An Assessment
on
Distribution Process of Cylinders
and
Measure of Safety Issues:
A Study on Linde Bangladesh Ltd.

Submitted To

Mahbub Parvez
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Submitted By

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I.D:093-11-1224

Date of Submission: 17/05/2014

Date: 17/05/2014

Mr.Mahbub Parvez
Assistant Professor
Faculty of Business and Economics
Daffodil International University.

Dear Sir:

Enclosed is my internship report on the assessment of distribution and related safety measures of Linde Bangladesh Ltd. This report is informative, beneficial as well as insightful. I have tried my level best to prepare an effective & creditable report. This report has the summary and trends of violations concerning vehicle movement and driver duties also an analysis of sales and supply of three sales centers of Linde Bangladesh Ltd.

The main purpose of this report is to show that the safety measure adopted by the company is working towards reducing the risks of accidents by reducing violations and assess that the sales demands are being met by the distribution team.

This report also contains description of the company's functional departments and an analysis of Linde's current status and future prospects.

I hope that this analytical assessment will benefit the distribution department of Linde Bangladesh Ltd and also their position in the industry.

Sincerely,

……

Sanzida Bhuiyan Sithi
I.D: 093-11-1224

Daffodil International University

Certification of Approval

I am Pleased to certify that the internship report on" **Assessment on Distribution Process of Cylinders and Measure of Safety Issues: A Study of Linde Bangladesh Ltd. ",**Tejgaon Branch, conducted by Sanzida Bhuiyan Sithi, bearing I.D: 093-11-1224 of the department of Business Administration has been approved for presentation and defense/ viva voice. She completed the work during the Fall-2013 semester.

I am pleased to hereby certify that the data and the findings presentation in the report are the authentic work of Sanzida Bhuiyan Sithi. I strongly recommended the report presented in the report presented by Sanzida Bhuiyan Sithi for future academic commendations and defense/viva voice.

Sanzida Bhuiyan Sithi bears a strong moral character and very pleasing personality. It has indeed been a great pleasure working with him. I wise her all success in life.

……..
Mahbub Parvez
Assistant Professor
Faculty of Business & Economics
Daffodil International University.

ACKNOWLEDGEMENT

This internship report was prepared through continuous study and analysis during my internship period of three months from 1st September, 2013 to 28th November 2013. This work would not be possible without the cooperation and assistance of some generous hands. Firstly, I would like to thank my teacher Mahbub Parvez for giving me the opportunity to do my internship under his guidance.

Then, I would like to thank my supervisor Engr. Deba Brata Saha and Abdul Kadim for letting me work in the distribution department and helping me whenever I needed something and assisting in compiling this report

I would also like to thank Managing Director Mr. Erphan Shehabul Matin for allowing me to do the internship in his reputed organization.

EXECUTIVE SUMMARY

This report is compiled of evaluations of the effectiveness of safety measures relating to the operations of distribution department of Linde Bangladesh ltd. This report also contains the analysis of how effective is the distribution team in consuming their costs efficiently.
In this report I have summarized the violations by using safety rules of vehicles and drivers. For doing that I had to use VTS (Vehicle Transportation System) for observing vehicle Violence and also used TIS (Transportation Information System) for observing the driver's Movement. I have also worked for calculating the monthly cost for covered vans which is varied with its cylinder movement. For doing this analysis I had to choose some same vehicle with a same capacity, loading power and same fixed cost. I also have worked with the time consuming about the cylinder loading/unloading. For this case I had to monitor the each and every vehicle at the time of cylinder loading/unloading for calculating the average time and to find out the extra time.

The first chapter of report will show the origin of the report, objective of the report. Methodology of data collection, procedure of collection and also scope and limitation, which were faced by me at the time of working there.

Second Chapter will show the organizational history and diagram.
Third chapter will show my actual learning part from the internship.

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PART 01
INTRODUCTION PART

1.1 ORIGIN OF THE REPORT

This Internship report was assigned as a part of the academic requirement in order to complete my 'Bachelor of Business Administration' program under the 'Department of Business' at Daffodil International University. To support my internship report, I worked as an intern in"Linde Bangladesh Ltd. (Formerly BOC) for three months from 1st September, 2013 to 28th November,2013. And I was consigned to help the officers of the Distribution Department of Linde.

1.2 OBJECTIVES OF THE STUDY

The main objective of the report is to asses the distribution process of cylinders and measures the safety issues of Linde Bangladesh Ltd, which includes the following specific objectives.

Specific Objectives:

- To analyze the monthly reports and comparison of vehicle violations with the data downloaded from a vehicle tracking system (VTS) for this safety of vehicles transporting gases around the country.
- To analyze the monthly report from the data recorded on drivers log books recording their duty hours using a Transport Information System.(TIS)
- To calculate the possible loss or profit by using data of nominal number of cylinder of three sales centers.
- To identify condemn or missing cylinder of customer and regular monitoring of private cylinder movement from Tejgaon site to other sales center and also finding the time of loading/unloading of cylinders.

1.3 METHODOLOGY OF THE STUDY

The report is an Exploratory In nature. Both primary and secondary data are used in this report. To collect primary data interview method has been used with an unstructured questionnaire. The interview was as more of a discussion method.

The Primary sources:

- Manager, Senior Executives and the labor of cylinders.
- Clients

The secondary Sources:

- Recorder data of previous years
- Log books
- Types of report of vehicle management
- Yearly or monthly articles

Method of Data Collection:

Primary data were collected through face to face conversation with the officers and labors with an open ended questionnaire was used to collect primary data. Secondary data were collected from different published article, web sites and the documents they used for their client

Population Size: The whole organization included with 400 employees with officers and labors, 10000 clients and all other alliances of the company.

Sample Size: 100 labors, 25 management employees under distribution and safety departments and 50 clients.

Sampling Method: Simple random sample method is used to sampling data, where participants are randomly chosen.

Data Analysis Process: Percentage calculation, Graph and pie chart are used to identify the actual activities of the department.

1.4 LIMITATIONS OF THE REPORT

- Report did not work with rules of Human Resource Management.
- In this report there is no contribution of Financial Department.
- Report did not work on organizational behavior, attitude and activities.

- Data gathered could not be verified for accuracy.
- Restriction as per the company policies to disclose some of the internal information and financial data of the company to the outside people.

PART: 2

ABOUT

LINDE BANGLADESH

LIMITED

NAME AND LOCATION

Company Name: Linde Bangladesh Limited.

Linde Bangladesh Limited operates nationwide through three major productions sites and 18 sales centers as listed below.

Corporate Office

285 Tejgaon Industrial Area,

Dhaka – 1208

Phone: +880.2.8870-341

Fax: +880.2.8870-357

Email: info.bd@linde.com

Tejgaon Site

285 Tejgaon Industrial Area,

Dhaka-1208

Phone: +880.2.8870-322

Fax: +880.2.8870-336

Email: info.bd@linde.com

Shitalpur Site

Shitalpur, Shitakund, Chittagong

Phone: +880.3.1751-485

172Email: info.bd@linde.com

Rupgonj Site

P.O. Dhuptara, P.S. Rupgonj, Narayangonj

Phone: +880.11.9985-

Email: info.bd@linde.com

2.1 HISTORICAL BACKGROUND

The first business years: 1879-1890

Thanks to the Linde engineers and the reliability and performance of the Linde plants, the young engineering firm "Gesellschaft für Linde's Eismaschinen", whose refrigeration machines (photo: the first refrigeration machine sold to Trieste) were manufactured primarily by Maschinenfabrik Augsburg and the Swiss company Gebrüder Sulzer, soon became the market leader in Germany and Europe and was even represented in the United States through a licensee.

In order to create a broader selling base, Carl von Linde also built his own cold storage facilities for food and ice factories for industrial and private consumption. His ice machines were also used as freezer plants for ships, for ice skating rinks, for refrigeration in dairies, and for the liquefaction of carbonic acid and chlorine.

Establishment of BOC

While in Germany "Gesellschaft für Linde's Eismaschinen" soon gained a reputation in refrigeration technology, the history of BOC began almost simultaneously in London. In 1880, six years before the company was founded, the brothers Arthur and Leon Brin took out a patent on a chemical process for separating oxygen. Five years later, the brothers showed a demonstration machine at the Inventions Exhibition in South Kensington, London. Henry Sharp, a stoneware manufacturer, was sufficiently interested to persuade friends and members of his

family to help form a company to develop the Brins' process - "Brin'sOxygen Company Ltd" was founded in January 1886 and the following year, the company produced 4,024m³ of oxygen.

BOC and LINDE

BOC had had to give up its own oxygen production in favour of the Linde liquefaction process in 1906, after losing a patent dispute with "Gesellschaft für Linde's Eismaschinen".

The company was renamed "The British Oxygen Company", and after winning the patent dispute, Carl von Linde became a member of the Board of Directors of BOC. The company achieved a first breakthrough for industrial applications with the introduction of autogenously (gas) welding in the early 20th century.

Together with the name change, the production process was further refined by combining the best features of the Linde process with a new process developed by Georges Claude. Today The Linde Group is a world leading gases and engineering company with almost 48,000 employees working in more than 100 countries worldwide. In the 2009 financial year it achieved sales of EUR 11.2 bn. The strategy of The Linde Group is geared towards sustainable earnings-based growth and focuses on the expansion of its international business with forward-looking products and services. Linde acts responsibly towards its shareholders, business partners, employees, society and the environment – in every one of its business areas, regions and locations across the globe

Linde Bangladesh Limited, a member of the Linde Group, has been contributing towards the development of the nation as a silent partner. A strong in–built culture with work values reinforced and developed Linde Bangladesh over the years which are reflected in the performance of its employees for more than 50 years with continuous expansion in ranging on wide spectrum of industries from chemicals and petrochemicals to steel. It has a team of around 400 trained, motivated and professional members who look over operations for 24 hour at three major locations across the country to support the customers.

Linde Bangladesh Limited is committed to the quality of its products & services. The company's motto is to ensure optimum conditions in health, safety and the environment for employees, customers and stakeholders.

	MILESTONES OF THE COMPANY AT A GLANCE
1958	Pakistan Oxygen Limited.
1964	Tejgaon plant commissioned and two plants, oxygen and acetylene were set up. Chittagong welding electrode plant was established.
1968	Khulna plant was inaugurated.
1971	After the liberation war company changed name from "Pakistan Oxygen Limited" to "Bangladesh Oxygen Limited" which was known as "Oxygen Limited" during the transition period of incorporation.
1973	Incorporated in the joint stock companies and received government approval as the first full-fledged "Company" of the newly formed country.
1976	First CO2 plant was introduced.
1979	Welding Training Centre started its journey.
1990	BOC transferred its corporate office from Motijheel to Mohakhali.
1995	The company changed its name from "Bangladesh Oxygen Limited" to "BOC Bangladesh Limited".

1996	BOC set up its first line welding electrode plant.
1997	Rupgonj Plant was commissioned.
1999	Shitalpur plant was bought over with 20TPD production facility. BOC set up its second line welding electrode plant.
2000	ASPEN and LPG Bottling plant was commissioned.
2004	Inaugurated present corporate office in Tejgaon.
2006	BOC Bangladesh Limited was acquired by the Linde Group.
2010	Achieved BDT 100 Crore Profit.
2011	BOC set up its Wittemann carbon dioxide plant.

Table 1: Milestones of the company.

2.2 NAME AND CHARACTERISTICS OF FOUNDERS

The company's founder, Carl von Linde, invented refrigeration technology and pioneered a process of air separation. Today, we are a global market leader in gases and engineering solutions.

Carl Linde (ennobled in 1897) was born in Berndorf (Bavaria) as the third of nine children of a Protestant minister on 11 June 1842.

In 1861 he began to study mechanical engineering in Zurich, which he had to give up without graduating. Thanks to the intercession of his professors, he found a first position with the locomotive manufacturer Borsig in Berlin.

In 1866 he went to Munich; in 1868 was appointed professor extraordinaire at the new Polytechnic University, where he developed his ground-breaking refrigeration machine.
In 1879 he founded "Gesellschaft für Linde's Eismaschinen AG" in Wiesbaden together with other entrepreneurs.

Ten years later, he returned to the University in Munich. In 1895 he liquefied air; in 1902 he separated it into gases and thus laid the foundation for the industrial gases industry.
He died in Munich in 1934, at the age of 92.

2.3 VISION, OBJECTIVES & STRATEGIES OF THE COMPANY

2.3.1 VISION OF LINDE BANGLADESH LTD

"We shall be recognized as the leader in all the business sectors in which we compete in Bangladesh.

Our success will be built on our absolute dedication to the satisfaction of our customers, through constant innovation, operational efficiency, cost effectiveness and the talents of our people.

We shall always apply high standards of integrity and responsibility in our activities."

2.3.2 VISION OF THE LINDE GROUP

"We will be the leading global gases and engineering group, admired for our people, who provide innovative solutions that make a difference to the world."

2.3.3 THE LINDE SPIRIT

The organization's core values are anchored in the Linde Spirit, its corporate philosophy. All of its actions are guided by a strong commitment to corporate integrity. It is the fabric of the company's moral and ethical code, ensuring that it always acts with honesty and fairness. At The

Linde Group, every employee is committed to their vision and to live up, day by day, to the values and principles set for them. They call this “living the Linde spirit.”

The core values of The Linde Group are:

- Passion to excel.
- Innovating for customers.
- Empowering people & Thriving through diversity.

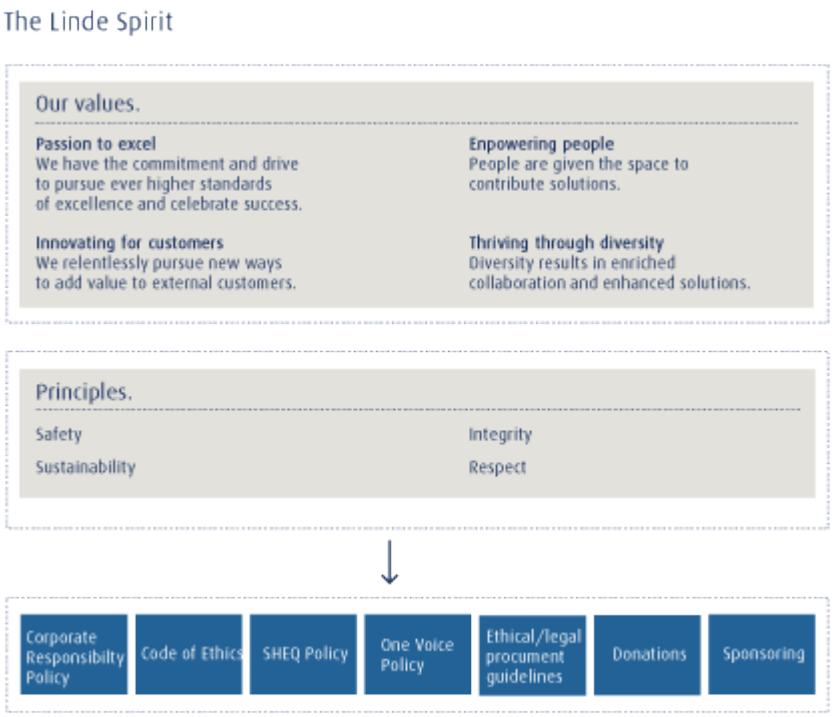


Figure 1: The Linde Spirit

2.3.4 CORPORATE RESPONSIBILITY POLICY

Just like the Code of Ethics, the Linde Group’s Corporate Responsibility policy also builds on the values and principles set down in the Linde Spirit. It outlines the sense of responsibility to its stakeholders, such as business partners, employees and society. It also addresses the commitment to protecting natural resources the strategy of the Linde Group is

geared towards sustainable earnings-based growth and focuses on the expansion of its international business with forward-looking products and services. Linde acts responsibly towards its shareholders, business partners, employees, society and the environment in every one of its business areas, regions and locations across the globe. Linde is committed to technologies and products that unite the goals of customer value and sustainable development.

2.4 ORGANIZATIONAL STRUCTURE

Linde Bangladesh Limited (Formerly BOC Bangladesh Limited) is led by Mr.Erphan Shehabul Matin, the Country Head and Managing Director of the company.

The Board of Directors shoulders the responsibility of company's welfare and shareholders' interests.

BOARD OF DIRECTORS

Names	Position
Ayub Quadri	Chairman
Erphan Shehabul Matin	Country Head and Managing Director
Sanjiv Lamba	Director
Siew Yeap Wong	Alternative Director of Sanjiv Lamba
Binod Patwari	Director
Lee Bon Hian	Director
Md. Fayekuzzaman	Director
Latifur Rahman	Director
M Nazmul Hossain	Finance Director and Company Secretary
Parveen Mahmud	Director

Table 2: Board of Directors.

2.4.1THE ORGANOGRAM

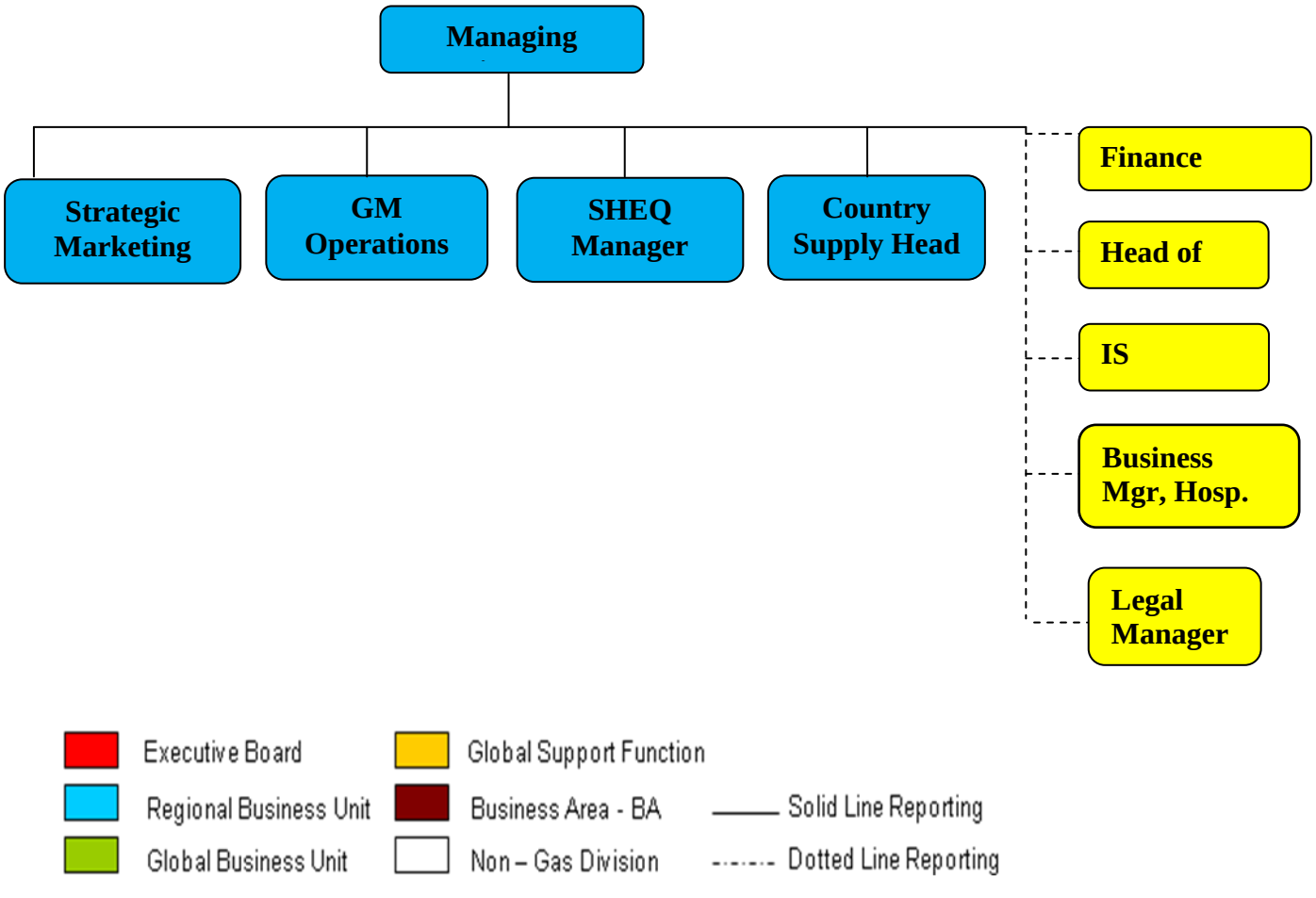


Figure 2: The Organogram.

2.5 THE FUNCTIONAL DEPARTMENTS

Linde Bangladesh Limited has seven essential functional departments and they are:

- ***Human Resource Department*** – that carries out every necessary task required for recruitment of a new employee till the retention of an employee. They engage in developing employees to reach their true potential.

- ***Information System Department*** – handles all the information related to the infrastructure of the organization and provides with the necessary technological support.

- ***SHEQ (Safety, Health, Environment and Quality)*** – this department handles everything related to safety. They ensure safety starting from procurement to distributions, keeping it their not to harm anybody at any time.

- ***Production Department*** – is responsible for looking after all the necessary actions in producing the gases. The duty also includes the procurement of required materials.

- ***Distribution*** – this department works in the middle helping both the production and customer service departments. The main job of this department is to make sure the products reach the sales centers and customers on time and the correct products are being transported. Because they deal with the transportation and movements of the hazardous gases, another key part of their duties include safety. It is the department's duty to ensure safe operations regarding movement of transports and

- Cylinders. They also have ensure that all the delivery system is working at optimum levels with effective and efficient use of time and capacity.

- ***Customer Service*** – this department is involved in providing production and distribution departments with the data stating the demand for their products, helping the customers with their products and providing all sorts of after sales services.

2.6 PRODUCTS AND SERVICES

Industrial gases- compressed oxygen, liquid oxygen, compressed nitrogen, liquid nitrogen, acetylene, carbon dioxide, food grade carbon dioxide, dry ice, compressed argon, liquid argon, lamp gases, LPG, hydrogen.

Specialty gases – High purity/ultra high purity gases, gas mixtures, fire suppressants, refrigerants, compressed helium, liquid helium, sulphur hexafluoride, sulphur dioxide.

Welding gases and equipment- mild steel electrodes, low hydrogen/ low alloy electrodes, cast iron electrodes, hard surfacing electrodes, arc welding equipment and accessories, MIG equipment and accessories, TIG welding equipment and accessories, plasma cutting equipment and accessories, safety products, abrasives.

Medical gases and equipment - Medical compressed oxygen, medical liquid oxygen, nitrous oxide, ENTONOX, medical air, medical carbon dioxide, sterilizing equipment and gases – special gases, anesthesia machines, ICU/CCU monitors and ventilators, pulse oximeter, infant warmer and incubators, photo therapy unit, OT light and table, autoclave/sterilizer, gynecological tables, humidifier, oxygen concentrator. Resuscitators, medical pipeline

2.7 SWOT ANALYSIS

Figure.03 Diagram of SWOT Analysis

2.8 THE CURRENT STATE AND FUTURE DIRECTIONS

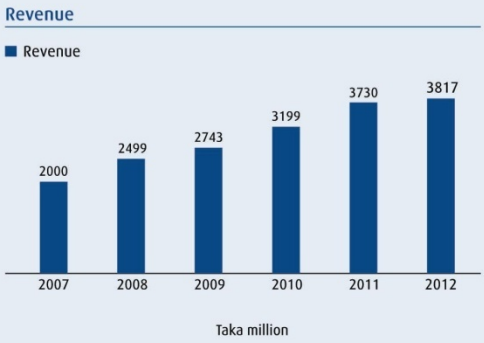
Currently the operations of the company are not at a very great stage because of the shortage of production facilities. The company would like to produce more of the gases to satisfy a broader customer base. However, the demand for the products is not always stable because of the volatile market. There are a number of factors that affect the demand for example the consumption of the ship building industry. As the production of ship varies according to the world's economic condition, the demand for Linde's products varies with that. The political condition of Bangladesh affects the sales of wielding products and services mainly along with other sales. The current economics condition of the country is also hampering the sales of wielding gases because the construction companies are slowing down with number of constructions.

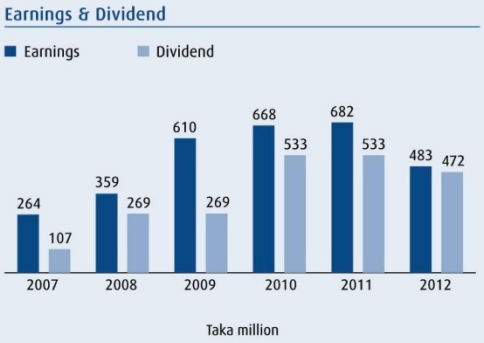
Despite the predicament, the current operations are keeping the company in a profit earning position according to the plans. However, they are lacking growth due to the current state and to fight this problem, the company plans on increasing production facilities by 2015 for both gases and welding.

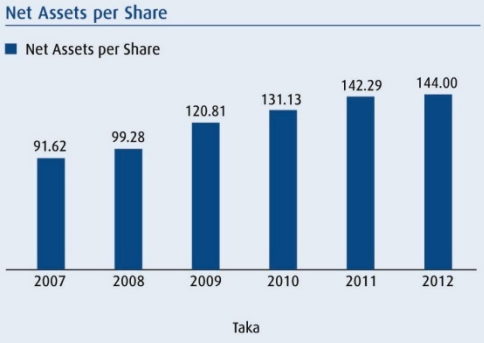
2.8.1 Financial Performance

Inside cover folding pages

		2007	2008	2009	2010	2011	2012
Revenue	Taka'000	2,000,172	2,498,583	2,742,817	3,199,375	3,729,754	3,817,127
Profit before tax	"	350,155	457,740	772,611	903,256	940,136	660,493
Taxation	"	89,171	116,106	181,972	241,320	230,584	180,575
Deferred tax	"	-2,667	-17,708	-19,231	-6,132	28,037	-2,593
Earnings	"	263,651	359,342	609,870	668,068	681,515	482,511
Final dividend proposed	"	106,528	117,181	117,181	152,183	152,183	167,401
Interim dividend paid	"	-	152,183	152,183	380,457	380,457	304,366
General reserve*	"	1,195,914	1,312,546	1,666,177	1,823,141	1,993,048	2,019,010
Share capital	"	152,183	152,183	152,183	152,183	152,183	152,183
Revaluation reserve	"	46,181	46,181	20,174	20,174	20,174	20,174
Shareholder's equity*	"	1,394,278	1,510,910	1,838,534	1,995,498	2,165,405	2,191,367
Net fixed assets	"	1,004,121	961,178	922,735	1,043,552	1,238,834	1,474,836
Depreciation	"	134,386	135,466	136,321	132,769	131,915	146,144
Earnings per share	Taka	17.32	23.61	40.08	43.90	44.78	31.71
Price earnings ratio	"	19.00	11.00	12.00	16.00	14.00	17.00
Dividend per share	"	7.00	17.70	17.70	35.00	35.00	31.00
Dividend percentage	%	70	177	177	350	350	310
Net assets per share*	Taka	91.62	99.28	120.81	131.13	142.29	144.00
Operating cashflow per share	"	22.16	25.11	68.41	45.45	34.57	31.78







* Adjusted for change in presentation of proposed dividends

PART: 3

THE LEARNING PART

The report consists of four individual parts to help the distribution managers in their regular decision making process. For Linde, safety is one of the most important factors and they put huge efforts in making sure everyone who works for them in the factories, offices and sales centers are safe. Accordingly, the delivery process also puts a huge emphasis on the safety of the vehicles and the drivers running those vehicles as they have to handle extremely dangerous gases and chemicals. For that reason, half of my analysis for this report was related to vehicle and driver safety.

3.1 PRIVATE CYLINDER MOVEMENT RECORD

For the last part of my report was keeping the private cylinder movement record by checking the regular documents. And I had to always give concentrate to the customer about their missing cylinder.

From my observation, there are three types of cylinders.

1. **Private Cylinders**: which are only used by private and fixed customer and cylinders are bought by the customer for long life.

2. **BOC Cylinder**: The cylinders are used for rent to the customer like hospital, industry and food & beverage etc. Customer has to pay the normal rental money to the company depending on time.

3. **Emergency cylinder**: The cylinders are given to those customer who are not capable for buying the cylinder but they need the gas immediately just like medical patient.

That time company gives them cylinder for a fixed time by taking some collateral

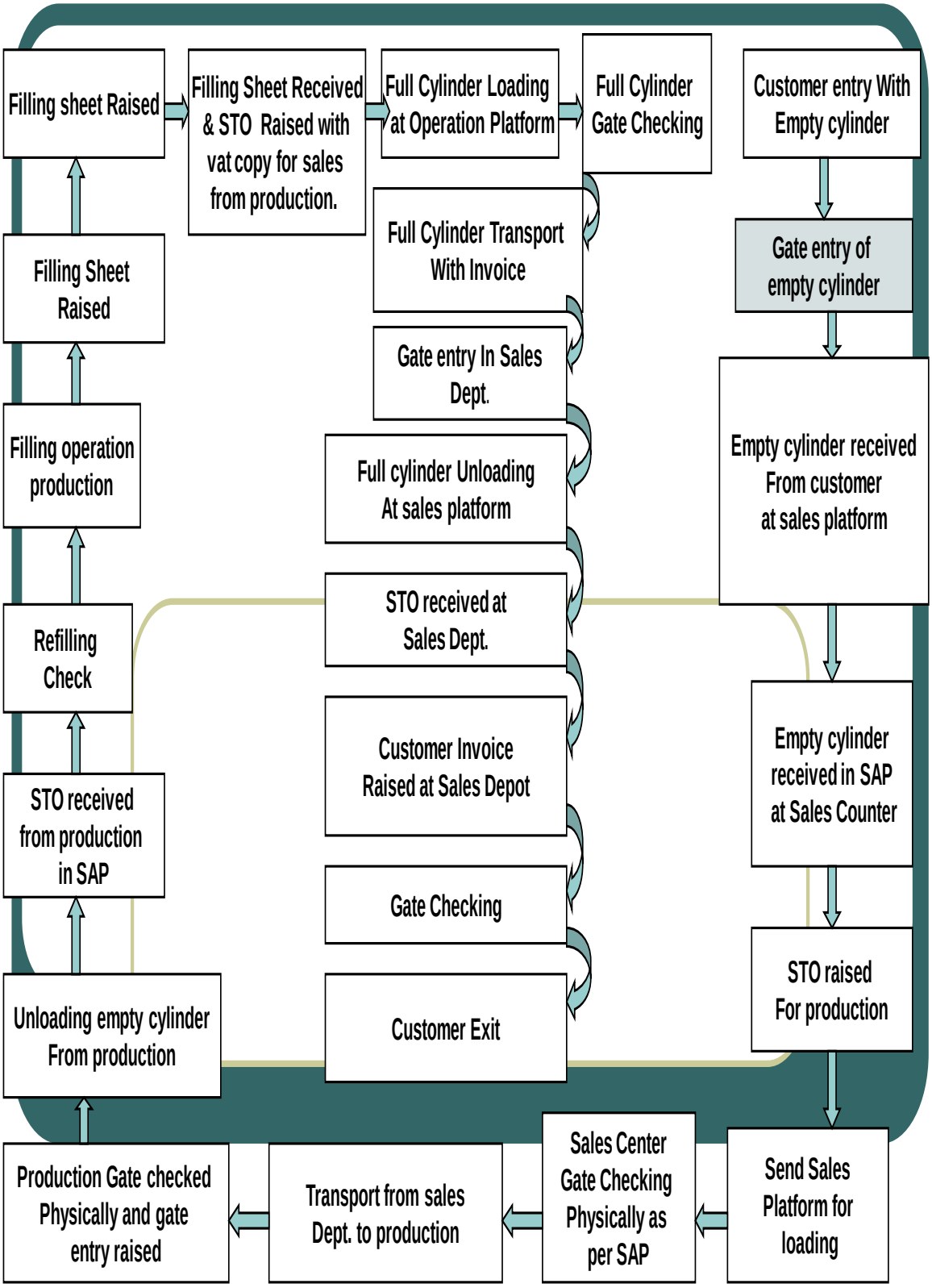
There are various types of gases in “Linde Bangladesh” like

- Industrial Oxygen
- Medical Oxygen
- Medical Nitrogen
- Industrial Nitrogen

- Argon
- Helium
- Carbon-dye-Oxide
- Nitrous Oxide
- Hydrogen

These gases moved in full Bangladesh according to customer and plant demands. I have monitored the movement of private gas which are moved from tejgaon site only to another sales centers.

Private Cylinder Management Process



Figuer.4: private cylinder movement record or process.

3.2 VEHICLE SAFETY

For the part where I worked on Vehicle Safety, I used the company's Vehicle Tracking System (VTS) to collect data. The Vehicle Tracking System mainly runs through the internet. The VTS receives data from GPS tracking devices attached to the vehicles after every two minutes and are recorded in report forms in the system. For my part of the report, I downloaded the Fleet Violation Reports of the previous day, everyday and recorded the violations as summary reports for the month in Excel files for each month. After the month was completed I used the previous month and the current month's summary reports to create comparison between two months and presented those to my supervisor.

3.3 DRIVERS' SAFETY

In order to monitor the drivers' duty hours and the violations of the rules of the company by any driver, I used the company's Transport Information System (TIS). This system is essentially used to record all the information about the expenses for the vehicles like fuel consumption, transport expenses, maintenance etc. and driver rules verification for the drivers. As my report was concerned about the drivers' safety, I used the data from drivers' log books into the system and gathered monthly Driver Rules Verification Reports for each driver to analyze their duties.

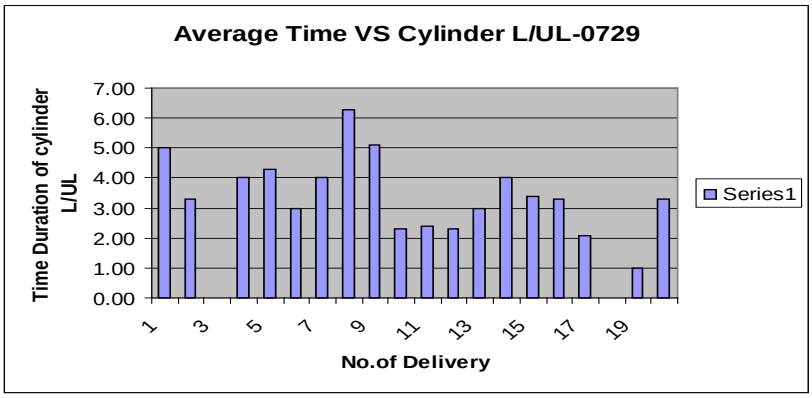
3.4 CALCULATION OF COST

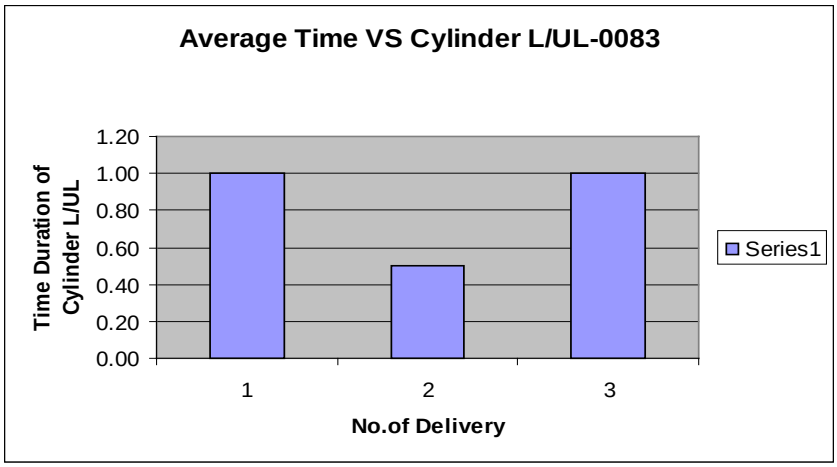
For calculating the possible cost which is related with profit and loss, I only considered covered vans with three sales centers. To calculate the cost, I took help from the log book.
Where the data were accumulated in Company for a long time. From the log book records, I have gathered information about the cost of preparing and renewing legal documents, costs of sudden expenses that might have to be met and average maintenance costs of running those vans for a period of 2 months. For prices of the vehicles, I went to a few car dealers to get the current market price of those vehicles. After gathering information about all the variable and fixed costs,

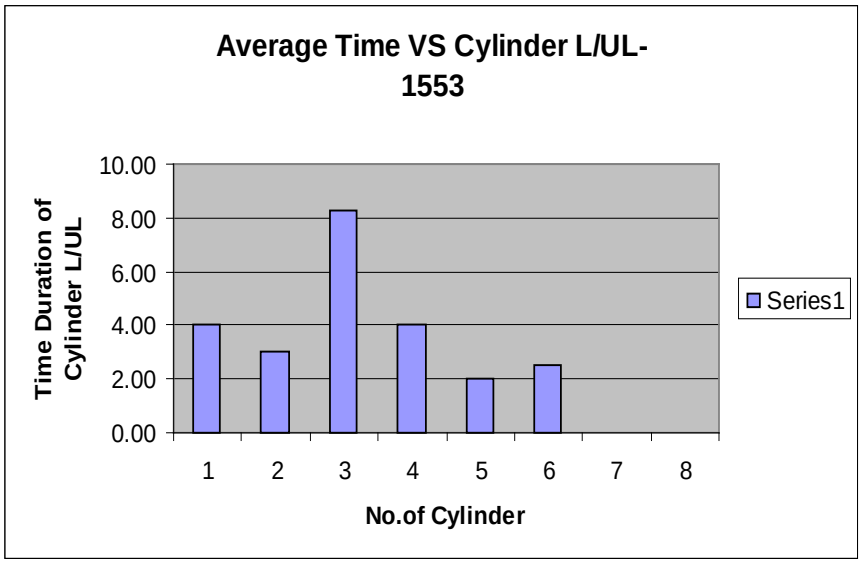
I have found the actual cost by adding fixed and variable cost with comparing actual capacity of the van and expected capacity of the vans with cylinders.

3.5 COMPARISON BETWEEN DELIVERY AND NO. OF CYLINDER LOADING/UNLOADING

It was another issue that how much time we spend for loading/unloading of pickup vans with cylinder. It works under the cylinder management process. So that is why for consuming the time and getting the maximum profit, it was needed to do the survey with the loading/unloading time of cylinders. I have completed the survey also under the cylinder management process,







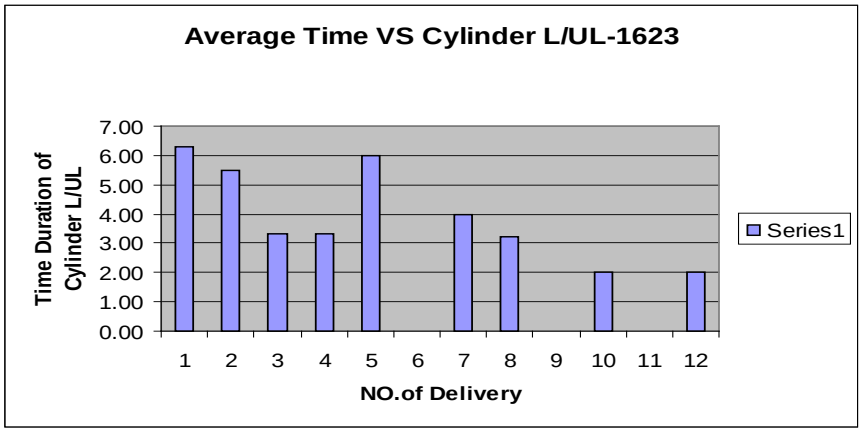


Figure-5: Average time VS cylinder Loading/unloading

3.6 ANALYSIS

3.6.1 VEHICLE SAFETY

As mentioned previously, safety is of No. 1 priority for the Linde Group especially because they handle highly explosive gases and transport them all around Bangladesh. It is the company's commitment to keep everything around them safe. As they say, "We are committed to safety, health, environment and quality. At the Linde Group, we do not want to harm people or the environment." After a lot of studying about road accidents, the Linde Group has determined that there three main factors that lead to road accidents and they are:

Harsh Braking, Harsh Acceleration & Over Speed.

The GPS tracking devices that are attached to all the vehicles sends movement reports to the Vehicle Tracking System regarding the vehicle speed, location and any violations caused by the vehicles. According to the company policies, Harsh Braking is defined as deceleration by 8 km or more at once and Harsh Acceleration is defined as the acceleration of 5km or

More at once, the speed limit for passenger cars is 80km/hour and 60km/hour for commercial vehicles and crossing those speed limits results in Over Speed. For my report, I gathered the information from VTS and compared the violation data between the months. The expectation for the analysis was to see a decline in number of violations by each vehicle over the months. However, violations actually varied from month to month. This was because there are a number of factors that comes in to play, like technical problems with the vehicles or the GPS device, problem with the vehicles, new driver etc.

The commercial vehicles used to transport products are divided into four major vehicle groups and they are: Bulk Vehicles, PGP Vehicles, Hard Good Vehicles and Pick-Ups. There are dedicated supervisors for each group of vehicles. In order to keep everyone posted about the movement of all vehicles, movement reports and violation reports were downloaded everyday from VTS and mailed to all the concerned managers and supervisors. Whenever violations were recorded, the respected supervisors of each vehicle group contacted the drivers to ask them why the violations have occurred. The supervisors explained to the drivers what each violations meant because most of the times, the drivers did not understand the definition of Harsh Braking and Harsh Acceleration as defined by the company. They always seemed to assume that Harsh Braking only means what we normally know as Hard Brake, which is coming to a sudden halt while driving. It was also explained to the drivers how the GPS devices Attached to their cars

worked and how we got the information instantly so that they try to keep themselves alert all the time. If violations continued to be regular even after counseling, the drivers were changed for those vehicles to see if there were any problems with the vehicles.

By analyzing the violations for Three months starting from September to November, I have found that although the numbers of violations have been fluctuating over the months, violations have decreased from September to October .On the other hand we can see from the below diagram that, the total violation increases from October to November. So the violation rate is varied from month to month.

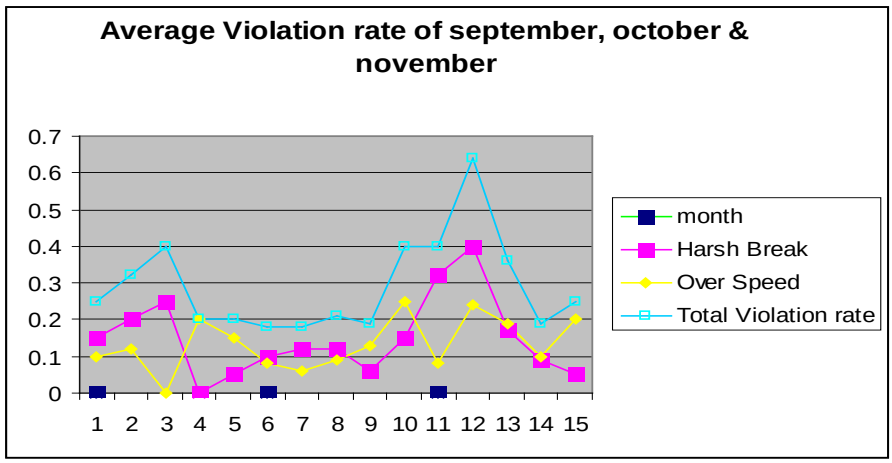
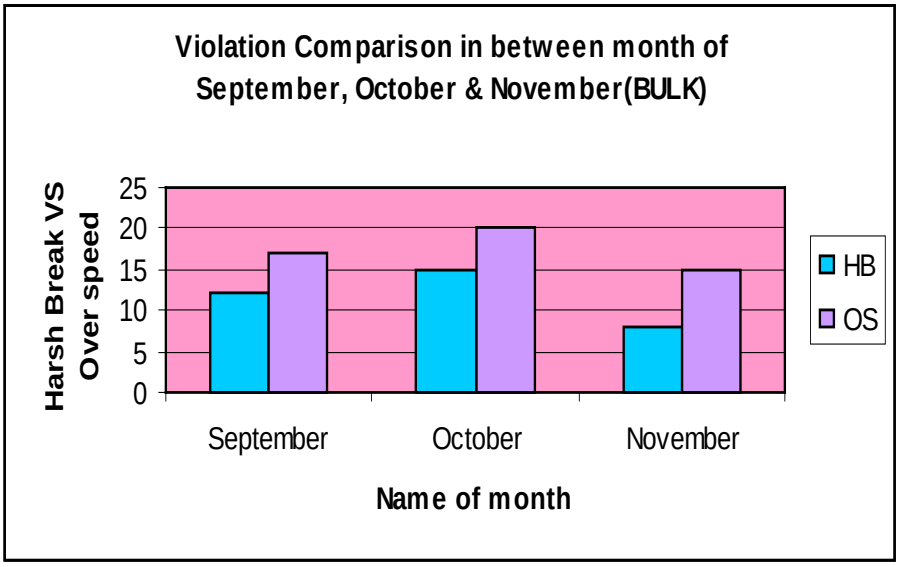
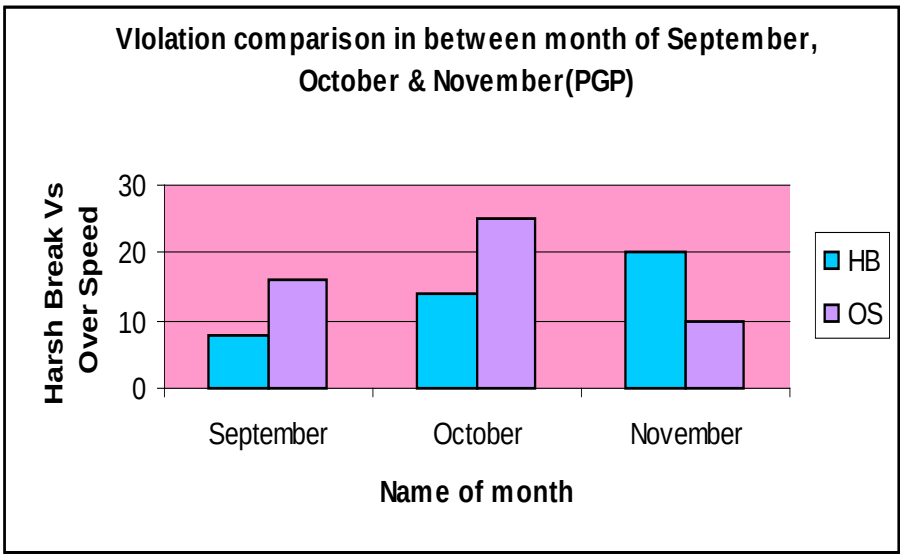


Figure 6: Showing the Average number of violations over the months.
Diagram: Showing the Average number of violations over the months.





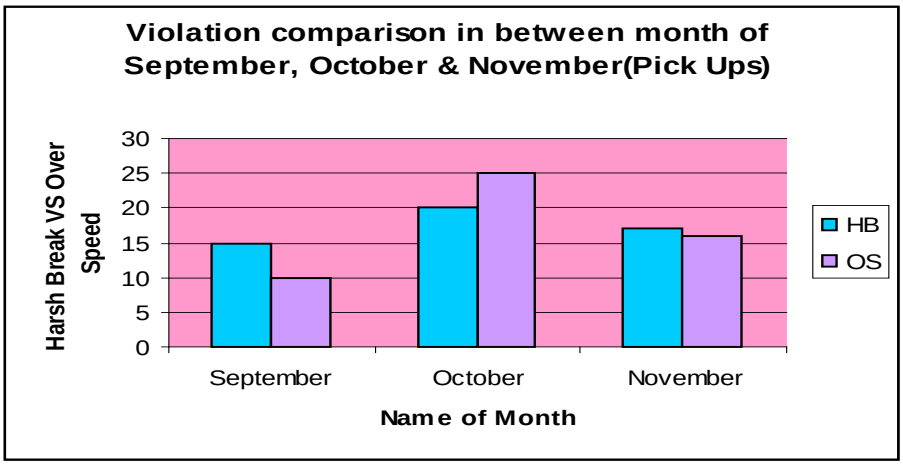


Figure 7: Comparison of total number of violations by all types of vehicles for September, October & November

From the figure we can say that September and November have occurred less violation about over speed and Harsh Break than October.

3.6.2 DRIVERS' SAFETY

Drivers play a major role when it comes to road safety. Everything depends on the hands of the drivers once they are out on the roads. Drivers must be always alert of their surroundings, rested completely, and have a clear mind when they are driving. To ensure all of these, the company came up with certain rules for the drivers. The rules include driving hours of not more

than 12 hours, resting time of at least 10 hours between duties, at least one day break in every week, etc. The reason for creating a report on drivers' duty hours was to see if these rules are being followed by the drivers.

For the purpose of creating reports of total duty hours of drivers I had only considered the log books of PGP Vehicle drivers because the Tejgaon site is mainly for producing compressed gases in cylinders. To get the monthly report on the hours driven and total duty hours of each driver, I used the software Transport Information System (TIS). To produce monthly reports, I fed the TIS data from drivers' log books regarding their driving hours and after all the data were given, the TIS software generated a monthly report with the summary of duties of each driver.

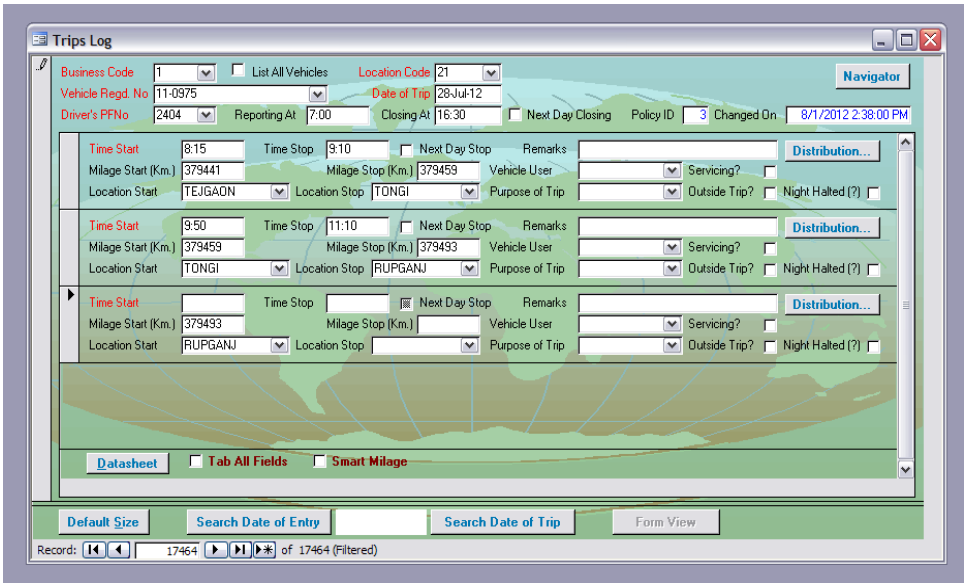


Figure 8: Screenshot of the TIS.

After all the data were given to the system, the system processed them and created summary reports of the duties for each driver that included the maximum driving hour shift, working hour shift, rest between shifts etc. and counted out the number of violations. I gathered the monthly summaries of each driver for three months and summarized the total hours and violations.

After constant investigations, the distribution managers and officers have found out a number of reasons why there are violations relating to the drivers' duties.

i. When there are violations involving long driving hours, it was found that the main reason was the obvious traffic in highways. Although, the company policies state

that the driving hours should not exceed 12 hours, this issue was a difficult one to handle. To avoid traffic congestions, the drivers were asked to take different routes when possible, start their journey early etc.

ii. Working hours of the drivers are lengthened due to four main reasons,

a) The traffic condition lengthens driving hours, which also increased the working hours.

b) Sometimes loading and unloading of the cylinders take a long time because of shortage of workers during busy sales hours. To deal with this problem managers try to engage workers in loading/unloading vehicles according to their priorities.

c) At times the paper processing takes time at sales centers adding to the working hours.

Officers in different sales centers to carry out the paper work as early as possible when vehicles go from the Tejgaon site.

d) Problems with car also led to longer working hours because the drivers had to stop their journey and get them fixed which was time consuming considering that workshops were not always available nearby and they had to wait for someone to come from close by garages.

iii. Continuous driving time exceeds the allowed hours once again, because of the traffic. Drivers were stuck in traffic for long hours which added up to their continuous driving hours.

iv. The results showed resting periods to be a lot more less than the given 10 hours of rest because of some limitations with the software TIS which had troubles recording timings beyond midnight.

The managers tolerated some degree of errors as the software did not provide exact analysis of the exception involving the rules the drivers must follow.

Numbers have actually been increasing when they were expected to decrease. This was due all the reasons mentioned beforehand. Especially in the month of July, the violations of

continuous driving hours increased significantly. That was because of increased traffic congestion in the city during the month of Ramadan. The drivers had to spend hours stuck in traffic leading to high continuous driving hours as well as high working and driving hours.

3.6.3 SURVEY FROM THE DRIVERS.

In order to keep the roads safe, 'Seven Golden Rules' must be followed by everyone working for The Linde Group. Every driver has been given Defensive Driving training where the importance of safe driving and the rules were explained to them. This survey was carried out to see if there is any difference in perception between the trained internal drivers and the external drivers.

Most of the questions were open ended so that the drivers could fill in the answers with what they think and what they do. The questions were asked to know how do the drivers drive in order to protect themselves and others on the roads and what do they think should be done to make the roads of our country more safe from accidents. The survey included questions like how seat belts help you, how important is concentration when driving, what steps you take to be safe while driving and what do you think can be done to make our roads accident-free. The drivers were also asked to score vehicles according to how dangerous they think those vehicles were on a scale of 11, 1 being the most dangerous and also asked to score the reasons for accidents in our country on a scale of 10 with 1 being the most common reason.

From the survey, we know that 25% drivers think that the motor cycle is so much dangerous for occurring accident. 17% thinks that Bi-cycle will be a great accidental issue for them. 13% thinks that Rickshaw can be a major issue for an accident. And last of all here 30% drivers believe that Nosimon and private car is so dangerous for them in time of lorry driving and rest of 13% say that truck is the another factor for occurring accident.

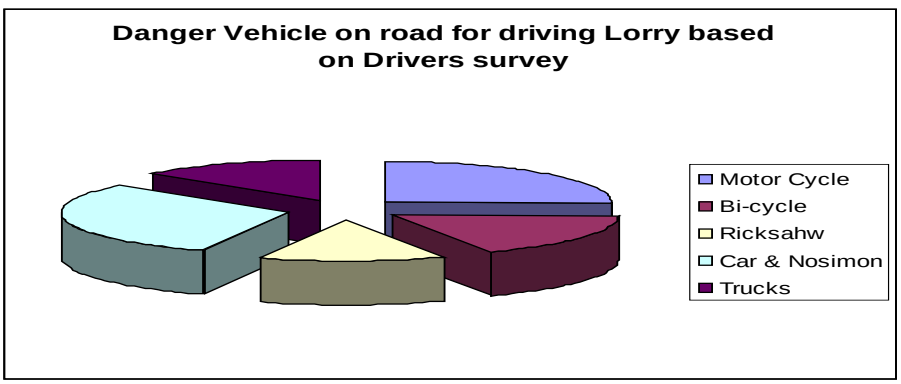


Figure 9: The scores given to different vehicle by drivers for driving on road with lorry.

When the drivers asked about the benefits of seat belts, every internal driver said that seat belts help to keep them safe whereas only 63% of the external drivers said that seat belts help in keeping them safe and 12.5% of them said they were not needed. This clearly shows the impact of safety training that was given to the internal drivers because the drivers who have received the Defensive Driving Training know the importance of seat belts and know that seat belts are extremely important in saving lives. These results can be summarized by the following diagrams.

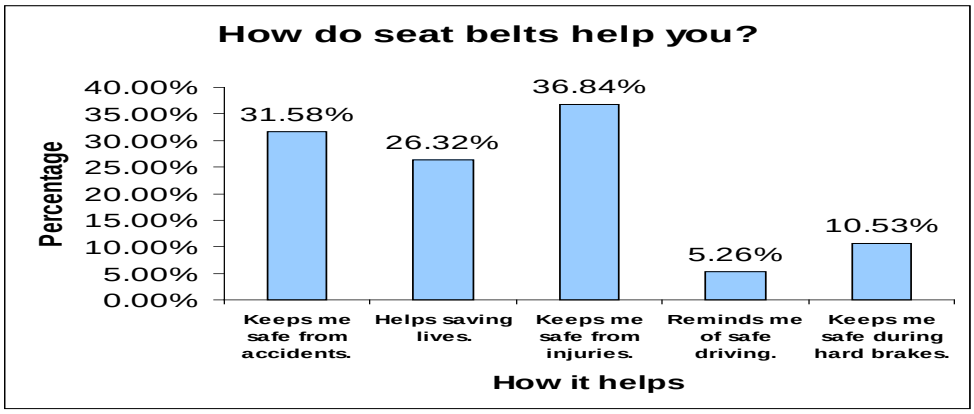


Figure 10: The opinions of internal drivers on seat belts.

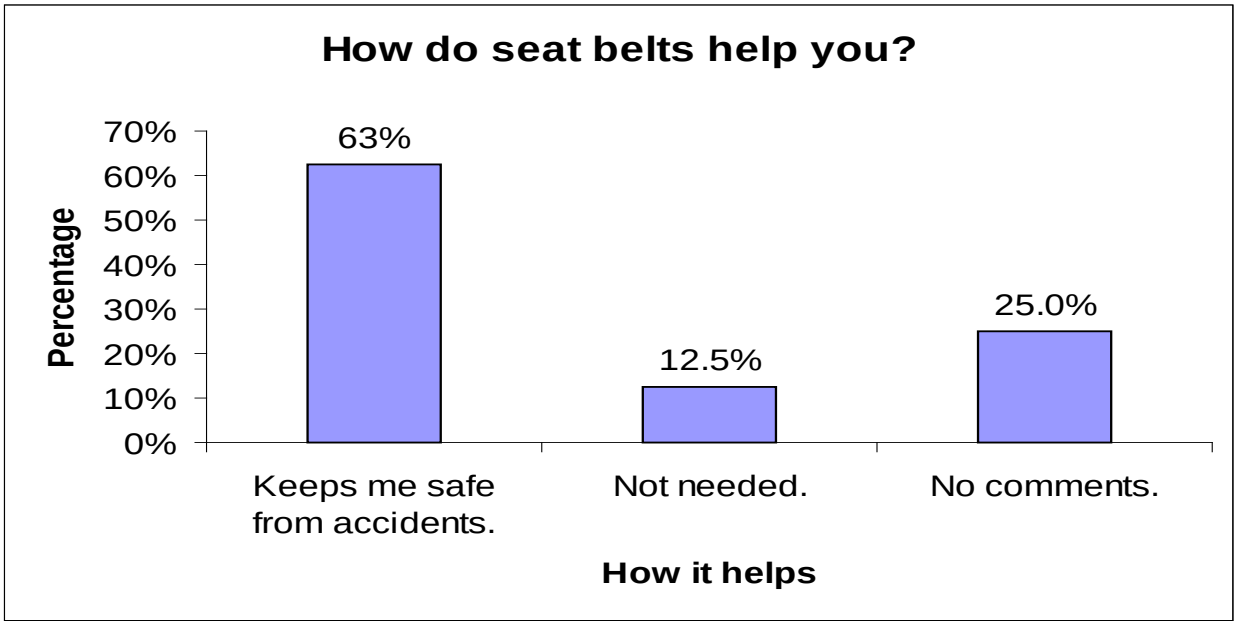


Figure 11: The opinions of external drivers on seat belts.

The survey results established that the drivers who were trained by the company had stronger idea about safety and traffic rules and regulations. They were more conscious about safe driving than the external drivers who did not receive any Defensive Driving Training. Therefore, it can be said that these trainings conducted by Linde as an initiative to reduce the risks of accidents contributed to safer driving conditions for everyone who has received the training.

3.6.4 CALCULATION OF LOSS OR PROFIT FROM MOVEMENT OF CYLINDER:

Most of the vehicles are used by Linde Bangladesh Limited are on contract. The standard lifetime of vehicles according to the company policy is 5 years. When a new contractor is made, it is done for 3 years. After running for 3 years, if there is no major problem, the contract is renewed for one more year and after that for one last year, therefore a total of 5 years of contract is made with a contractor. According to the contracts made, the company pays the price of the vehicles, registration costs, maintenance costs along with 10% of profit on all the expenses. The company pays the fuel costs. The contractors are responsible for all the maintenance expenses for the vehicles. The company pays them in such a way that from that rent payment; they are able to payback the car dealer, their interest payments and also the maintenance expenses.

In order to calculate the monthly rent price for the vehicles, I gathered the registration and maintenance costs from the current contractors and record sheets.

I have worked with 5 vehicles which are under same contractor and same company. I have found the actual total cost based on 5 cars for the purpose of movement of cylinders for the month of September and October. At the time of survey I have found a big loss what is made for every month for cylinders movement only. Per vehicles it seems to be 3000-10000. In a view it is

so much little loss, but they have 20 cars of Tejgaon site.5 cars have made loss around 25000tk and 40000tk at the month of September and October. So, it will be a big loss for the 20 pickups at a month around 1, 00,000 or 1,50000tk.

Vehicle No	Month	Trip No	Total fixed cost	Total variable cost	Total Cost	capacity of Lorry	NO.of moving cylinder	Expected cost per each cylinder	Actual cost per each cylinder	Loss/Profit
11-1709	September	1	11758	10557	28879	180	112	160.4388889	257.8482143	-97.4093254
11-1709	September	2	11758	9877	21635	180	120	120.1944444	180.2916667	-60.09722222
11-1709	September	3	11758	9866	21624	180	250	120.1333333	86.496	33.63733333
11-1709	September	4	11758	10824	22582	180	15	125.4555556	1505.466667	-1380.011111
11-1709	September	5	11758	10303	22061	180	56	122.5611111	393.9464286	-271.3853175
11-1709	September	6	11758	10117	21875	180	75	121.5277778	291.6666667	-170.1388889
11-1709	September	7	11758	9711	21469	180	125	119.2722222	171.752	-52.47977778
11-1709	September	8	11758	9979	21737	180	85	120.7611111	255.7294118	-134.9683007
11-1709	September	9	11758	9711	21469	180	73	119.2722222	294.0958904	-174.8236682
11-1709	September	10	11758	10053	21811	180	180	121.1722222	121.1722222	0
Total								1129.616667	3558.465167	-2428.848501

Vehicle No	Month	Trip no	Total fixed cost	Total variable cost	Total Cost	capacity of Lorry	NO.of moving cylinder	Expected cost per each cylinder	Actual cost per each cylinder	Loss/Profit
11-1623	September	1	15858	10557	26415	180	110	146.75	240.1363636	-93.386364
11-1623	September	2	15858	9877	25735	180	55	142.9722222	467.9090909	-324.93687
11-1623	September	3	15858	9866	25724	180	85	142.9111111	302.6352941	-159.72418
11-1623	September	4	15858	10824	26682	180	23	148.2333333	1160.086957	-1011.8536
11-1623	September	5	15858	10303	26161	180	200	145.3388889	130.805	14.5338889
11-1623	September	6	15858	10117	25975	180	69	144.3055556	376.4492754	-232.14372
11-1623	September	7	15858	9711	25569	180	75	142.05	340.92	-198.87
11-1623	September	8	15858	9979	25837	180	36	143.5388889	717.6944444	-574.15556
11-1623	September	9	15858	9711	25569	180	68	142.05	376.0147059	-233.96471
11-1623	September	10	15858	10053	25911	180	79	143.95	327.9873418	-184.03734
Total								1298.15	4440.638473	-3142.4885

Vehicle No	Month	Trip No	Total fixed cost	Total variable cost	Total cost	capacity of Lorry	NO.of moving cylinder	Expected cost per each cylinder	Actual cost per each cylinder	Loss/Profit
11-1624	September	1	18636	10557	29193	180	98	162.1833333	297.8877551	-135.70442
11-1624	September	2	18636	9877	28513	180	83	158.4055556	343.5301205	-185.12456
11-1624	September	3	18636	9866	28502	180	56	158.3444444	508.9642857	-350.61984
11-1624	September	4	18636	10824	29460	180	25	163.6666667	1178.4	-1014.7333
11-1624	September	5	18636	10303	28939	180	36	160.7722222	803.8611111	-643.08889

11-1624	September	6	18636	10117	28753	180	48	159.7388889	599.0208333	-439.28194
11-1624	September	7	18636	9711	28347	180	75	157.4833333	377.96	-220.47667
11-1624	September	8	18636	9979	28615	180	10	158.9722222	2861.5	-2702.5278
11-1624	September	9	18636	9711	28347	180	150	157.4833333	188.98	-31.496667
11-1624	September	10	18636	10053	28689	180	23	159.3833333	1247.347826	-1087.9645
Total								1437.05	8470.45	-60970.045

Vehicle No.	Month	Trip No.	Total fixed cost	Total variable cost	Total cost	capacity of Lorry	NO.of moving cylinder	Expected cost per each cylinder	Actual cost per each cylinder	Loss/Profit
11-1553	September	1	20586	10557	31143	180	25	173.0166667	1245.72	-1072.7033
11-1553	September	2	20586	9877	30463	180	37	169.2388889	823.3243243	-654.08544
11-1553	September	3	20586	9866	30452	180	56	169.1777778	543.7857143	-374.60794
11-1553	September	4	20586	10824	31410	180	88	174.5	356.9318182	-182.43182
11-1553	September	5	20586	10303	30889	180	39	171.6055556	792.025641	-620.42009
11-1553	September	6	20586	10117	30703	180	45	170.5722222	682.2888889	-511.71667
11-1553	September	7	20586	9711	30297	180	81	168.3166667	374.037037	-205.72037
11-1553	September	8	20586	9979	30565	180	36	169.8055556	849.0277778	-679.22222
11-1553	September	9	20586	9711	30297	180	79	168.3166667	383.5063291	-215.18966
11-1553	September	10	20586	10053	30639	180	55	170.2166667	557.0727273	-386.85606
Total								1534.55	6607.720258	-5073.1703

Table 4: The total loss from the movement of cylinders at the month of September

Vehicle . No.	Month	Trip no	total fixed cost	Total variable cost	Total Cost	Capacity of Lorry	NO.of moving cylinder	Expected cost per each cylinder	Actual Cost Per Each cylinder	Loss/Profit
11-1553	October	1	20586	12255	32841	180	36	182.45	912.25	-729.8
11-1553	October	2	20586	13355	33941	180	85	188.5611111	399.305882	-210.744771
11-1553	October	3	20586	9866	30452	180	75	169.1777778	406.026667	-236.848889
11-1553	October	4	20586	15000	35586	180	36	197.7	988.5	-790.8
11-1553	October	5	20586	7450	28036	180	98	155.7555556	286.081633	-130.326077
11-1553	October	6	20586	10117	30703	180	63	170.5722222	487.349206	-316.776984
11-1553	October	7	20586	9711	30297	180	81	168.3166667	374.037037	-205.72037
11-1553	October	8	20586	9865	30451	180	25	169.1722222	1218.04	-1048.86778
11-1553	October	9	20586	10250	30836	180	15	171.3111111	2055.73333	-1884.42222
11-1553	October	10	20586	10053	30639	180	10	170.2166667	3063.9	-2893.68333
Total								1743.233333	10191.2238	-8447.99043

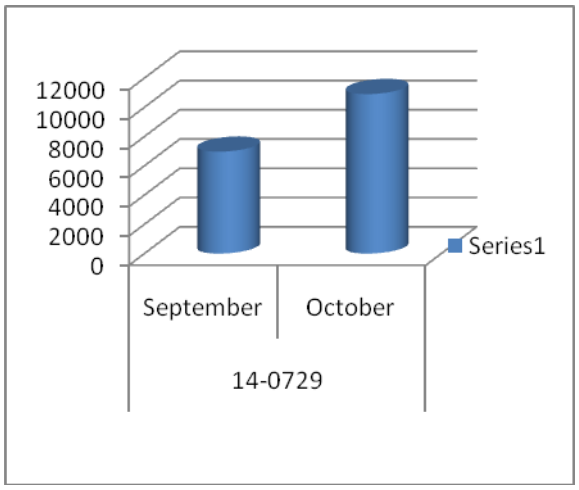
No.	Trio No.	total fixed cost	Total variable cost	Total Cost	Capacity of Lorry	NO.of moving cylinder	Expected cost per each cylinder	Actual Cost Per Each cylinder	Loss/Profit
11-1709	October	1	11758	13355	25113	180	56	139.5166667	448.446429	-308.929762
11-1709	October	2	11758	10250	22008	180	26	122.2666667	846.461538	-724.194872
11-1709	October	3	11758	9250	21008	180	75	116.7111111	280.106667	-163.395556
11-1709	October	4	11758	14256	26014	180	65	144.5222222	400.215385	-255.693162
11-1709	October	5	11758	13654	25412	180	89	141.1777778	285.52809	-144.350312
11-1709	October	6	11758	10117	21875	180	76	121.5277778	287.828947	-166.30117
11-1709	October	7	11758	9890	21648	180	112	120.2666667	193.285714	-73.0190476
11-1709	October	8	11758	15000	26758	180	180	148.6555556	148.655556	0
11-1709	October	9	11758	10250	22008	180	15	122.2666667	1467.2	-1344.93333
11-1709	October	10	11758	12000	23758	180	25	131.9888889	950.32	-818.331111
Total								1308.9	5308.04833	-3999.14833

hicle No	Month	Trip No	total fixed cost	Total variable cost	Total cost	Capacity of Lorry	NO.of moving cylinder	Expected cost per each cylinder	Actual Cost Per Each cylinder	Loss/Profit
14-0729	October	1	12700	16879	28879	180	25	160.4388889	1155.16	-994.721111
14-0729	October	2	12700	14685	27385	180	125	152.1388889	219.08	-66.9411111
14-0729	October	3	12700	16234	28934	180	54	160.7444444	535.814815	-375.07037
14-0729	October	4	12700	16986	29686	180	26	164.9222222	1141.76923	-976.847009
14-0729	October	5	12700	16663	29363	180	36	163.1277778	815.638889	-652.511111
14-0729	October	6	12700	8065	20765	180	45	115.3611111	461.444444	-346.083333
14-0729	October	7	12700	16878	29578	180	378	164.3222222	78.2486772	86.073545
14-0729	October	8	12700	17505	30205	180	120	167.8055556	251.708333	-83.9027778
14-0729	October	9	12700	14275	26975	180	45	149.8611111	599.444444	-449.583333
Total								1398.722222	5258.30883	-3859.58661

Vehicle No.	Month	Trip no.	total fixed cost	Total variable cost	Total Cost	Capacity of Lorry	NO.of moving cylinder	Expected cost per each cylinder	Actual Cost Per Each cylinder	Loss/Profit
11-1623	October	1	15858	12520	28378	180	26	157.6555556	1091.46154	-933.805983
11-1623	October	2	15858	14250	30108	180	35	167.2666667	860.228571	-692.961905
11-1623	October	3	15858	16253	32111	180	38	178.3944444	845.026316	-666.631871
11-1623	October	4	15858	17000	32858	180	89	182.5444444	369.191011	-186.646567
11-1623	October	5	15858	13654	29512	180	72	163.9555556	409.888889	-245.933333
11-1623	October	6	15858	9800	25658	180	64	142.5444444	400.90625	-258.361806
11-1623	October	7	15858	7825	23683	180	59	131.5722222	401.40678	-269.834557
11-1623	October	8	15858	12500	28358	180	102	157.5444444	278.019608	-120.475163
11-1623	October	9	15858	10250	26108	180	65	145.0444444	401.661538	-256.617094
11-1623	October	10	15858	13005	28863	180	10	160.35	2886.3	-2725.95
Total								1586.872222	7944.0905	-6357.21828

ehicle No.	Month	Trip no.	total fixed cost	Total variable cost	Total cost	Capacity of Lorry	NO.of moving cylinder	Expected cost per each cylinder	Actual Cost Per Each cylinder	Loss/Profit
11-1624	October	1	18636	10557	29193	180	168	162.1833333	173.767857	-11.5845238
11-1624	October	2	18636	9877	28513	180	125	158.4055556	228.104	-69.6984444
11-1624	October	3	18636	9866	28502	180	25	158.3444444	1140.08	-981.735556
11-1624	October	4	18636	10824	29460	180	10	163.6666667	2946	-2782.33333
11-1624	October	5	18636	10303	28939	180	45	160.7722222	643.088889	-482.316667
11-1624	October	6	18636	10117	28753	180	26	159.7388889	1105.88462	-946.145726
11-1624	October	7	18636	9711	28347	180	36	157.4833333	787.416667	-629.933333
11-1624	October	8	18636	9979	28615	180	89	158.9722222	321.516854	-162.544632
11-1624	October	9	18636	9711	28347	180	75	157.4833333	377.96	-220.476667
11-1624	October	10	18636	10053	28689	180	6	159.3833333	4781.5	-4622.11667
Total								1596.433333	12505.3189	-10908.8855

Table5: The total loss from the movement of cylinders at the month of October.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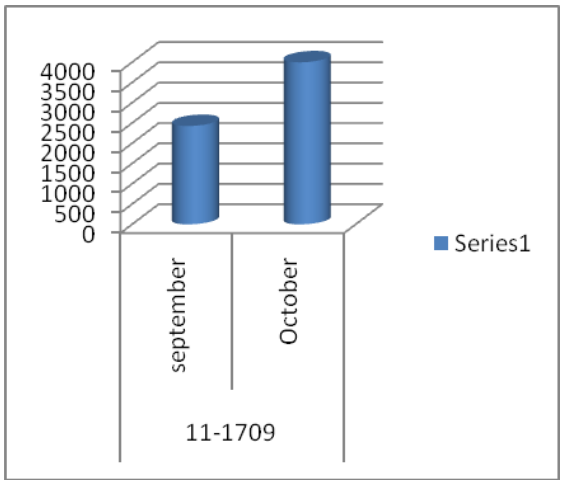
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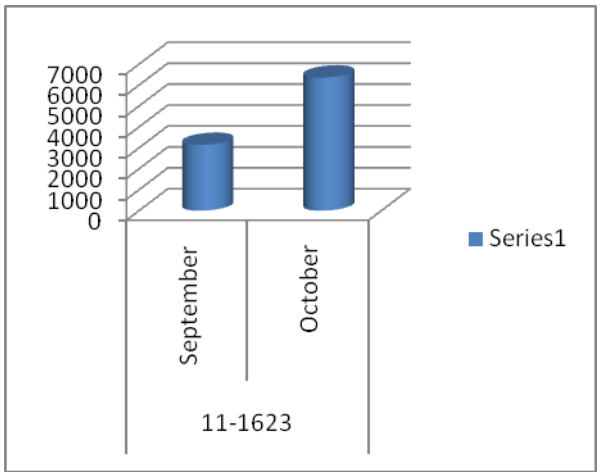
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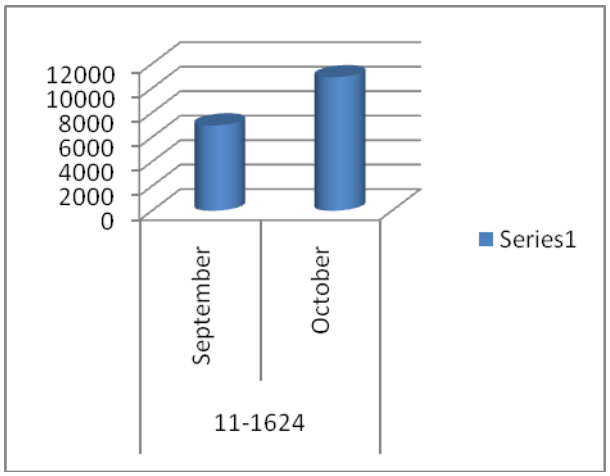
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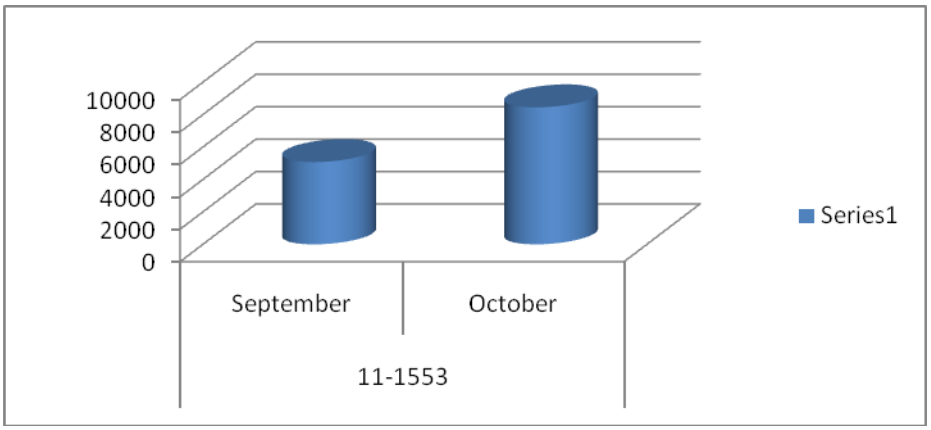


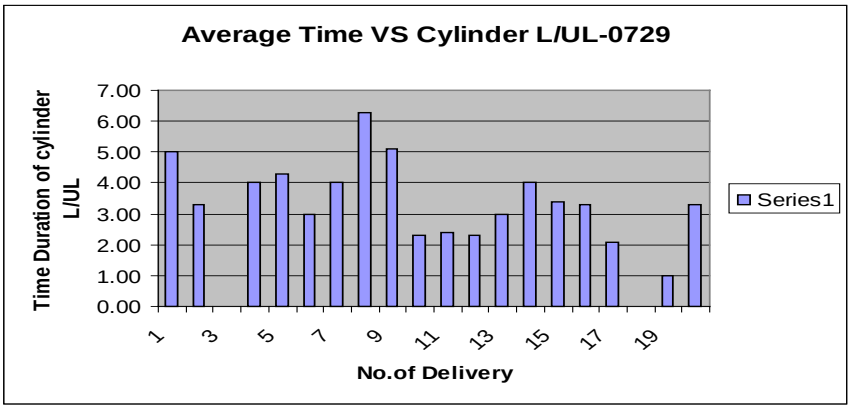
Figure-12 Total loss for 5 vehicles at the month of September and October of the purpose of cylinder movement

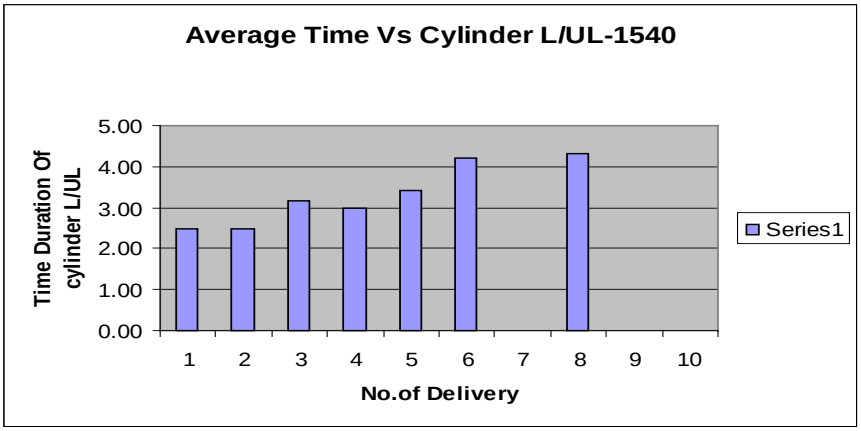
We have shown that by the chart how much are getting loss from the cylinder movement for the purpose of mismanagement. The same thing I have converted to the graph from chart for better understanding. We have worked with five vehicles for 2 months. And from the survey we have seen it the total loss is increasing by day after day. Each and every movement loss or cost has increased comparison with previous month. We can see from here the loss of October is more than September losses. So it is ongoing process which will be a great barrier for making company profit.

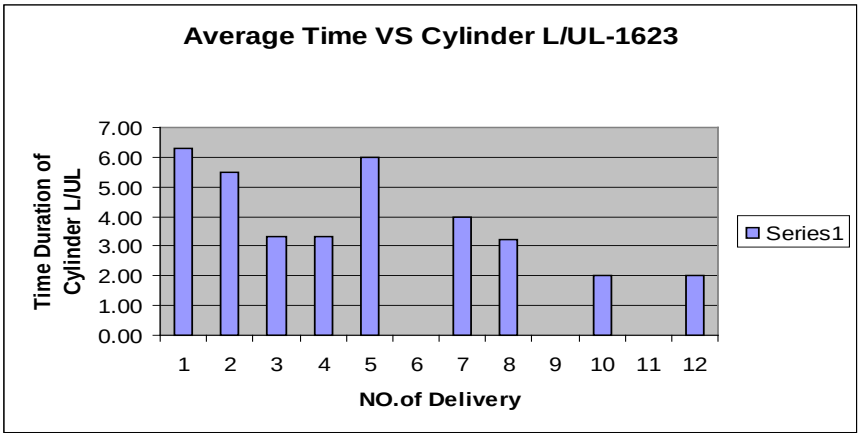
3.6.5 ANALYSIS OF TIME DURATION OVER CYLINDER LOADING/UNLOADING

There is another part of my internship activities is to find out the time duration of the time of cylinders loading and unloading. Purpose of the activity is to consume the time. There is a problem of proper time maintaining at the case of cylinder delivery. Most of the customer's complain were they don't get their cylinder at the proper time. Because of time delay they face various types of problem and they have to waste their time. So it is another project to find out the

possible reason. There is various types of reasons like unconsciousness of external workers, mismanagement of loading or unloading time, filling duration, test shop procedure and last of all unconcern's of customer services. The scope of working for me is to consume the time of loading and unloading sector of the cylinder by monitoring whole process within my working hour. I tried to do that by finding out the actual problem and tried to make a survey on that. There is found a big fault about their lazy workers. They are not proper dutiful about their work and responsibility.







Figure,13: Average time of cylinder loading/unloading.

PART-4

FINDINGS, RECOMMENDATION

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CONCLUSION

4.1 FINDINGS:

- Due to Lack of education workers are not properly manage loading and unloading system of cylinders.
- There are some monitoring devices which are used for tracking vehicles. Sometimes devices show some unauthentic results.
- Most of the workers are not concerned about their job in cylinder ground, for that reason cylinders movement are not proper addressed,
- Customer care department is lousy in terms of their job. For the lack of information, consumers do not get proper delivery and services.
- Shortage of workers in cylinder grounds for different shifts is a major problem. Workers can not manage everything for shortage of man power.
- Safety issue of Linde Bangladesh is Excellent, There is no lacking in their safety management.

4.2 RECOMMENDATIONS

After carrying out all the required studies and analyses, I have found that the company had the scope to enhance its operations in certain areas.

i. In the case of assessing drivers' duties, they can put some attention into using better software which can overcome the problems that were faced currently like recording times beyond midnight.

ii. The company may setup the trip monthly instead when planning the number of trips to various sales centers, this is because even though the trips are planned to be 2 or 3 times per week it often ends up being more or less number of trips. If the trips are planned over a period of one month, they can be spread equally over the month and utilization of the vehicle capacities can be improved.

iii. Company can make a proper trip plan with its fixed and variable cost for minimizing the extra cost. Officers should give more concentrate to the actual scenery than the driver's complain or cost.

iv. The company may recruit a proper person for observing the loading and unloading time of cylinder movement in vehicle, which will help to minimize time and prevent missing cylinders.

v. Customer care should be more sensitive about their work, duties, responsibilities and activities to their retail customers.

4.3 CONCLUSION

Linde Bangladesh Limited plays an extremely important role in contributing to smooth running of Bangladesh's economy as numerous industries are dependent on the products and services provided by this organization. Through my internship in this reputed organization, I have tried to portray the small aspects of the distribution department and related safety matters. By working in this company for three months, I have not only achieved my educational goal of completing the internship but I have also learned about how a corporate office operates, and have experienced the corporate environment. I have also learned the importance of safety. I observed that the company is more concerned about the related stakeholders than just making profits.

Throughout my report, I have put in use many theories that I have learned during my BBA program in Daffodil International University and analyzed the safety matters related to distributions. I also assessed the performance of distribution department through comparing the deliveries and sales. Finally, I have used my analytical ability to recommend some ways that can help the organization with its operations.

APPENDIX

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REFERENCES

REFERENCES

1. Linde corporate website- http://www.linde.com/

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3. Publications and internal documents of Linde Bangladesh.