness of the prices and shall record the basis for the same. It is very important to establish the reasonableness of prices on the basis of estimated rates, prevailing market rates, last purchase prices, economic indices of the raw material/labour, other input costs and intrinsic value etc., before award of the contract.
- Minutes of TC meeting shall be drawn and signed on the same day.

Sufficient time shall be given, enabling them to be present, if they so desire. *The unqualified bidders' price bids shall not be opened and shall be filed.*

Based on the TC recommendations and with the approval of the competent authority, Letter of Award, Purchase Order shall be issued.

Generally, approval of the competent authority as per the Delegation of Power (DOP) shall be obtained for recommendations of the TC in the following stages:

In STE & LTE (Single Cover System)

Stage -1 : For Placement of Order

In LTE (Two Cover System)

Stage -1 : For opening of Price Bids of the short listed firms

Stage -2 : For Placement of Order

In PTE

Stage -1 : For short listing of firms on the basis of Bid Guarantee and PQR

Stage -2 : Short listing on the basis of Techno-Commercial and opening of Price Bids

Stage -3 : For Placement of Order

The TC meeting is called to discuss the 2nd Cover opening to select the vendor offering the lowest price, called the L1 vendor.

2.6 PRICE NEGOTIATION

- Price Negotiation shall be conducted only with the lowest bidder. No negotiation shall be held individually by any department. All negotiations shall be conducted by the Tender Committee.
- Only if the Tender Committee feels that a negotiation is strictly necessary, the process is carried out.
- All proceedings of the negotiation shall be clearly recorded and authenticated on the same day, by the Tender Committee.
- Enough time shall be given for the bidders to attend Price Negotiation. Immediately after Price Negotiation, TC meeting shall be convened and tender shall be finalized.

is also considered as a negotiation and this shall be done with the consultation of finance and technical member or as recommended by the Tender Committee.

2.7 FINALISATION OF PURCHASE

Approval of the competent authority as per the delegation of powers shall be obtained for placement of Purchase Orders. While sending files to the competent authority for the placement of Purchase Orders, the purchase proposal check list shall be accompanied with a background note.

2.7.1 Letter of Indent (LOI)

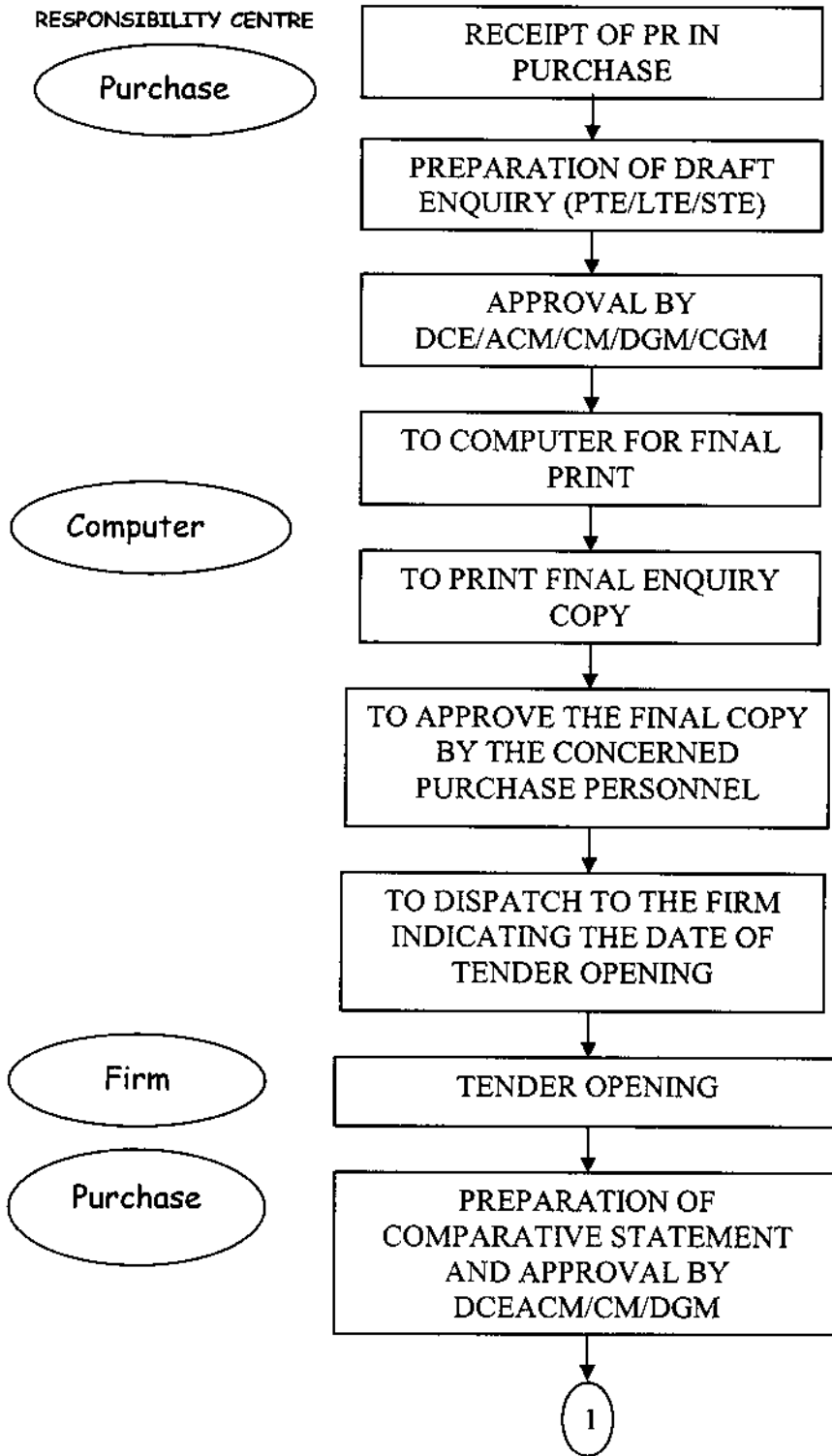
- The contract is brought into existence with the communication of acceptance of the offer by issue of Letter of Indent.

After the LOI has been convened, a *Purchase Order* shall be placed. The Purchase Order shall contain the Terms & Conditions mutually agreed.

Approving Authority	STE	LTE	PTE / GTE
BOARD	Above 2000 lakhs	Above 2000 lakhs	Above 2000 lakhs
SUB COMMITTEE	Upto 2000 lakhs	Upto 2000 lakhs	Upto 2000 Lakhs
CMD	Upto 100 lakhs	Upto 1000 lakhs	Upto 1000 Lakhs
DIRECTOR	Upto 50 lakhs	Upto 200 lakhs	Upto 400 Lakhs
CGM	Upto 30 lakhs	Upto 75 lakhs	Upto 100 Lakhs
GM	Upto 15 lakhs	Upto 20 lakhs	Upto 50 Lakhs
DGM	Upto 5 lakhs	Upto 15 lakhs	Upto 25.0 Lakhs
CM	Upto 2 lakhs	Upto 10 lakhs	Upto 15.0 Lakhs
ACM	--	Upto 5 Lakhs	----
DCE	--	Upto 2 lakhs	----
SEE/EE	--	Upto 1 Lakh	

Table: 2.8 Approving Authority for Purchase Order

PROCEDURE OF RECEIPT OF PURCHASE REQUISITION (PR) TO PLACEMENT OF PURCHASE ORDER (PO)



TO DISPATCH TO THE INDENTOR AND ACCOUNTS WITH THE STATEMENT AND TC INTIMATION

PURCHASE

RECOMMENDATIONS FROM THE INDENTOR

TO CONDUCT TC MEETINGS

RECOMMENDATIONS FROM THE ACCOUNTS

TO PREPARE TC MINUTES

TO GET APPROVAL OF THE TC MINUTES

TO ADDRESS THE FIRM FOR TECHNICAL / COMMERCIAL / VALIDITY CLARIFICATION

TO GET REPLY FROM THE FIRM

TO CONDUCT SECOND TC MEETING / ADDRESS THE FIRM FOR PRICE COVER OPENING BASED ON CLARIFICATIONS

TO GET APPROVAL FOR PRICE COVER OPENING BASED ON THE VALUE

PRICE COVER OPENING

PREPARATION OF COMPARATIVE STATEMENT OF PRICES

2

Indentor

Accounts

Purchase, Accounts, Indentor

Purchase

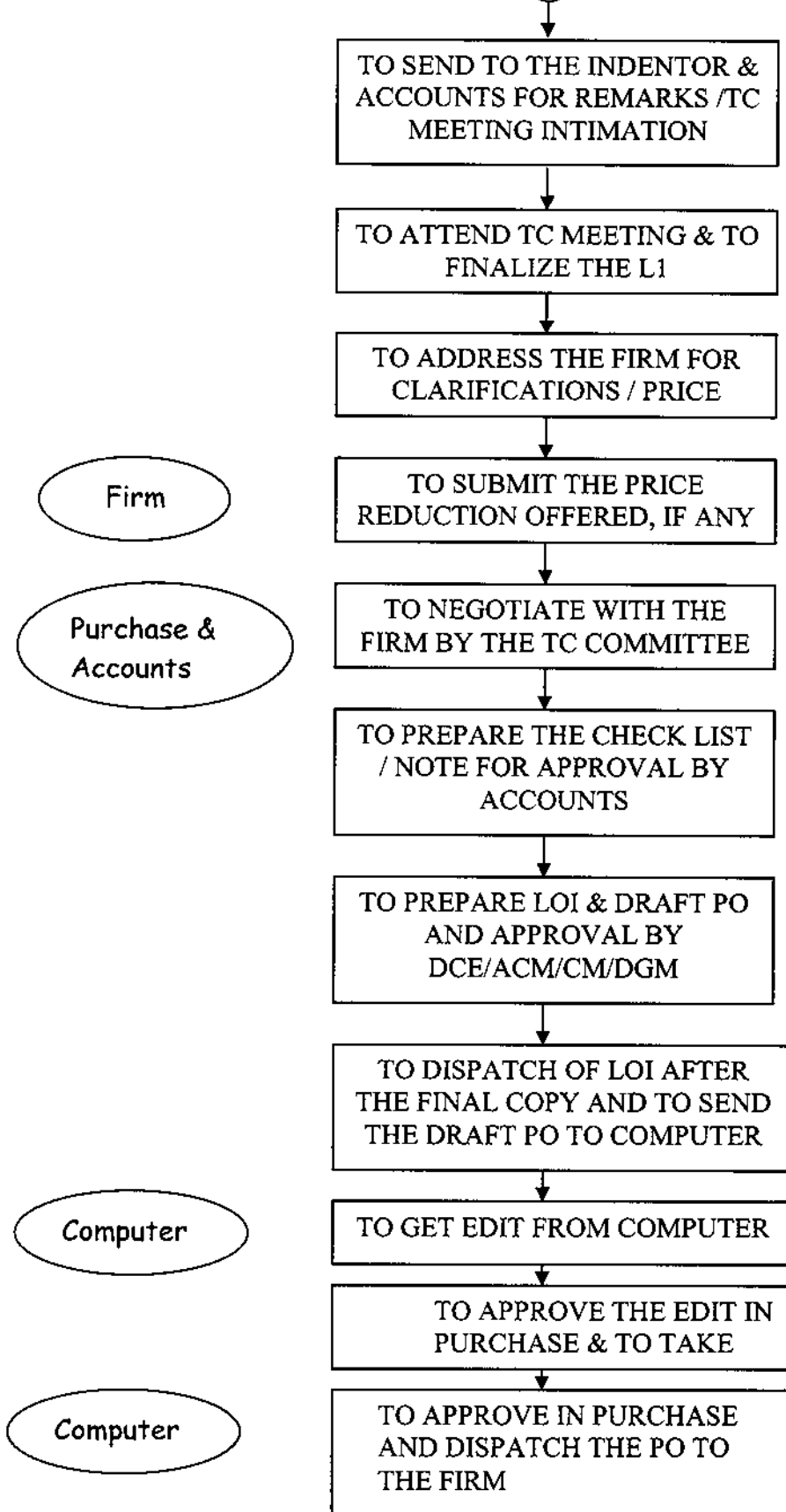
Indentor & Accounts

Purchase

Firm

Purchase

Purchase



CHAPTER-3

ONLINE INTEGRATED MATERIAL MANAGEMENT SYSTEM

(OLIMMS)

ONLINE INTEGRATED MATERIAL MANAGEMENT SYSTEM (OLIMMS)

Set-up at an estimated cost of Rs.Two crores, the OLIMMS is expected to reduce the lead-time for procurement of materials and speed-up the purchase process in NLC.

Material management wing of NLC purchases materials and spares worth Rs.300 crores annually and employs around 500 people. It is to be noted that last year NLC implemented the 'Integrated voice and data communications fiber optic network' (IVDFN) connecting 190 terminals, six production units, three service units, and NLC township building and hospitals.

OLIMMS, exclusively developed by IIT, Kharagpur, is aimed at reducing the material procurement timing and also generate appropriate reports, thus speeding up the purchase process in NLC.

Set-up at a cost of Rs two crore, the system would reduce the lead-time for procurement of materials, and would also account for accuracy, security and transparency .This helps the required spares would be made available in time for maintenance of mine machineries and thermal power stations and would also reduce inventory of materials.

The features of OLIMMS include intending, procurement, store keeping and material accounting. The new system will use the high bandwidth network as the carrier.

Modules:

- OLIMMS is an information system to Monitor materials functions
- OLIMMS is a Computerised materials management system developed with state of the art Technology using Oracle RDBMS software and has been implemented on Client-Server based platforms.
- OLIMMS menu driven, user friendly system and Modular in structure.

Main Modules:

- Purchase
- Stores (Receipts & Issues)

Features:

- Purchase
- Automatic clubbing of Indents
- Online printing of Purchase Enquiry,
- Comparative statement,
- Purchase Committee Recommendations, Purchase Orders.

3.1 ACTIVITIES WHICH ARE "ON LINE" AND "OFF LINE" IN THE EXISTING OLIMMS PURCHASE PROCESS

Activity	Responsibility centre	Through OLIMMS /OFFLINE
Preparation of Indent and to convert into PR	Indentor	Online
To receive the Purchase Requisition In Purchase from Indentor	Purchase	Online
To prepare generated enquiry and to approve the Enquiry	Purchase	Online
To take print and to despatch to the firm	Purchase	Off line
Tender Opening /Receipt of offers	Purchase & Firm	Off line
To evaluate / prepare Commercial Comparative statement	Purchase	Online
To address indentor and to send Xerox copies of the Offers	Purchase	Off line
Recommendations from Indentor including preparation of the Technical Comparative statement	Indentor	Online
To address the firm for clarifications	Purchase	Off line
To get reply from Firm	Firm	Off line
To forward the firm's replies to the Indentor- for remarks	Purchase	Off line
To send TC intimations and to conduct TC Meeting	Purchase	Off line

Preparation of TC minutes	Purchase	Online
Approval of TC minutes	Purchase, Indentor & Accounts	Approval in ON LINE for High value
Preparation of back ground note and approval by the Director & Finance & Indentor & CMD	Purchase, Accounts & Indentor	Online
Again approval in the Online to proceed for the next activity	Purchase	Online
To get approval for Price cover opening	Purchase & Accounts	Online
Price cover opening intimation to the firm	Purchase	Offline
Price cover opening	Purchase & Firm	Offline
Preparation of Price Comparative statement	Purchase	On line
Recommendations from Indentor	Indentor	On line
Recommendations from Accounts	Accounts	Online
To send TC intimation and to conduct TC meeting	Purchase	Offline
TC meeting	Purchase & Acc. & indentor	Offline
Preparation of minutes and approval	Purchase & Acc. & indentor	Online
Approval of TC minutes in High value Tenders	Purchase & Acc. & indentor	Online
Checklist / note preparation and approval by accounts	Purchase & Acc	Online
Check list preparation and approval	Purchase	Online
Preparation of LOI and to despatch	Purchase	Offline
Preparation of Draft PO & approval	Purchase	Online
To take print of Purchase Order and to despatch to the firm	Purchase	Offline

CHAPTER-4



LEAD TIME ANALYSIS

4.1 LEAD TIME

Time elapsed between the requisitioning of the material by the user department to the time of receipt of materials.

Total Lead time consists of two elements namely:

- ⊖ **Administrative Lead Time (Or) Internal Lead Time**
- ⊖ **Supplier's Lead Time**

(i) Administrative lead time (or) internal lead time:

It is the time between the date of purchase Requisition placed by indenter to the date of issue of the purchase order by the Purchase department.

(ii) Supplier's lead time:

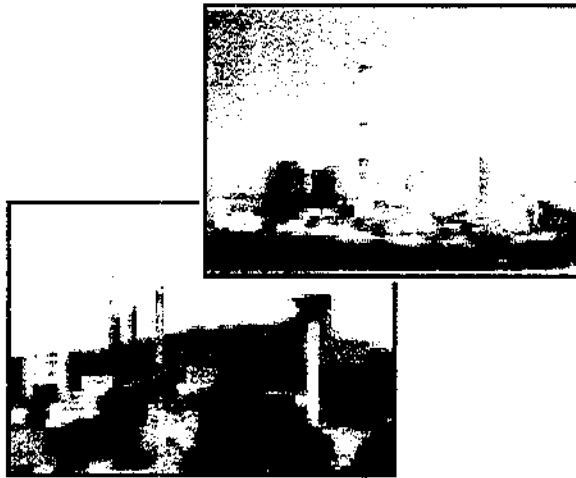
It is the time between the placement of the purchase order to the receipt of material from the supplier.

Lead time is of fundamental importance in determining the inventory levels. The level of inventory of an item depends upon the length of its lead time. The longer the lead time, the higher is the average inventory carrying cost.

In the study, the activity wise analysis of the process is carried out and the lead times are studied for the procurement processes before and after the implementation of the Online Integrated Material Management System (OLIMMS).

The advantages in optimizing the Lead time are reduction in inventory, cost and production time. The analysis done is projected in the following pages.

CHAPTER-5



DATA ANALYSIS

5.1 ANALYSIS FOR 3 MONTHS SECONDARY DATA BEFORE IMPLEMENTING OLIMMS

1. Preparation of Draft Enquiry, Approval Final Print and Dispatch to the Firm

- The process of enquiry generation involves the conversion of an incoming Purchase Request into an out going enquiry to selected vendors.
- The list of firms, delivery schedule, payment terms and all PR informations are maintained in the PR register.
- An enquiry number is generated for the particular enquiry.
- After the draft copy has been approved, the final print of the enquiry is taken and the approval is obtained and is dispatched to the firms.
- The Tender Documents are also enclosed along with the dispatch of the enquiry.

Responsibility Centre: Purchase & Computer

Type of enquiry	Range in days	Average number of days	As per norms
STE	10 -25	16.3	13
LTE-Single Cover	9-126	48.1	13
LTE-Less than 5 Lakhs	3-117	31.4	13
LTE-More than 5 Lakhs	15-28	23.5	13
PTE	3-23	10.8	6

Notice Inviting Tender in Paper in the Case of PTE

- In the case of Press Tender / Global Tender the details of the Tender Documents are furnished in the *Notice Inviting Tender*

Responsibility Centre: Public Relations Officer

Type of enquiry	Range in days	Average number of days	As per norms
PTE	2-7	2.8	7

- The offers are received in sealed covers. All tenders received against a particular enquiry shall be arranged in alphabetical order and entered in the tender register before the tenders are opened. These tenders will be received by the concerned sections along with the tender opening register.
- The tenders are opened by the Tender Opening Committee with the presence of representatives of bidders. The date, time and the venue of opening of tenders are intimated priorly.

Responsibility Centre: Firm

Type of enquiry	Range in days	Average number of days	As per norms
STE	6-26	15.3	25
LTE-Single Cover	12-41	28.4	25
LTE-Less than 5 Lakhs	11-34	22.6	25
LTE-More than 5 Lakhs	12-38	24.5	25

3. Sale of Documents and Tender Opening for PTE/GTE

- Tender Documents will be free of cost in the case of STE and LTE. For PTE/GTE the cost will normally be fixed on the basis of the estimated value in the PR.

Responsibility Centre: Purchase & Firm

Type of enquiry	Range in days	Average number of days	As per norms
PTE	15-43	34.2	30

4. Preparation of Comparative Statement & to Send Copies to Indentor and Accounts

- Once the received tenders are opened, the comparative statement comprising of the tender reference, number of enquiries issued, due date of opening, number of offers received and other technical and commercial aspects, is prepared by the concerned dealing assistant of the Purchase branch.

Indentor for technical evaluation and to the Finance branch for scrutiny.

- In the case of PTE/GTE separate comparative statement for Bid Guarantee and Pre-qualification requirement, Technical aspects, commercial terms and conditions shall be prepared after opening the 1st cover.

Responsibility Centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
STE	4-10	6.3	5
LTE-Single Cover	2-29	12.7	5
LTE-Less than 5 Lakhs	1-12	5.4	5
LTE-More than 5 Lakhs	2-11	5.5	5
PTE	5-18	11.2	8

5. Recommendations from Indentor and Accounts

- The Indentors and Accounts department will furnish their remarks and recommendations to the copies of the offers received by them, from the purchase department for values upto Rs.5Lakhs.

Responsibility Centre: Indentor & Accounts

Type of Enquiry	Range in days		Average number of days		As Per Norms
	From Indentor	From Accounts	From Indentor	From Accounts	
STE	1-27		9.2		10
LTE-Single Cover	5-22	1-30	10.7	6.5	10
LTE-Less than 5 Lakhs	1-54	4-13	17.3	2.6	10
LTE-More than 5 Lakhs	6-41	7-8	15.0	3.8	10

6. First Tender Committee Meeting & Receipt of Tender Committee Minutes

- The offers are finalized by the Purchase Executives with delegated powers after obtaining Indentor's recommendations with respect to the Technical suitability and concurrence from Finance.
- In the case of Purchase where the value is above Rs.5Lakhs, the tender shall be decided by a *Tender Committee*.

delegation of power.

- The concerned Purchase Executive prepares minutes of the meeting and the TC members will circulate the minutes for approval. The copy is then dispatched to the firms.

Responsibility Centre: Indentor, Accounts & Purchase

Type of enquiry	Range in days		Average number of days	As per norms
	TC meet	Minutes		
STE	3 -8		1.3	7
LTE-More than 5 Lakhs	3-9	8-15	10.1	7
PTE	1-45	3-28	20.1	10

7. To Address Firm for Clarifications & Receipt of Replies

- For STE and LTE less than Rs.5Lakhs, the firm is addressed as per the recommendations received from the Indentor and Accounts.
- In the case of LTE more than Rs.5lakhs, and PTE, the firm is addressed as per the PQR and Techno- Commercial aspects.
- Reply from the firms is received with respect to the furnished recommendations.

Responsibility Centre: Purchase & Firm

Type of enquiry	Range in days	Average number of days	As per norms
STE	1-26	18.1	15
LTE-Less than 5 Lakhs	1-20	12.7	15
LTE-More than 5 Lakhs	5-11	5.8	15
PTE	1-10	11.3	15

8. To Address Firm for Further Clarifications & Receipt of Reply from Firms

- To address the firm for the second time for further clarifications, if not clarified in the first reply.

Type of enquiry	Range in days	Average number of days	As per norms
LTE-Less than 5 Lakhs	4-45	8.3	10
LTE-More than 5 Lakhs			10
PTE	1-21	25.2	10

9. To Conduct TC Meeting

- With the receipt of replies from the firms, TC meeting is conducted to analyse the replies for shortlisting the firms.

Responsibility Centre: Firm, Indentor, Accounts & Purchase

Type of enquiry	Range in days	Average number of days	As per norms
		TC meet	
LTE-Less than 5 Lakhs	4-11	0.9	7
PTE	1-26	7.3	10

10. To Indentor & Accounts and from Indentor & Accounts

- For STE,LTE(single cover) & LTE less than Rs.5lakhs,the firms reply is obtained for analysis of their remarks

Responsibility Centre: Indentor, Accounts & Purchase

Type of enquiry	Range in days	Average number of days		As per norms
		Indentor	Accounts	
STE	1-37	2.4	6.2	10
LTE-Single cover	1-37	4.9	4.9	7
LTE-Less than 5 Lakhs	1-38	1.3	8.4	10

11. TC Minutes Approval by Accounts

- Approval of the minutes is obtained from the Accounts department based on the Pre-qualification Requirements (PQR), for the short listed firms in the case of LTE more than Rs.5Lakhs and PTE

Type of enquiry	Range in days	Average number of days	As per norms
LTE-More than 5 Lakhs	0-1	0.3	10
PTE	4-32	9.3	4

12. Approval by Director/Chairman cum Managing Director

- The PQR minutes is forwarded to the Director for approval, with a background note after scrutinizing the firms based on PQR.

Type of enquiry	Range in days	Average number of days	As per norms
PTE	12-41	17.2	10

13. Receipt of File

- The files are received from the Corporate Office for the approval of MM Authorities

Responsibility Centre: Accounts, Purchase & Indentor

Type of enquiry	Range in days	Average number of days	As per norms
PTE	0-5	0.8	4
LTE-More than 5 Lakhs			4

14. Tender Committee Meeting

- For clarifications in Techno commercial aspects a third T.C. meeting is held in the case of PTE.

Responsibility Centre: Accounts, Purchase & Indentor

Type of enquiry	Range in days	Average number of days	As per norms
PTE	4-32	10.3	-

15. Approval by Accounts to Open Price Covers

- Approval from the competent authority is obtained for the opening of price covers of the short-listed firms

Type of enquiry	Range in days	Average number of days	As per norms
LTE - Less than Rs.5 lakhs	3-21	9.3	3
LTE - More than Rs.5 lakhs	0-1	0.3	3
PTE	3-34	12.5	10

16. Preparation of Background Note & Approval by Competent Authority to Open Price Covers

Responsibility Centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
LTE - Less than Rs.5 lakhs	3-21	8.9	3
LTE - More than Rs.5 lakhs	1-5	1.3	10
PTE	4-21	4.2	15

17. Price Cover Opening Intimation & Price Cover Opening

- The short-listed firms are intimated for the price cover opening after obtaining approval from the competent authority.

Responsibility centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
LTE - Less than Rs.5 lakhs	2-18	7.0	10
LTE - More than Rs.5 lakhs	4-25	11.5	10
PTE	2-26	6.5	10

18. Preparation of Comparative Statement of Prices & to Send Copies to Indentor & Accounts

- The Dealing Assistant will prepare the comparative statement of the price and commercial points. This comparative statement will be sent to the Indentor and respective Accounts Executive.

Responsibility centre: Purchase

		days	norms
LTE - Less than Rs.5 lakhs	1-10	4.0	3
LTE - More than Rs.5 lakhs	1-14	4.6	3
PTE	1-3	1.3	3

19. Tender Committee Meeting

- After the comparative statement of prices is approved TC meet is held to evaluate the prices.

Responsibility centre: Purchase, Accounts & Indentor

Type of enquiry	Range in days	Average number of days	As per norms
PTE	4-11	11.0	7

20. Receipt of Recommendations from Indentor & Account

- Recommendations based on the price cover offers are obtained from the Indentor & Accounts.

Responsibility centre: Accounts & Indentor

Type of enquiry	Range in days	Average number of days	As per norms
STE	1-27	9.2	10
LTE - Less than Rs.5 lakhs	1-32	5.7	7
LTE - More than Rs.5 lakhs	0-10	2.5	7

21. To Firm & From Firm

- After the L1 bidder is finalized, they are intimated the same.

Responsibility centre: Purchase & Firm

		days	norms
STE	1-26	18.1	15
LTE-Less than Rs.5 Lakhs	1-14	2.4	-
LTE-More than Rs.5 Lakhs	1-15	10.5	7
PTE	2-26	13.0	7

22. Price Negotiation with the Firm

- The firm is called in for the negotiation in prices, with the presence of the TC members, in case rates are higher than the previous purchase rates.

Responsibility centre: Purchase, Indentor, Accounts & Firm

Type of enquiry	Range in days	Average number of days	As per norms
STE	0-9	1.5	10
LTE-Less than 5 Lakhs	1-13	4.5	7

23. Tender Committee Meeting

- After the receipt of the response from the firms, TC is conducted to finalise the rate of the L1 bidder, after negotiation.
- The minutes are approved by the competent authority.

Responsibility centre: Purchase, Indentor, Accounts

Type of enquiry	Range in days	Average number of days	As per norms
STE	1-12	4.0	7
LTE-More than 5 Lakhs	1-4	3.6	7
PTE	1-26	13.6	7

24. To Indentor & Accounts and from Indentor & Accounts

- The recommendations from the Indentor and Accounts are directly obtained without TC meeting, in the case of LTE less than Rs.5 Lakhs.

Type of enquiry	Range in days	Average number of days	As per norms
LTE-Less than 5 Lakhs	1-32	5.7	7

25. Preparation of Checklist/ Background Note

- The Dealing assistant in Purchase department prepares the checklist comprising of all the salient terms and conditions of payment, tax, delivery schedule etc., and is sent for the approval.

Responsibility centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
STE	12-17	4.8	8
LTE-Single Cover	2-46	15.4	8
LTE-Less than 5 Lakhs	1-22	8.0	8
LTE-More than 5 Lakhs	0-10	2.5	15
PTE	4-21	4.2	15

26. Note Approved by Competent Authority

Responsibility centre: Purchase, Indentor, Accounts

Type of enquiry	Range in days	Average number of days	As per norms
PTE	1-19	6.2	10

27. Receipt of File

- The files are received from the corporate office after approval by the competent authorities.

Responsibility centre: Purchase, Indentor, Accounts

		days	
PTE	0-5	0.8	4

28. Approval of Letter of Indent & Approval of draft Purchase Order

- The Letter of Indent (LOI) is the contract brought into existence as the communication of acceptance of the offer.
- LOI is prepared and the approval is obtained from the competent authority.
- Draft copy of the Purchase Order is obtained approval.

Responsibility centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
STE	2-19	7.7	4
LTE-Single Cover	1-17	5.4	2
LTE-Less than Rs.5 Lakhs	1-20	5.8	2
LTE-More than Rs.5 Lakhs	1-10	4.3	2
PTE	1-17	4.5	3

29. Final PO Approval and Dispatch

- The draft PO is sent to the Computer department for the final print.
- After the approval of the final copy is obtained, it is dispatched to the firm.

Responsibility centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
STE	8-14	10.3	7
LTE-Single Cover	3-14	9.7	7
LTE-Less than 5 Lakhs	5-11	7.3	7
LTE-More than 5 Lakhs	4-10	6.5	7
PTE	2-18	9.8	7

Type of enquiry	Total number of days	As per norms
STE	103	125
LTE-Single Cover	178	107
LTE-Less than 5 Lakhs	183	154
LTE-More than 5 Lakhs	144	186
PTE	289	198

5.2 DATA ANALYSIS FOR 3 MONTHS SECONDARY DATA AFTER IMPLEMENTING OLIMMS

1. Preparation of Enquiry, Approval and Dispatch to the Firm

- The process of enquiry generation involves the conversion of an incoming Purchase Request into an out going enquiry to selected vendors.
- The list of firms, delivery schedule, payment terms and all PR informations are maintained in the PR register.
- An enquiry number is generated for the particular enquiry.
- The Tender Documents are also enclosed along with the dispatch of the enquiry.

Responsibility Centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
STE	2-12	12.3	3
LTE-Single Cover	3-61	19.6	5
LTE-Less than 5 Lakhs	8-20	12.1	4
LTE-More than 5 Lakhs	4-32	15.9	5
PTE	-	11	4.5

Notice Inviting Tender in Paper in The Case of PTE

- In the case of Press Tender / Global Tender the details of the Tender Documents are furnished in the *Notice Inviting Tender*

Responsibility Centre: Public Relations Officer

		days	
PTE	-	5	5

2. Tender Opening /Receipt of Offers

- The offers are received in sealed covers. All tenders received against a particular enquiry shall be arranged in alphabetical order and entered in the tender register before the tenders are opened. These tenders will be received by the concerned sections along with the tender opening register.
- The tenders are opened by the Tender Opening Committee with the presence of representatives of bidders. The date, time and the venue of opening of tenders are intimated priorly.

Responsibility Centre: Firm

Type of enquiry	Range in days	Average number of days	As per norms
STE	3-15	21.4	21
LTE-Single Cover	15-29	20.5	21.5
LTE-Less than 5 Lakhs	21-27	23	21
LTE-More than 5 Lakhs	12-23	17.2	21

3. Sale of Documents and Tender Opening for PTE/GTE

- Tender Documents will be free of cost in the case of STE and LTE. For PTE/GTE the cost will normally be fixed on the basis of the estimated value in the PR.

Responsibility Centre: Purchase & Firm

Type of enquiry	Range in days	Average number of days	As per norms
PTE	-	21	28

- Once the received tenders are opened, the comparative statement comprising of the tender reference, number of enquiries issued, due date of opening, number of offers received and other technical and commercial aspects, is prepared by the concerned dealing assistant of the Purchase branch.
- One set of offers along with comparative statement shall be sent to the Indentor for technical evaluation and to the Finance branch for scrutiny.
- In the case of PTE/GTE separate comparative statement for Bid Guarantee and Pre-qualification requirement, Technical aspects, commercial terms and conditions shall be prepared after opening the 1st cover.

Responsibility Centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
STE	1-15	7.1	2
LTE-Single Cover	5-70	25.4	2
LTE-Less than 5 Lakhs	8-25	16.3	3
LTE-More than 5 Lakhs	1-82	18	5
PTE	-	15	7

5. Recommendations from Indentor and Accounts

- The Indentors and Accounts department will furnish their remarks and recommendations to the copies of the offers received by them, from the purchase department for value upto Rs.5 Lakhs.

Responsibility Centre: Indentor & Accounts

Type of enquiry	Range in days	Average number of days	As per norms
STE	1-20	15.9	4
LTE-Single Cover	2-51	23.2	4
LTE-Less than 5 Lakhs	3-19	12.7	5

6. First Tender Committee Meeting & Receipt of Tender Committee Minutes

Purchase Executives with delegated powers after obtaining Indentor's recommendations with respect to the Technical suitability and concurrence from Finance.

- In the case of Purchase where the value is above Rs.5Lakhs, the tender shall be decided by a *Tender Committee*.
- The TC meet is attended by the members (*INDENTOR, FINANCE, and PURCHASE*) at the Purchase Executive's chamber based on the delegation of power.
- The concerned Purchase Executive prepares minutes of the meeting and the TC members will circulate the minutes for approval. The copy is then dispatched to the firms.

Responsibility Centre: Indentor, Accounts & Purchase

Type of enquiry	Range in days	Average number of days	As per norms
LTE-More than 5 Lakhs	1-6	11.5	4.5
PTE	-	6	4.5

7. To Address Firm for Clarifications & Receipt of Replies

- For STE and LTE less than Rs.5Lakhs, the firm is addressed as per the recommendations received from the Indentor and Accounts.
- In the case of LTE more than Rs.5lakhs, and PTE, the firm is addressed as per the PQR and Techno- Commercial aspects.
- Reply from the firms is received with respect to the furnished recommendations.

Responsibility Centre: Purchase & Firm

Type of enquiry	Range in days	Average number of days	As per norms
STE	1-18	11.8	9
LTE-Single cover	1-31	13.1	5
LTE-less than 5 Lakhs	5-33	11.7	10
LTE-More than 5 Lakhs	2-15	10.9	16
PTE	-	14	9

- With the receipt of replies from the firms, TC meeting is conducted to analyse the replies for shortlisting the firms.

Responsibility Centre: Firm, Indentor, Accounts & Purchase

Type of enquiry	Range in days	Average number of days	As per norms
PTE	-	6	6

9. To Indentor & Accounts and From Indentor & Accounts

- For STE,LTE(single cover) & LTE less than Rs.5lakhs,the firms reply is obtained for analysis of their remarks

Responsibility Centre: Indentor, Accounts & Purchase

Type of enquiry	Range in days	Average number of days	As per norms
STE	2-13	4.6	4
LTE-Single cover	6-26	6.1	4
LTE-less than 5 lakhs	5-21	5	6

10. TC Minutes Approval by Accounts

- Approval of the minutes is obtained from the Accounts department based on the Pre-qualification Requirements (PQR), for the short listed firms in the case of LTE more than Rs.5Lakhs and PTE

Responsibility Centre: Accounts

Type of enquiry	Range in days	Average number of days	As per norms
LTE-More than 5 Lakhs	1-4	7.7	5
PTE	-	16	2

- The PQR minutes is forwarded to the Director for approval, with a background note after scrutinizing the firms based on PQR.
- The files are received from the Corporate Office for the approval of MM Authorities

Responsibility Centre: Accounts, Purchase & Indentor

Type of enquiry	Range in days	Average number of days	As per norms
PTE	-	11	13

12. Tender Committee Meeting & to Address Firm on Techno- Commercial Aspects

- For clarifications in Techno commercial aspects a third T.C. meeting is held in the case of PTE.

Responsibility Centre: Accounts, Purchase & Indentor

Type of enquiry	Range in days	Average number of days	As per norms
PTE	-	9	12

13. Approval by Accounts to Open Price Covers

- Approval from the competent authority is obtained for the opening of price covers of the short-listed firms

Responsibility Centre: Accounts

Type of enquiry	Range in days	Average number of days	As per norms
LTE - Less than Rs. 5 lakhs	7-10	8	2
LTE - More than Rs. 5 lakhs	1-10	2.5	2.5
PTE	-	2.5	4

14. Preparation of Background Note & Approval by Competent Authority to Open Price Covers/ Receipt of file

Responsibility Centre: Purchase

	Range in days	Average number of days	As per norms
LTE - Less than Rs.5 lakhs	1-5	3	1
LTE - More than Rs.5 lakhs	8-15	2.7	2
PTE	-	7	13

15. Price Cover Opening Intimation & Price Cover Opening

- The short-listed firms are intimated for the price cover opening after obtaining approval from the competent authority.

Responsibility centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
LTE - Less than Rs.5 lakhs	3-12	6	3
LTE - More than Rs.5 lakhs	1-7	2.7	3
PTE	-	6	3

16. Preparation of Comparative Statement of Prices & to Send Copies to Indentor & Accounts

- The Dealing Assistant will prepare the comparative statement of the price and commercial points. This comparative statement will be sent to the Indentor and respective Accounts Executive.

Responsibility centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
LTE - Less than Rs.5 lakhs	5-11	7	3
LTE - More than Rs.5 lakhs	2-10	1.8	3
PTE	-	3	3

17. Tender Committee Meeting & Minutes Approval

- After the comparative statement of prices is approved TC meet is held to evaluate the prices.

Responsibility centre: Purchase, Accounts & Indentor

		days	
PTE	-	4	3
LTE-more than Rs.5 lakhs	1-2	1.4	3

18. Receipt of Recommendations from Indentor & Accounts

- Recommendations based on the price cover offers are obtained from the Indentor & Accounts.

Responsibility centre: Accounts & Indentor

Type of enquiry	Range in days	Average number of days	As per norms
STE	2-10	4	4
LTE - Less than Rs.5 lakhs	5-9	4.7	3

19. To Firm & From Firm

- After the L1 bidder is finalized, they are intimated the same.

Responsibility centre: Purchase & Firm

Type of enquiry	Range in days	Average number of days	As per norms
LTE-Less than 5 Lakhs	2-6	3	2.5
LTE-More than 5 Lakhs	2-14	3.1	4
PTE	-	6	4

20. Price Negotiation with the Firm

- The firm is called in for the negotiation in prices, with the presence of the TC members, in case the rates are higher than the previous purchase rates.

Responsibility centre: Purchase, Indentor, Accounts & Firm

Type of enquiry	Range in days	Average number of days	As per norms
STE	1-8	3.1	3
LTE-single cover	1-15	5.3	3
LTE-Less than 5 Lakhs	1-5	3.1	3

- After the receipt of the response from the firms, TC is conducted to finalise the rate of the L1 bidder, after negotiation.
- The minutes are approved by the competent authority.

Responsibility centre: Purchase, Indentor, Accounts

Type of enquiry	Range in days	Average number of days	As per norms
LTE-More than 5 Lakhs	5-12	0.2	3
PTE	-	5	3

22. To Indentor & Accounts and From Indentor & Accounts

- The recommendations from the Indentor and Accounts are directly obtained without TC meeting, in the case of LTE less than Rs. 5 Lakhs.

Responsibility centre: Purchase, Indentor, Accounts

Type of enquiry	Range in days	Average number of days	As per norms
LTE-Less than 5 Lakhs	1-7	4.2	4
LTE-single cover	2-15	6.0	4

23. Preparation of Checklist/ Background Note & Note Approval /Receipt of File

- The Dealing assistant in Purchase department prepares the checklist comprising of all the salient terms and conditions of payment, tax, delivery schedule etc., and is sent for the approval.

Responsibility centre: Purchase, Indentor, Accounts

Type of enquiry	Range in days	Average number of days	As per norms
STE	1-25	4	4
LTE-Single Cover	1-8	4	4
LTE-Less than 5 Lakhs	9-22	5.2	3.5
LTE-More than 5 Lakhs	1-3	6.8	7
PTE	-	17	15

- The Letter of Indent (LOI) is the contract brought into existence as the communication of acceptance of the offer.
- LOI is prepared and the approval is obtained from the competent authority.
- Draft copy of the Purchase Order is obtained approval.

Responsibility centre: Purchase

Type of enquiry	Range in days	Average number of days	As per norms
STE	2-41	15.1	6
LTE-Single Cover	5-47	19.9	6
LTE-Less than 5 Lakhs	2-24	18	6
LTE-More than 5 Lakhs	9-33	10.9	6
PTE	-	10	7

Total Lead Time

Type of enquiry	Total number of days	As per norms
STE	99	60
LTE-Single Cover	143	80
LTE-Less than 5 Lakhs	143	95
LTE-More than 5 Lakhs	113	115
PTE	174	130



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CHAPTER-6

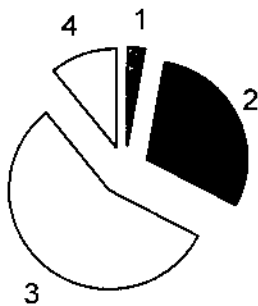
SURVEY ANALYSIS

SURVEY ANALYSIS BASED ON QUESTIONNAIRE

(Among the Executives of Purchase Department)

1. Response of the firm in furnishing the details relating to the pre-qualification requirements:

- With regard to the response of the firm in the case of furnishing complete details regarding Pre- qualifications Requirements, the opinions were as follows:



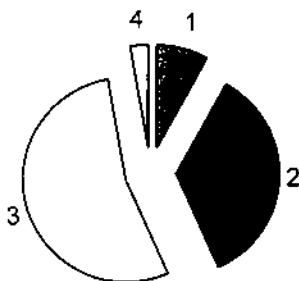
S.No	Options	Number of answers	%
1	Lesser than Lead Time	1	2.7
2	Within Norms	11	29.7
3	Takes More Time	21	56.7
4	No Response	4	10.8

Inference

- Majority opined that longer Lead Time is taken by the firms in furnishing the complete details of the PQR
- Hence this activity can be accelerated

2. The firm's reply in case of clarification related to techno commercial aspects:

- The firm's promptness in replying for the techno-commercial clarifications is assessed as:



S.NO	OPTIONS	NUMBER OF ANSWERS	%
	Lesser than Lead Time	3	8.1
2	Within Norms	13	35.1
3	Takes More Time	20	54.0
4	No Response	1	2.7

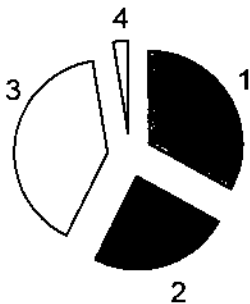
Inference

- 54% has suggested that, lead time is more for the firms to send reply for the techno-commercial aspects.
- All clarifications to be obtained from the firm should be made clearly within one enquiry.

3. The Probable Reasons for Re-Enquiry:

- The reasons given by the Purchase Department was as follows:

- (a) Changes in specifications
- (b) Firm not extending the validity
- (c) L1 rates are higher



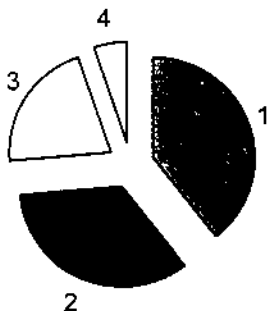
S.NO	OPTIONS	NUMBER OF ANSWERS	PERCENTAGE
1	(a) & (b)	23	35.3
2	(a)& (c)	20	30.7
3	(a),(b),(c)	11	16.9
4	No Delay	11	16.9

4. The Reasons for the Longer Lead Time in Conducting the TC Meetings & for the Approval of TC Minutes

Both before and after the implementation of OLIMMS, the reasons are given as:

- (a) Delay in attending TC meeting by the TC members
- (b) Delay in the receipt of approved minutes
- (c) Transit delay

(i) Before implementing OLIMMS:

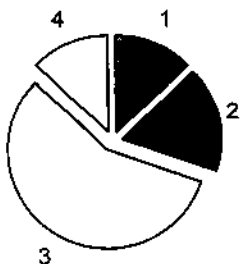


S.NO	OPTIONS	NUMBER OF ANSWERS	PERCENTAGE
1	(a)	27	32.9
2	Both (a)& (b)	20	24.3
3	(a),(b),(c)	33	40.2
4	Others	2	2.4

Inference

- The survey clearly depicts that all the three reasons given are equally responsible for the longer lead time.

(ii) After implementing OLIMMS:



S.NO	OPTIONS	NUMBER OF ANSWERS	PERCENTAGE
1	(a) & (b)	30	39.4
2	(a)& (c)	26	34.2
3	(a),(b),(c)	16	21.0
4	No Delay	4	5.2

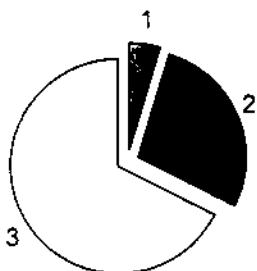
Inference

- The analysis depicts that, nearly 11% have given that there is no delay in conducting the TC meet.
- But the delay if any is due to the reasons given above.

5. The Promptness in Obtaining Recommendations from Indentors / Accounts:

- With respect to the Lead Time, it is inferred as follows:

(i) Before implementing OLIMMS:

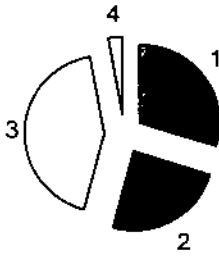


S.NO	OPTIONS	NUMBER OF ANSWERS	PERCENTAGE
1	Lesser than Lead Time	7	18.9
2	Within Norms	13	35.1
3	Takes More Time	16	43.2
4	No Response	1	2.7

Inference

- ✓ The receipt of replies from the Indentors and Accounts was found to be taking longer time before the implementation of OLIMMS-as per the survey

(ii) After implementing OLIMMS:

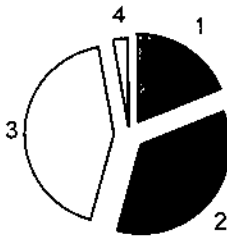


S. NO	OPTIONS	NUMBER OF ANSWERS	PERCENTAGE
1	Lesser than Lead Time	1	2.7
2	Within Norms	6	16.2
3	Takes More Time	30	39.4
4	No Response	-	-

Inference

- It is clear from the polls that the time taken by the indentors/Accounts in sending their recommendations are comparatively lesser when compared to before implementing OLIMMS

6. The time interpretations in obtaining accounts concurrence/approval:



S.NO	OPTIONS	NUMBER OF ANSWERS	%
1	Lesser than Lead Time	11	29.7
2	Within Norms	9	24.3
3	Takes More Time	16	43.2
4	No Response	1	2.7

Inference

- Nearly 40% have given that, the lead Time in obtaining Accounts concurrence is taking longer time, as per the survey conducted.

7. The probable reasons for the delay in addressing the firms may be:

- The firm is addressed by the Purchase department, for clarifications, other intimations etc. this processing of this activity also indicates longer time. The probable reasons given were analysed as:

S.NO	OPTIONS	NUMBER OF ANSWERS	%
1	Double operations of dealing the file & approval online	13	35.1
2	As some screens like accounts, high value approval are offline	9	24.3
3	Due to teething problems	7	18.9
4	Due to stringent norms	8	21.6



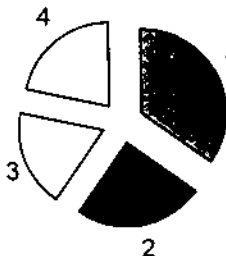
Inference

The main reason given by the executives, the longer lead time is due to insufficient number of personal computers.

8. The possible reasons why the lead time has not been reduced effectively after the implementation of OLIMMS:

It is analysed that after the implementation of OLIMMS the lead time has reduced only partially and the reasons were given as:

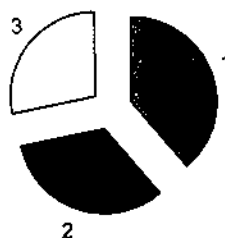
S.NO	OPTIONS	NUMBER OF ANSWERS	%
1	Double operations of dealing the file & approval online	13	35.1
2	As some screens like accounts, high value approval are offline	9	24.3
3	Due to teething problems	7	18.9
4	Due to stringent norms	8	21.6



Inference

- Majority opined that parallel filing systems being processed at present are more time consuming.
 - This process can be neglected within span of time.
9. **The methods which can be adopted to reduce the lead time more effectively:**
- For the effective reduction in the lead time even after implementation of OLIMMS, some of the methods were suggested by the Purchase Executives. Their polls for the methods were as follows:

S.No	OPTIONS	NUMBER OF ANSWERS	PERCENTAGE
1	Online with all indentors and finance	19	38.7
2	E-procurement	16	32.6
3	Through e-mail with firms	14	28.5



Inference

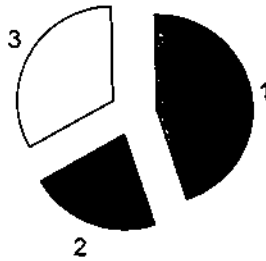
- The indentors and finance department are in the process of getting in the network through OLIMMS
- So the next preference given is E-procurement, which can effectively reduce the total lead time.

10. **Training - a necessity for the total computerization:**

Along with the process of total computerization the training to be provided to the members is found to be a must. (100 %)

11. **Benefits to the organization due to the reduction in lead time:**

The different ways by which the organisation will be beneficiary, if the lead time is optimised are analysed under the survey as:

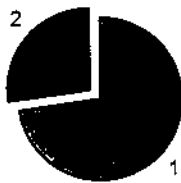


S.NO	OPTIONS	NUMBER OF ANSWERS	%
1	Materials can be received in a shorter time	23	45.0
2	Reduces activities like Local Purchase	11	21.5
3	Reduces the Inventory carrying cost	17	33.3

Inference

- The materials can be received within a shorter period and purchase can be made at a realistic price instead of speculative price due to volatile market conditions.

12. Necessity for a Parallel Filing System along with On- Line Process:



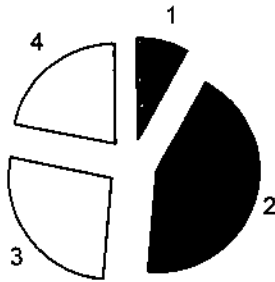
S.NO	OPTIONS	NUMBER OF ANSWERS	%
1.	Yes	27	72.9
2.	No	10	27.1

Inference

- For retrieval of the complete process for future reference the parallel system is expected to be necessary by the Executives.
- This can be changed, once the On-line process proves to be a tool proof method.

13. Rate of Work Load in Purchase Branch:

- The work load on members of the Purchase Branch is rated under the survey as:



S.NO	OPTIONS	NUMBER OF ANSWERS	%
1	Less load	3	8.1
2	Occasionally Heavy	16	43.2
3	Heavy	10	27.0
4	Very Heavy	8	21.6

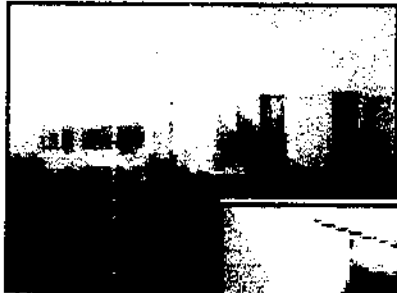
INFERENCE

- The work load is rated to be occasionally heavy, under the survey.

14. Well Experienced Person in Purchase - Section Head:

From the survey it is revealed that if a person experienced in Purchase is heading the section, the process flow will be better comparatively. (100%)

CHAPTER-7



DATA

INTERPRETATIONS

DATA INTERPRETATIONS

7.1 BEFORE IMPLEMENTING OLIMMS

The first phase of the study was focused on the lead time analysis of secondary data before the implementation of Online Integrated Material Management system (OLIMMS) .With the help of the activity wise data analysis conducted on these data the following interpretations were made:

- The enquiry generation process takes longer lead time in the initial stages of the process, as the enquiry number generation, verifications, maintenance of registers etc., is done manually.
- Preparation of comparative statement is found to be tedious, error prone and time consuming when done manually.
- The Tender Committee meetings were not held on the day fixed. The reason analysed under the survey study is that, as the physical presence of all the TC members is involved, there are greater chances of postponement
- Longer lead time is noted in the case of obtaining recommendations from Indentors and Accounts department.
- The receipt of clarifications from the Firms has taken maximum time, so there is a longer lead time experienced.
- There is a longer lead time experienced, in the case of obtaining approvals from the competent authority.
- Transit delay is also reason for the longer lead time.
- The Responsibility Centres for each activity, in cases of STE, LTE & PTE are depicted using Pie Charts in the following pages.

7.2 AFTER IMPLEMENTING OLIMMS

The second phase of the study was focused on the lead time analysis of secondary data after the implementation of Online Integrated Material Management system (OLIMMS). With the help of the activity wise data analysis conducted on these data the following interpretations were made:

- Enquiry generation process does not show much deviation with the norms, as most of the activities have been bypassed and the manual process is eliminated.
- The receipt of recommendations and concurrence from the Accounts department is prone to cause a longer lead time, since the Accounts department is on the process of getting into the network, under OLIMMS.
- The lead time for obtaining recommendations from indentors is found to be longer.
- The preparation of comparative statement was analysed as within the prescribed time limit as the process was online.
- The receipt of reply from firms and the Tender committee meetings are the major reasons found for the longer lead time.
- The mind- set of the employees to accept the re engineering process is also noted for the time span.
- Transit delay is also a reason for the longer lead time, as the contacts with the firms are done Offline.
- The Responsibility Centres for each activity, in cases of STE, LTE & PTE are depicted using Pie Charts in the following pages.

SINGLE TENDER ENQUIRY

-RESPONSIBILITY CENTRES

[BEFORE IMPLEMENTING OLIMMS]

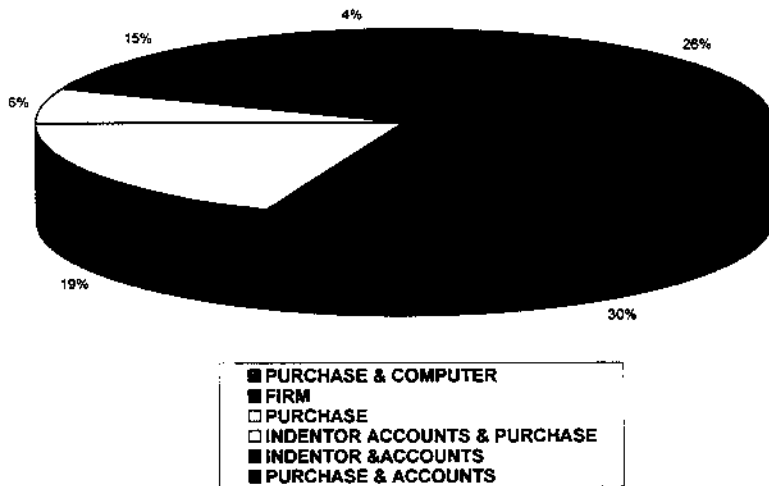


Fig: 7.1.1

LIMITED TENDER ENQUIRY-LESS THAN Rs. 50,000

-RESPONSIBILITY CENTRES

[BEFORE IMPLEMENTING OLIMMS]

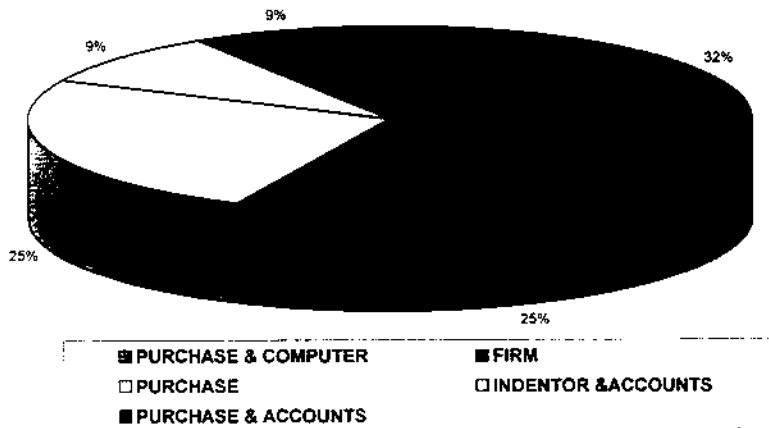


Fig: 7.1.2

LIMITED TENDER ENQUIRY - LESS THAN Rs.5 LAKHS
 - RESPONSIBILITY CENTRES
 [BEFORE IMPLEMENTING OLIMMS]

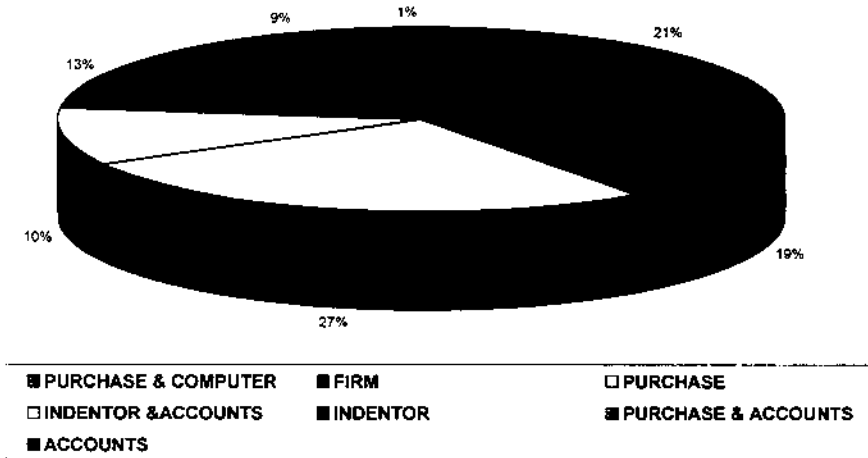


Fig: 7.1.3

LIMITED TENDER ENQUIRY - MORE THAN Rs.5 LAKHS
 - RESPONSIBILITY CENTRES
 [BEFORE IMPLEMENTING OLIMMS]

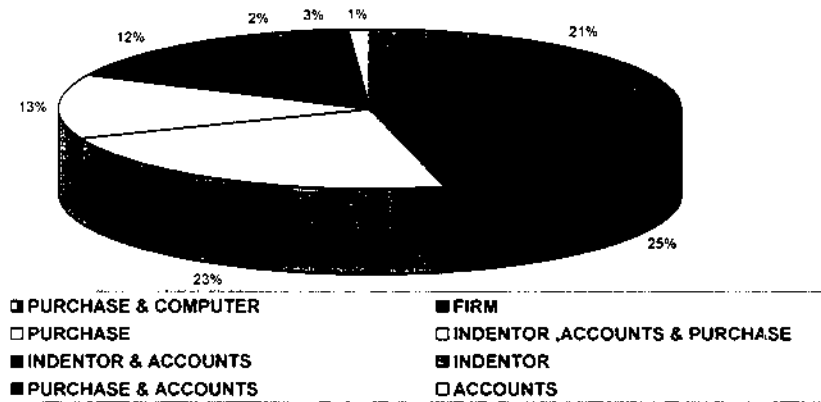


Fig: 7.1.4

PRESS TENDER ENQUIRY
 - RESPONSIBILITY CENTRES
 [BEFORE IMPLEMENTING OLIMMS]

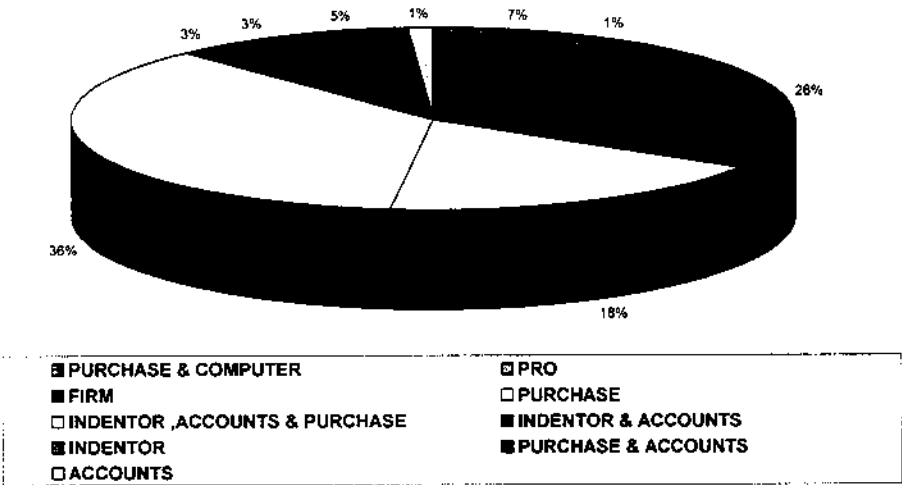


Fig: 7.1.6

SINGLE TENDER ENQUIRY
 - RESPONSIBILITY CENTRES
 AFTER IMPLEMENTING OLIMMS

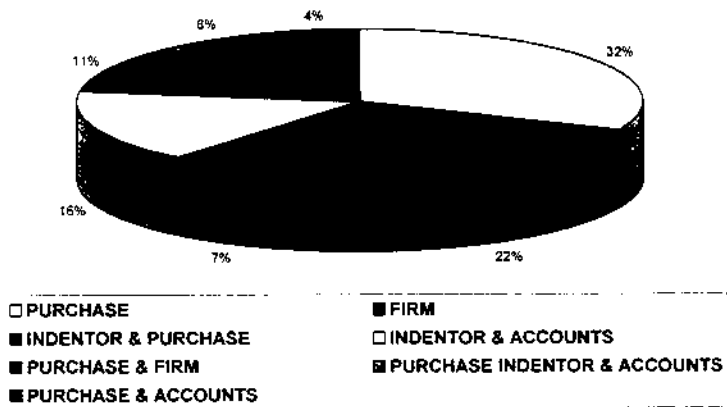


Fig: 7.2.1

LIMITED TENDER ENQUIRY-LESS THAN Rs.50,000
-RESPONSIBILITY CENTRES
AFTER IMPLEMENTING OLIMMS

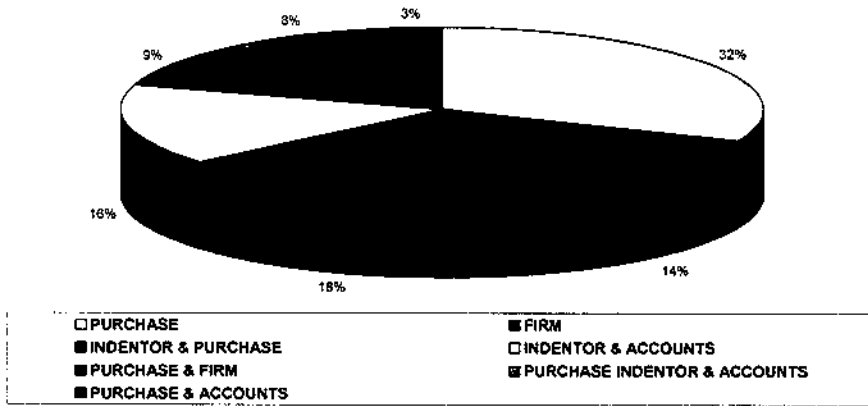


Fig: 7.2.2

LIMITED TENDER ENQUIRY-LESS THAN Rs.5LAKHS
-RESPONSIBILITY CENTRES
AFTER IMPLEMENTING OLIMMS

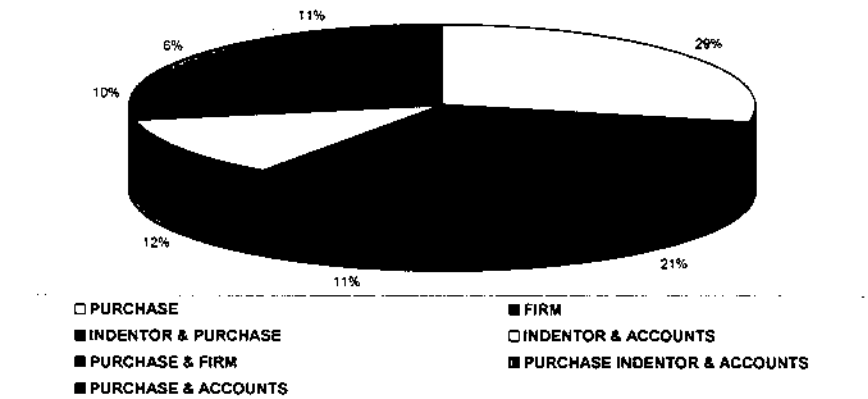


Fig: 7.2.3

LIMITED TENDER ENQUIRY - MORE THAN

Rs. 5 LAKHS

**- RESPONSIBILITY CENTRES
AFTER IMPLEMENTING OLIMMS**

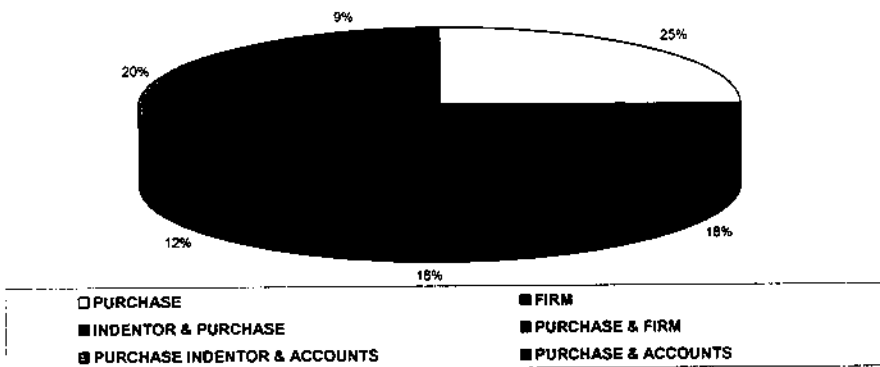


Fig: 7.2.4

PRESS TENDER ENQUIRY

**- RESPONSIBILITY CENTRES
AFTER IMPLEMENTING OLIMMS**

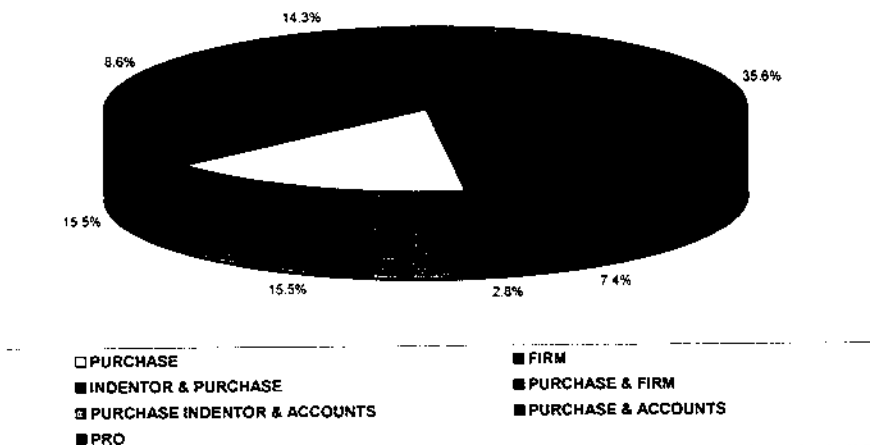


Fig: 7.2.5

CHAPTER-8

SUGGESTIONS

SUGGESTIONS

- From the study it is noted that, after the implementation of the Online Integrated Material Management System (OLIMMS), the lead time has been optimized to a maximum extent. On an average the total number of days reduced in the procurement process is nearly, 50 days, than the previous manual processing system.
- There is enormous saving in time is due to Online data transfer.
- There is elimination of manual process, since , OLIMMS is a positive approach towards paperless office.
- It was also analysed from the survey study conducted among the executives of MMC, that, online system has been working out successfully and if the firm is also connected in the network, the procurement process will be even better.
- In case, the production of a single power unit of NLC, trips for just 45 minutes, the total loss to the organization is roughly Rs.6 Lakhs. So, the procurement process should not be a cause for it and should be done within minimum days possible.
- As a positive approach towards this optimization of the Lead time, the study further focuses on suggestive methods to optimize the lead time by getting the firm connected online.
- The suggestive methods are:
 - (i) E-mail with firms.
 - (ii) E-Procurement

Under the study, recommendations are given on the *E-Procurement system*.

CHAPTER-9

RECOMMENDATIONS

RECOMMENDATIONS

The process flow of the recommended E-Procurement system is represented for LTE/STE and PTE.

The activities included are:

- Organising Committee
- Initiation of purchase
- Consolidation of quantities required by indentors
- Generating registered / authorised vendor list
- Notice Inviting tenders through website/pre-qualification requirements
- Committee assessing online shopping cart
- Preparation of comparative statement
- Selection of LI
- Approval of purchase order
- Issuance of purchase order
- Demanding bank guarantee for security

1. ORGANISING COMMITTEE

The regular products with their Make specified are grouped under single code. For eg: all electronics products or accessories are clubbed together. The committee is organized in such a way that the competent higher officials from Indentors, Accounts, & Purchase are put together in correspondence with the knowledge about the products, under their code.

Each code/product will have their respective committees, already organized in a standard way.

2. INITIATION OF PURCHASE:

The Purchase requests from all the indentors are collected once in a week/month. The detailed specifications of the products in complete form are requested from the Indentors. The days are fixed previously for the procurement of products under different codes.

(i.e) For e.g. the Procurement of Electronics Products are to be made only on Tuesdays. This is intimated to the firms in advance.

3. **CONSOLIDATION OF QUANTITIES REQUIRED BY INDENTORS:**

After the receipt of all indents from the Indentors, the consolidated list of the total quantities of products required, are prepared with respect to the products.

4. **GENERATING REGISTERED / AUTHORISED VENDOR LIST:**

The vendor list is prepared for the specified products from the overall list of recommended vendors & authorized vendors.

5. **NOTICE INVITING TENDERS THROUGH WEBSITE/PRE-QUALIFICATION REQUIREMENTS:**

The tenders are open in the NLC website for a priorly specified period. This activity is restricted to Press Tender Enquiries only. The Pre-qualification requirements for tenders should be laid down as proposed by the Indentors and are forwarded. Some of the details include, vendors past performance, capacity of the vendor etc.

6. **COMMITTEE ASSESSING ONLINE SHOPPING CART:**

The committee evaluates the online shopping cart of the vendors, where the technical and commercial specifications along with the details of the price value of each type of products are displayed.

7. **PREPARATION OF COMPARATIVE STATEMENT:**

From the vendors assessed in the online shopping cart, the comparative statements, comprising the techno-commercial aspects & price values are directly prepared with the help of Purchase executive.

8. **SELECTION OF L1:**

After the preparation of comparative statement, the successful lowest bidder in terms of price value is selected as L1.

9. **APPROVAL OF & ISSUANCE OF PURCHASE ORDER:**

Once L1 is selected, the Purchase Order is approved by the committee and is issued to the firms.

10. **DEMANDING BANK GUARANTEE FOR SECURITY:**

The primary objective of Bank guarantee is to establish the earnestness of the bidder so that he does not withdraw, impair or modify the offer.

Activities	Action centre	STE/LTE	PTE
		Lead time in days	Lead time in days
Organising Committee	PURCHASE	1	1
Initiation of purchase	PURCHASE	7	7
Consolidation of quantities required by indentors	PURCHASE	1	1
Generating registered / authorised vendor list	PURCHASE	1	1
Notice Inviting tenders through website/pre-qualification requirements	PURCHASE	-	7
Committee assessing online shopping cart	COMMITTEE		
Selection of Li	COMMITTEE		
Approval of purchase order	COMMITTEE	1	1
Issuance of purchase order	COMMITTEE		
Demanding bank guarantee for security	PURCHASE & FIRM	7	7
TOTAL DAYS		18	25

Fig: 9.1 E-PROCUREMENT PROCESS IN THE CASE OF SINGLE TENDER ENQUIRY & LIMITED TENDER ENQUIRY

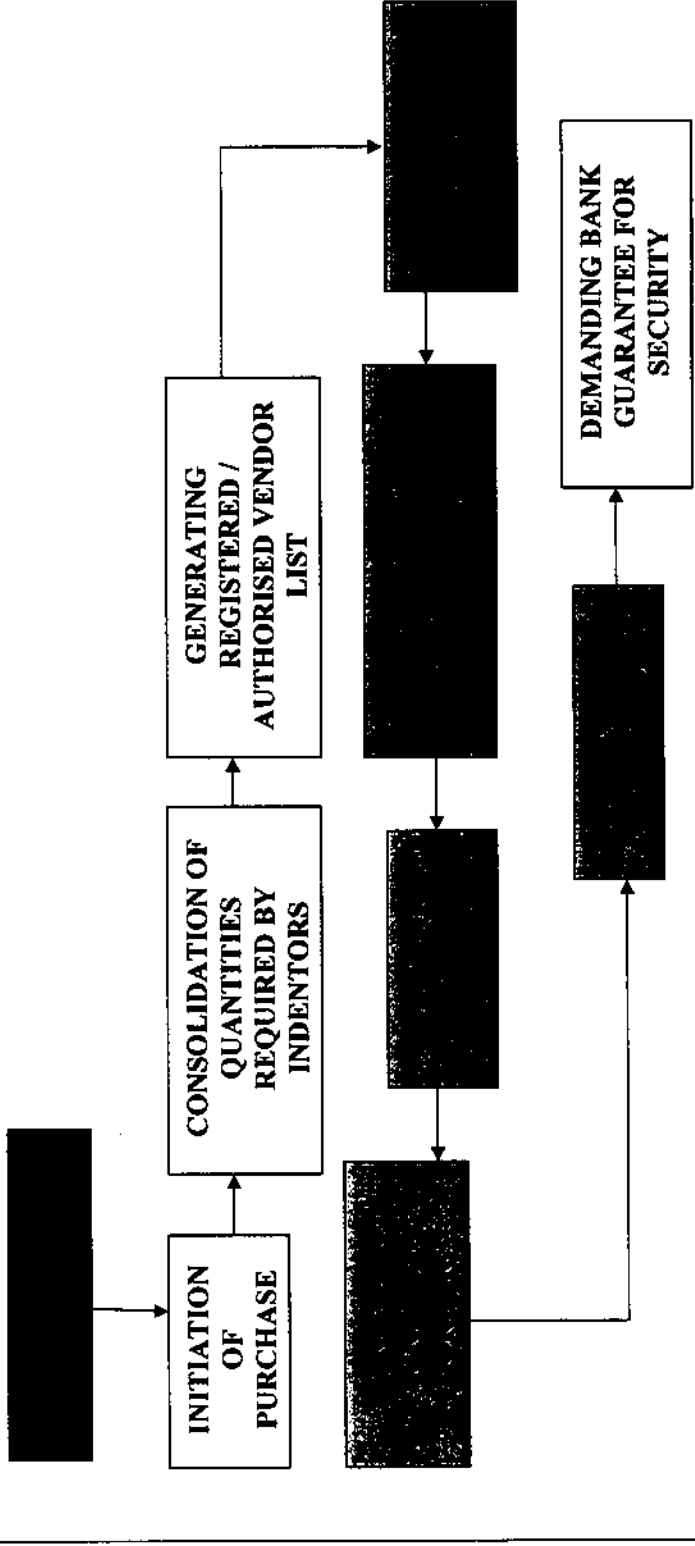
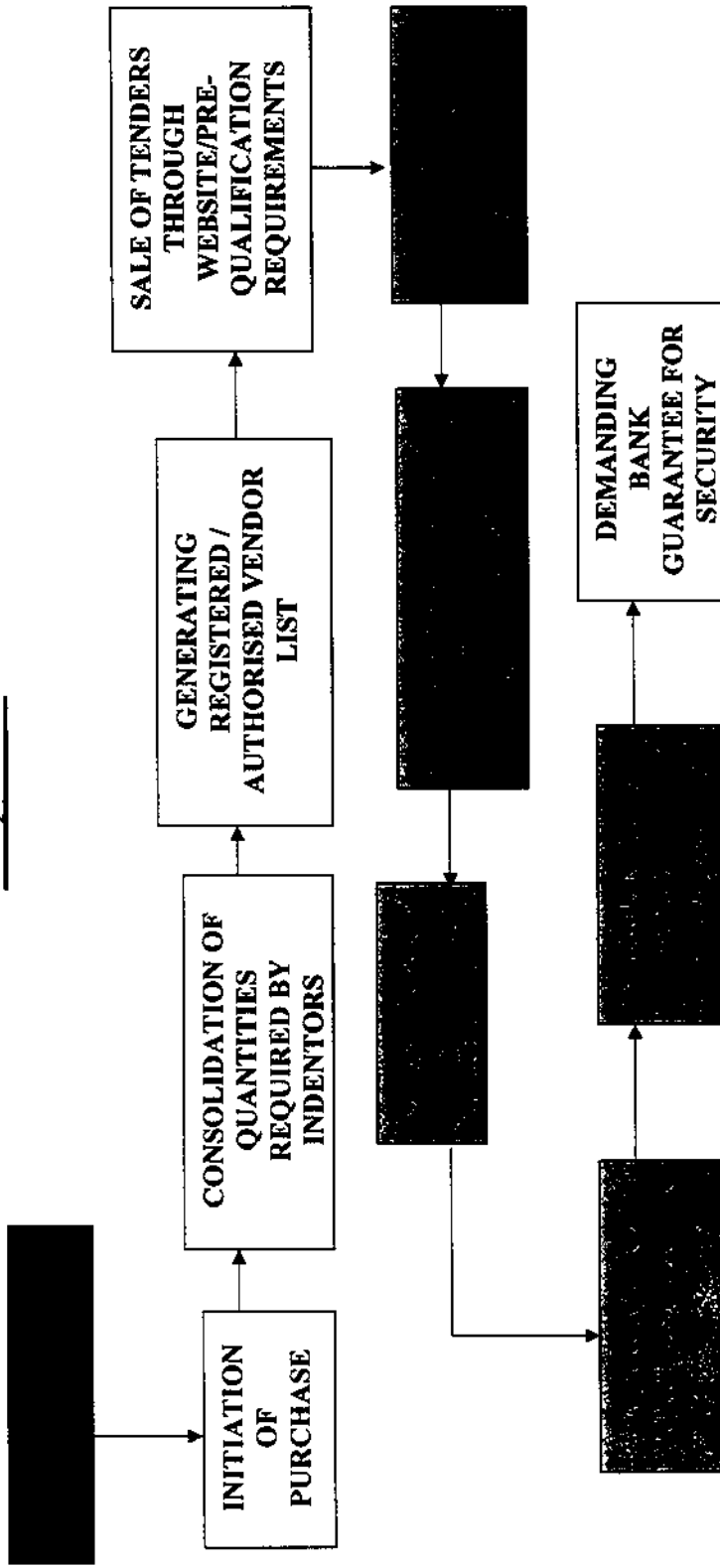


Fig: 9.2 E-PROCUREMENT PROCESS IN THE CASE OF PRESS TENDER ENQUIRY



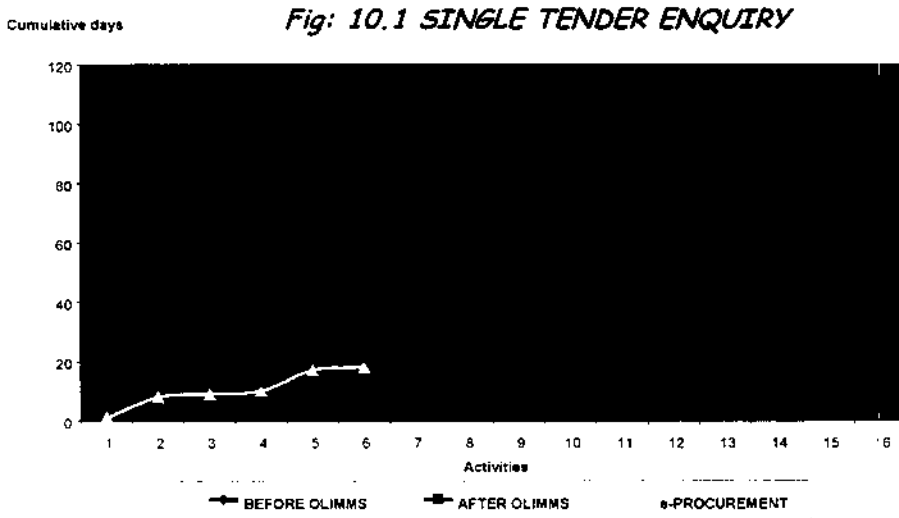
CHAPTER-10

COMPARISON OF TOTAL LEAD TIME

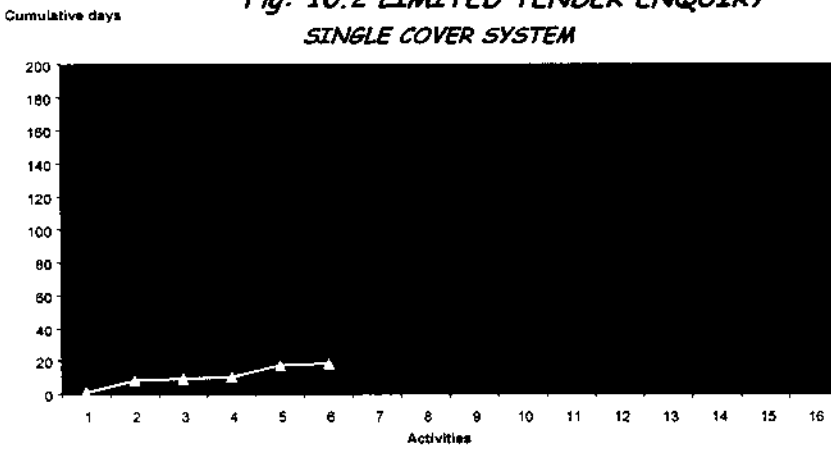
**COMPARISON OF TOTAL LEAD TIME
(BEFORE IMPLEMENTING OLIMMS, AFTER IMPLEMENTING
OLIMMS & PROPOSED E-PROCUREMENT SYSTEM)**

TYPE OF ENQUIRY	AVERAGE TOTAL LEAD TIME		
	BEFORE OLIMMS	AFTER OLIMMS	E-PROCUREMENT
STE	103.3	99.3	18
LTE-SINGLE COVER	177.6	143.1	18
LTE-LESS THAN Rs.5 LAKHS	182.6	143	18
LTE-MORE THAN Rs.5 LAKHS	143.8	113.3	18
PTE	289.2	174	25

- The total lead time in the case of STE, LTE and PTE are analysed in the case of the procurement before implementing OLIMMS and after implementing OLIMMS.
- This is compared along with the suggested "E-procurement system".
- The inference is depicted with the help of line charts.



**Fig: 10.2 LIMITED TENDER ENQUIRY
SINGLE COVER SYSTEM**



**Fig: 10.3 LIMITED TENDER ENQUIRY
TWO COVER SYSTEM**

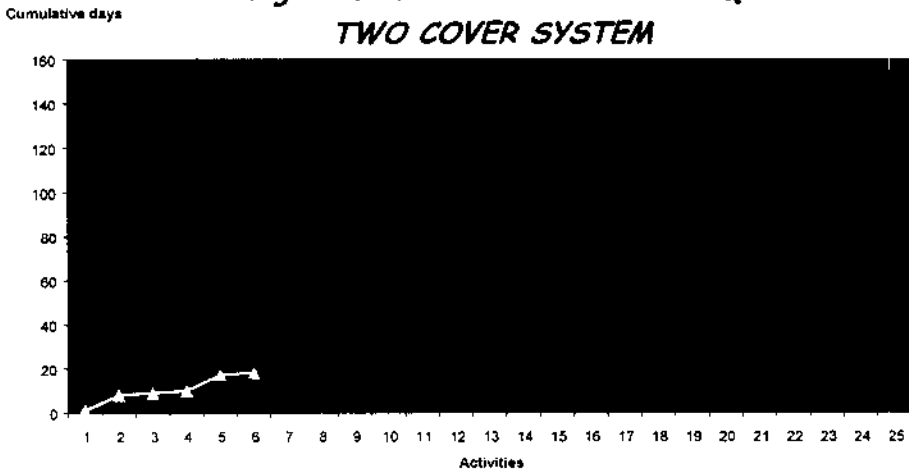
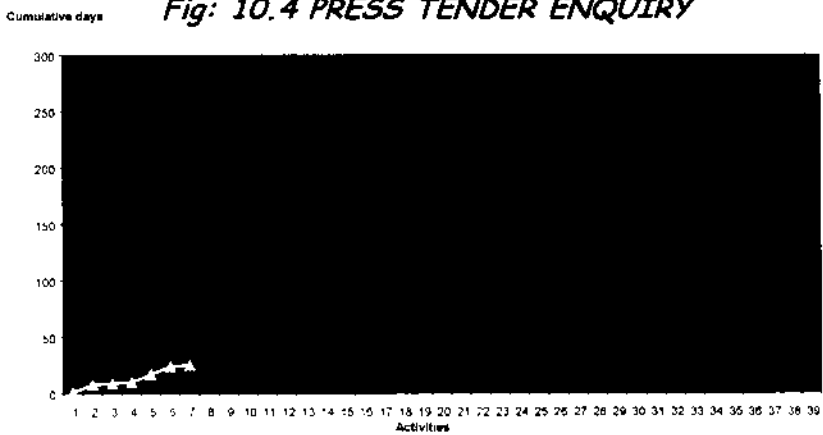


Fig: 10.4 PRESS TENDER ENQUIRY



COMPARISON STATEMENT SHOWING THE BENEFITS OF E-PROCUREMENT AGAINST MANUAL PROCUREMENT

Activities	Manual tendering	Electronic tendering	Remarks
Publishing tender Notification	<p>Complete Tender Notification is to be published in more than two papers. It will appear in paper for one day only.</p> <p>Contractor should not miss the paper on any day. If he misses that day, he cannot see the old notification.</p> <p>This decreases the competition.</p>	<p>Short tender Notification can be published in less than 50% space of manual tender notification.</p> <p>No charges in publishing the notification in site in E-Procurement</p> <p>This Notification is available any time and at any place.</p> <p>This increases participation, leading to better competitive bids.</p>	<p>50% savings in publishing cost per paper per tender notification.</p> <p>Ex : 12 cm x 18 cm (Rs.25,000/per paper per tender notification) No. of Papers 2 = Rs.50,000/-</p> <p>50% advt size will result in savings of Rs.25,000/-</p> <p>In a year , average 30 tender notifications will result in savings of Rs.25,000 x 30 = Rs.7.5 Lakhs</p>
Submission of tender documents	<p>Contractor may make mistakes in entering the Rate in words and figures, totaling mistakes, etc</p> <p>Contractor or his representative has to visit the office and submit the tender in tender box.</p> <p>A tender box has to be maintained with security.</p>	<p>Contractor has to fill up the bid sheets at his place and upload to system electronically</p> <p>Mistakes in figures and words will not happen in Electronic tendering since this is automated.</p> <p>No need to come to office to submit the tender docs.</p> <p>Contractor cannot submit the tender after the submission time</p>	<p>Frequent visits to office by contractors will take their time and money.</p> <p>In case of Electronic tenders, contractor need not visit dept. for submission of tender. This will save the time & money for contractors.</p> <p>Contractors from other towns / cities can easily participate in tender.</p>

Submission of EMD Amount	Demand Draft / Banker's Guarantee to be prepared by Contractors and submitted to Dept.	If Department opts for E-Payment gateway, contractor can pay Form Fees through his Debit / Card from his place. EMD amount is instantly debited to Department's Account. Else, contractor can scan the document and manually submit the DD / BG to office.	EMD Amount will be available at the disbursement of Tendering Authority from day one, thereby reducing holding time at Bank. All EMDs' received are properly accounted and streamlined for reimbursement to unsuccessful bidders.
Opening of tender document	For Tender opening, all contractors have to visit the office at stipulated date and time. During opening, officials have to read the values of each tenderer in front of contractors Preparation of Comparison statement will take its own time depending on the number of contractors who have participated Possibility of corrections being made in the Contractor cost bid values.	For Tender opening, Contractor need not to visit the office Comparison statement of qualified bidders will be generated within no time No correction can be made in the contractor Cost Bid since document is secured in tender engine.	In case of Electronic tendering, manpower, traveling cost of Contractor is saved Comparison statement will be generated automatically in E-Procurement. This leads to saving in time of officials as well as they can spend time in other productive works

Table: 10.1

Minimum Hardware requirements at Department to adopt E-procurement

- Pentium II and above computer
- Printer
- Dial up / Broadband Internet connection

TRANSFORMATION AT A GLANCE

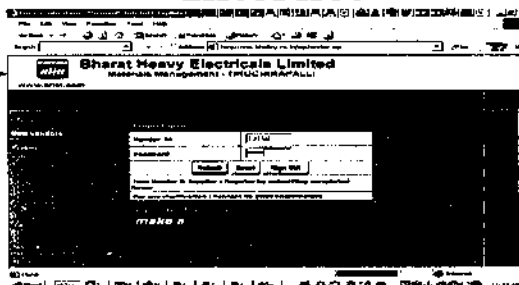
Manual



Intranet



Internet



CHAPTER-11

LIMITATIONS OF PROJECT WORK

LIMITATIONS OF THE PROJECT WORK

- For the recommended “e-Procurement system”, all vendors should be registered priorly.
- The committee assessing the system should also be organized in advance.
- The list of materials required by all user departments should be created on a weekly/monthly basis.
- The whole purchasing process should be kept highly confidential
- Prompt delivery by the vendors should be ensured.

CHAPTER-12

CONCLUSION

- On an average,

The total number of Purchase Orders released per year is 4000.

The maximum Lead time:

Before implementing OLIMMS - 239 days.

After implementing OLIMMS - 170 days

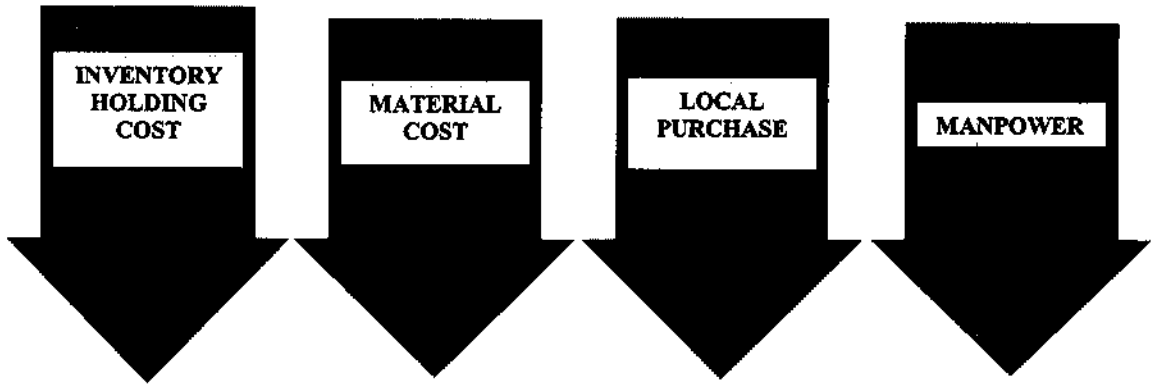
Recommended E-Procurement system - 25 days.

The recommended 'E-Procurement system' is expected to reduce lead time by **145 days**, when compared with the 'OLIMMS' system.

- Project study, focused on the following aspects:
 - Activity wise analysis of the Lead time in the procurement process was carried out in the case of STE, LTE & PTE.
 - The percentage responsibility of various departments in processing the activities in procurement was identified.
 - The survey study was conducted to analyse the response of the executives.
 - Graph depicting the total lead time taken for the procurement process under the three stages (before implementing OLIMMS, after implementing OLIMMS and through E-Procurement system) is plotted.
- The complete E-Procurement cycle is expected to be processed in a single day, if the preliminary steps of organizing committee, initiation of Purchase, generating registered/authorized vendor list etc. are priorly completed.
- So, this reduction in Lead time will be reflected through reduction in manpower requirement. Since, the process involves complete automation, the non-executive cadres can be transferred to other areas where their assistance is found necessary.
- The other advantages of the '*E-Procurement system*' are:
 - Reduction in Inventory helps in reducing the holding cost.
 - Local Purchasing activity can be reduced.

the Purchase.

**ADVANTAGES IN OPTIMISING LEAD TIME-THROUGH E-
PROCUREMENT**





APPENDICES

Student details: V. SOWMYA, M.E, Final year, Industrial Engineering,
Kumaraguru College of Technology, Coimbatore.

You are kindly requested to spare a few minutes to fill in these questions. It is assured that your views are studied only as a part of the project.

1. Section : _____

2. Description of the Item/SH/Material : _____

3. Number of pr's processed in this sub-head approximately for one year
: _____

4. Number of indentors : _____

5. Your opinion on the response of the firm in furnishing the details relating to the pre- qualification requirements:

- (a) Lesser lead time
- (b) Within norms
- (c) Takes more time

6. How is the firm's reply assessed in case of clarification related to techno-commercial aspects:

- (a) Lesser lead time
- (b) Within norms
- (c) Takes more time

7. What are the probable reasons for re-enquiry:

- (a) Changes in specifications
- (b) Firm not extending the validity
- (c) L1 rates are higher

(i) (a) (ii) both (a) & (b) (iii) (a),(b)&(c) (iv) others

8. What are the reasons for the longer lead time in conducting the TC meetings & for the approval of TC minutes

- (a) Delay in attending TC meeting by the TC members
- (b) Delay in the receipt of approved minutes

(i) Before implementing OLIMMS:

- (i) (a)&(b) (ii) (a)&(c) (iii) (a),(b)&(c) (iv) (d)

(ii) After implementing OLIMMS:

- (i) (a)&(b) (ii) (a)&(c) (iii) (a),(b)&(c) (iv) (d)

9. How prompt are the recommendations from indentors/accounts:

(i) Before implementing OLIMMS:

- (a) Lesser lead time
(b) Within norms
(c) Takes more time

(ii) After implementing OLIMMS :

- (a) Lesser lead time
(b) Within norms
(c) Takes more time

10. How is the time interpreted in obtaining accounts concurrence/approval

- (a) Lesser lead time
(b) Within norms
(c) Takes more time

11. The probable reasons for the delay in addressing the firms may be:

- (a) Due to the typing in the typing pool ()
(b) Less number of PCs ()
(c) Despatch delay ()

12. Is the lead time reduced effectively after the implementation of OLIMMS:

- (a) Yes
(b) No

If No, indicate the possible reasons:

- () (a) Double operations of dealing the file and approval online
() (b) As some screens like accounts, high value approvals are not online
() (c) Due to teething problems

13. Which of these methods can be adopted to reduce the lead time more effectively:

- (a) online with all indentors and finance ()
- (b) e-procurement ()
- (c) through e-mail with firms ()

14. Is training necessary for the total computerization:

- (a) Yes
- (b) No

15. If lead time is reduced, how will it help the organization, indicate your options:

- (a) Materials can be received in a shorter time ()
- (b) Reduces activities like Local Purchase ()
- (c) Reduces the inventory carrying cost ()

16. Is there a necessity for a parallel filing system along with the online processes:

- (a) Yes
- (b) No

17. How do you rate your work load in the Purchase branch:

- (a) Less load
- (b) Occasional heavy
- (c) heavy
- (d) Very heavy

18. Do you feel that if a experienced person in finance is heading the section, the process flow will be better:

- (a) Yes
- (b) No

THANK YOU!!

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16. www.mytenderwizard.com
17. www.intracen.org