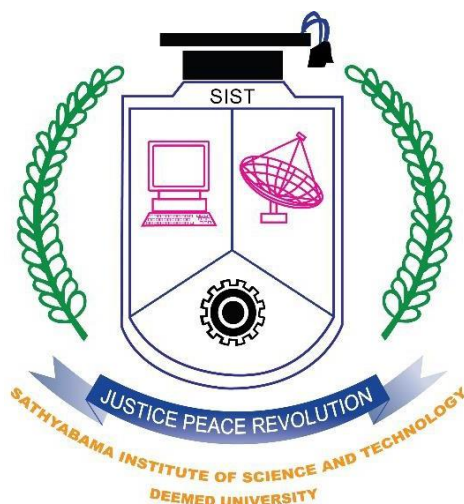


**A STUDY ON INVENTORY MANAGEMENT USING MILK
RUN CONCEPT IN HYUNDAI MOTORS INDIA**

BHARATH.A

(40410032)



**SCHOOL OF MANAGEMENT STUDIES
SATHYABAMA INSTITUTE OF SCIENCE AND
TECHNOLOGY**

(DEEMED TO BE UNIVERSITY)

Accredited with Grade “A” by NAAC

**JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI–
600119.**

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **BHARATH. A 40410032** who carried out the project entitled “**A Study on Inventory Management using Milk Run concept in Hyundai Motors India,**” Under my supervision from September 2021 to October 2021.

Dr.VELUMONI.D

Internal guide

Dr.BHUVANESWARI.G

Dean–School of Management Studies

Submitted for Viva-voce Examination held on _____

Internal Examiner

External Examiner



HRD /Project Training-2022/ PT-13

2 March 2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr.Bharath A (40410032), student of Sathyabama Institute of Science and Technology - Chennai, has successfully completed his project training during the period 3rd Jan 2022 to 2nd Mar 2022.

He was part of the project titled **"A Study on Inventory Management using Milk Run concept in Hyundai Motor India"** in Material Management# 2 Department at Hyundai Motor India Limited with reference to the partial fulfillment of the requirements of the MBA (Finance and Operations) Course.

He has been a keen learner. His skills and efforts during the training were commendable and we wish him all the best for his future endeavors.

For **HYUNDAI MOTOR INDIA LIMITED**

Navin Joseph Peter J
Head of Section
Human Resources Development



Hyundai Motor India Ltd.

Regd. Office & Factory :
Plot No. H-1, SIPCOT Industrial Park,
Irungattukottai, Sriperumbudur Taluk,
Kancheepuram Dist.
Tamil Nadu - 602 117, India.
CIN : U29309TN1996PLC035377

Tel : 044 - 47100000

www.hyundai.com

DECLARATION

BHARATH A (40410032) hereby declare that the Project Report entitled **“A Study on Inventory Management using Milk Run concept in Hyundai Motors India,”** done by me under the guidance of **DR.D.VELUMONI** is submitted in partial fulfillment of the requirements for the award of Master of Business Administration degree.

BHARATH A

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CHAPTER- 1

- 1.1 INTRODUCTION**
- 1.2 COMPANY PROFILE**
- 1.3 OBJECTIVES OF THE STUDY**
- 1.4 SCOPE OF THE STUDY**
- 1.5 NEED FOR THE STUDY**
- 1.6 LIMINATION OF THE STUDY**

CHAPTER-1

INTRODUCTION

1.1 INTRODUCTION OF THE STUDY

- ❖ Milk run is a delivery method in logistics which ensures that different deliveries from different vendors can be handled with maximum capacity utilization and minimal costs.
- ❖ The name Milk Run has been derived from the method used by the trucks to deliver the daily requirements of milk to the dairy co-operatives picking up milk from multiple suppliers and delivering it to a common point for further process.
- ❖ A milk run ensures that that minimum distance is travelled and the maximum demand is carried into the truck or delivery vehicle so as to meet both the demand requirement and effective transportation with least cost.
- ❖ This is applied where the load is scattered in many different places and in smaller units.
- ❖ In such a case carrying from each centre individually would be very expensive, hence a scheme is designed as per the requirements and accordingly all different units are procured and transported.
- ❖ Milk run as a process in Operations is quite important as it advocates a method which results in minimal costs at higher efficiency.
- ❖ Instead of each supplier or vendor sending multiple deliveries to a central point of demand, a single delivery vehicle makes trips to different points and picks up the goods.
- ❖ This makes sure that the costs are less and one vehicle is completely utilized. It goes around in a circular motion.
- ❖ It has become a critical concept in lean and agile companies where saving costs is very important. It is quite aligned with just in time and makes sure that the deliveries of materials happen at optimum times.
- ❖ It involves routing of materials with multiple pick up points and delivery to locations where the demand is high.
- ❖ One of the main aspects of milk run is the planning and routing aspect.
- ❖ A route which maximizes the pickups from multiple points and brings them to a central point with minimum amount of time and cost.
- ❖ Once the route is optimized, milk run starts showing a lot of benefits in the long run.

1.2 COMPANY PROFILE



Hyundai Motor India Limited is an unlisted public company incorporated on 06 May, 1996. It is classified as a public limited company and is located in -Puram District.602 105. T.n., Tamil Nadu. It's authorized share capital is INR 1,400.00 cr and the total paid-up capital is INR 812.54 cr.

HMIL's first car, the Hyundai Santro was launched on 23 September 1998 and was a runaway success. Within a few months of its inception HMIL became the second largest automobile manufacturer and the largest automobile exporter in India. Hyundai Motor India Limited (HMIL) is a wholly owned subsidiary of Hyundai Motor Company (HMC), South Korea and is the largest passenger car exporter and the second largest car manufacturer in India.



Hyundai Motor India Limited's **operating revenues range is Over INR 500 cr** for the financial year ending on 31 March, 2021. It's **EBITDA has decreased by -2.58 %** over the previous year. At the same time, it's book networth has increased by 13.93 %. Other performance and liquidity ratios are [available here](#).

Category: Car manufacturer

The Corporate Identification Number (CIN) of Hyundai Motor India Limited is U29309TN1996PLC035377. The registered office of Hyundai Motor India Limited is at PLOT NO.H-1, SPICOT INDUSTRIALPARK, IRRUNGATTUKOTTAI, SRIPERUMPUDUR TALUK, KANCHEE-, -PURAM DISTRICT.602 105. T.N., Tamil Nadu.

CIN
U29309TN1996PLC035377
INCORPORATION DATE / AGE
06 May, 1996 / 26 yrs
LAST REPORTED AGM DATE
23 August, 2021

AUTHORIZED CAPITAL
INR 140000.0 Lacs
PAIDUP CAPITAL
INR 81254.11 Lacs
INDUSTRY*
Manufacturing (Machinery & Equipments)

TYPE
Unlisted Public Company
CATEGORY
Company limited by Shares
SUBCATEGORY
Non-govt company

EMAIL ADDRESS
secretarial@hmil.net.
WEBSITE

www.hyundai.com/in

REGISTERED ADDRESS

PLOT	NO.H-1,	SPICOT	INDUSTRIALPARK
IRRUNGATTUKOTTAI,	SRIPERUMPUDUR	TALUK,	KANCHEE-
-PURAM	DISTRICT.602	105.	602105
Tamil Nadu - India			

CURRENT CARS PRODUCTIONS IN HYUNDAI MOTOR IRUNGATTUKOTAI :







Hyundai Alcazar rolls out of production line in Hyundai India plant as the 10 millionth (1 crore) car here



The 10 millionth car production landmark has been attained in the fastest possible time, and is backed by smart manufacturing processes. To mark the occasion, Thiru. M.K. Stalin, Chief Minister of Tamil Nadu signed on the car bonnet. S S Kim, MD & CEO, Hyundai Motor India Ltd., said, “This historic milestone of the 10 millionth car roll-out is a testimony of Hyundai’s commitment towards the Make in India initiative. Furthermore, it also showcases our vision of boosting the socio-economic development in the State of Tamil Nadu and making the country more self-reliant.”



1.3 OBJECTIVE OF THE STUDY

The objectives of this study are as follows:

- ❖ To study the current methodology followed in Hyundai Motors India – Irungattukottai.
- ❖ To identify the problems present in the current methodology.
- ❖ To suggest milk run method in improving the Inventory management.

1.4 SCOPE OF THE STUDY:

- ❖ To identify an alternate method to improve inventory management.
- ❖ To check the feasibility of Milk Run concept in reducing inventory storage & cost cutting
- ❖ To study the connection between logistics & improved inventory storage.

1.5 NEED FOR THE STUDY

- To identify an alternate method to improve inventory management.
- To check the feasibility of Milk Run concept in reducing inventory storage & cost cutting.
- To study the connection between logistics & improved inventory storage.

1.6 LIMINATION OF THE STUDY

- ❖ The total number of respondents are limited.
- ❖ Doing the project under the department of Materials management
- ❖ For the intricate study like this, the duration is very short

CHAPTER – 2

2.1 REVIEW OF LITERATURE

2.2 RESEARCH METHODOLOGY

CHAPTER 2

2.1 REVIEW OF LITERATURE

The concept of milk run logistics originates from the dairy industry. The notion covers a transportation network where all input and output (I/O) material requirements of several stations are covered by one vehicle that visits all these stations, and circulates according to a pre-defined schedule. This transportation concept is economical when the I/O volume of each single station is essentially smaller than a truckload. The milk run concept is frequently applied in internal plant logistics to transport raw materials, finished goods, and waste between manufacturing and assembly Stations and the warehouses of the plant .

Few studies on logistics system of automobile parts have been undertaken by researches with focus on the Milk Run logistics in general. For example, Mehmet et al. (2004) presents principles to design the procurement system, Bowersox et al. (2002) concluded that Milk Run is an important element for an integrated lean logistics strategy, and Nojiri (2005) indicated that the Milk Run logistics increases efficiency when the production scale of auto assembly factories is relatively small, in the range of several tens of thousands. The Milk-run Vehicle Routing problem is an extended variation of the vehicle routing problem. The vehicle routing problem and its variations have been studied extensively by Cordeau et al.

Xu (2003) introduced milk run and contracts with third party logistics enterprises, the third party designed the most rational distribution routes and plans in accordance with the daily needs of Shanghai GM to pick up from different suppliers timing and then directly transport to Shanghai GM. With the introduction of this logistics Shanghai GM inventory was reduced by 30%, storage space savings of 10 thousand square meters. The total transportation trips reduced by 20%, 30% integrated logistics cost reduction and resources utilization increase 10%.

Xu and Han (2010) analyzed the linkage mechanism between the manufacturing and logistics industry during the financial crisis in China. The financial crisis is the important historical period of China's economic structural adjustment and industrial restructuring, manufacturers and logistics companies need to focus on the overall situation and work together to overcome the current difficulties. They proposed new method of transportation using milk run. They analyzed that after implementing this method inventory costs reduced through control transportation time and also there was reduction in costs of package because loading and unloading only need one time. The reduction in costs of transportation has been proved to be as much as 67.5%.

Lin and Cha (2010) optimized the integration of the inventory and transportation in the distribution system. It is important research in logistics integration strategy. They analyzed the relationship between inventory and transportation, builds the ITIO issue optimization based on milk-run mode, and combining the character of Model. They also designed Genetic Algorithm of natural number coding to solve vehicle

scheduling model of milk-run, then uses stepwise iterated algorithm to balance inventory cost and transportation cost, in order to make the total cost of milk-run logistics network system minimum. Ricoh Express introduced the “milk run” method, by which one truck travels around to multiple suppliers to pick up cargo.

To operate the milk run system effectively, the company developed a system to optimize vehicle routing, by checking shipment volumes with suppliers prior to collection, by telephone or dedicated network. This new initiative more than doubled loading efficiency, from 30% to 65%, and shortened total travel distances for transportation. In addition, for large cargo with a sufficiently high loading rate, these efforts led to an annual reduction of 310 tons, or 35%, in CO₂ emissions.

Webasto Company which is producing roofs for Volkswagen cabriolets in Portugal, in a first round of optimization optimized milk runs for the German supply industry, consolidation of tours and routing from Germany to Portugal, which saved about 25% of transport costs, and energy consumption in a similar range.

DHL (Dalsey, Hillblom and Lynn), a Deutsche company of Germany that provides international shipping, in August, 2008, successfully implemented milk run system for jaguar land rover. Results improved efficiency and reduces cost. Rosini and Preti (2006) conducted a study on the Bologna metropolitan area. The Metropolitan area is the origin/destination point of regional, national and international supply chains for preparing the Policy guidelines for the rationalization of freight traffic. After implementation of the milk run logistics it was found that the number of incoming trucks reduced and waiting time of vehicles will be zero. The total transportation cost reduced to 37% and there was reduction in the lead time.

Valeo is an independent group fully focused mainly for the reduction of CO₂ emissions. In June 2009, a new process was deployed in Spain to improve the quality of service named “The Milk Run”, it involves Valeo Service collecting its orders directly from suppliers and delivering them to its warehouses. The milk runs speed up customer service while optimizing transport costs. In the second half of the year, they were extended to all of Valeo Service’s European divisions. It also improved its stock rotation by 10% through rigorous management . Michael and Claudia (2009) studied how stock transports to individual production lines can be optimized through the milk run. They introduced routes to supply several production stations or cells within one transport. The clustered routes lead to more frequent trips to the production lines. A higher delivery frequency has a positive effect of a marked reduction of inventory volume at the production stations. The number of transports can consequently be reduced and the utilization of transport equipment optimized. This leads to a reduction of inventory and transport costs.

Chen and Shuaiying (2009) established a cost optimization model for adopting milk-run for the supply-hub under multiple suppliers and obtained an optimized replenishment policy to the supply-hub for each group of suppliers without considering the penalty cost condition . Over the last 20 years, Toyota has also transformed

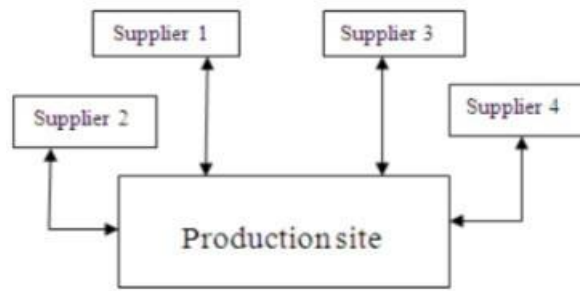
it’s after –market parts distribution system using the principle of milk run system. Dealers pre-diagnose and pre- order parts they need each day, instead of carrying months of stock, and get two three deliveries a day on milk runs

from local distribution centers.

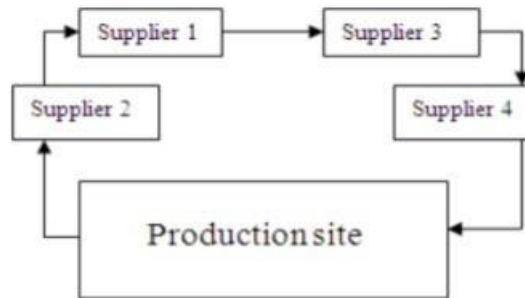
Akiyamaa and Yano (2008) studied the current conditions pertaining to truck deliveries to large retail stores in Japan. The report covered a total of 750 stores with 5,384,545 square meters of retail floor space. On a single day, it was estimated that large-scale retail stores in Tokyo receive nearly 46,000 truck deliveries. In order to reduce the number of trucks, the association plans to introduce a designated delivery agent system, whereby a designated agent consolidates goods from many vendor and delivers them to a department store, rather than having each vendor make separate deliveries. The truck deliveries could be reduced by 2,700 per day. This would be a very significant change, and it is equivalent to around 5.5% of the total number of truck deliveries to large retail stores in Tokyo.

Toyota uses milk runs from suppliers to support its JIT manufacturing system in both Japan and the United States. In Japan, Toyota has many assembly plants located close together and thus uses milk runs from a single supplier to many plants. In the United States, however, Toyota uses milk runs from many suppliers to each assembly plant. Gopaljee has its own milk-shed area allotted by the central and respective state governments, which in turn supports multiple groups of Village Level Center's (VLCs) covering over 4500 villages. About 1,25,000 farmers deliver fresh milk to Gopaljee twice a day at their 4,500 established milk societies. For collecting milk 50 milk routes were prepared, ensuring that milk is lifted within 3 hours of milking and brought to chilling centers. For this about 123 vehicles move around continually to collect milk from prepared route. A single vehicle covered around 25 villages.

Konica Minolta is using the milk run logistics in Wuxi City in Jiangsu, China. It contributes to reducing CO₂ emissions by shortening the total driving mileage of the trucks. Figure 3 shows the distribution system of Konica Minolta. Previously they used the direct shipment distribution system for all distribution system. In this system they used the separate vehicle for its all suppliers with separate route.



(a) Previous way



(b) Milk Run Logistics (New Way)

Konica Minolta had a problem of CO₂ emission from its distribution activities. So they employed a milk run logistics for round collection of its cargoes as show in figure 3.

Results contributed to reduced CO₂ emission by shortening the total driving mileage of the trucks.

Karagul and Albayrakoglu (2007) implemented milk run system in Turk Tractor Fabrikas (TTF) is located in Ankara in central Anatolia region of Turkey. It was found that TTF should simplify the material supply processes by implemented milk run system with the help of analytic hierarchy process in a manner to move over a total of four geographical regions for its 128 supplier companies grouped in 16 cities from which it conducts material supply. The costs for supply of materials can reduce approximately 0.2% of the total purchasing cost. This means a saving of 18,000-20,000 Euros per month. Also reduction in work-in-process (WIP) inventories of 25%.

There is also reduction in the number of personnel and associated costs, communication and control costs will be decreased significantly.

2.2 RESEARCH METHODOLOGY

Current Methodology:

- Hyundai Motors India, is India's first smart mobility solutions provider and the number one car exporter since inception in India.
- HMIT's fully integrated state of the art manufacturing plant at Irungattukottai boasts of advanced production, quality and testing capabilities.
- Currently at Irungattukottai, many of its raw materials such as Tires, Starter Motors, Batteries, Wheel Hub Cap, etc., are bought out from local vendors as Local Products (LP).

Problem:

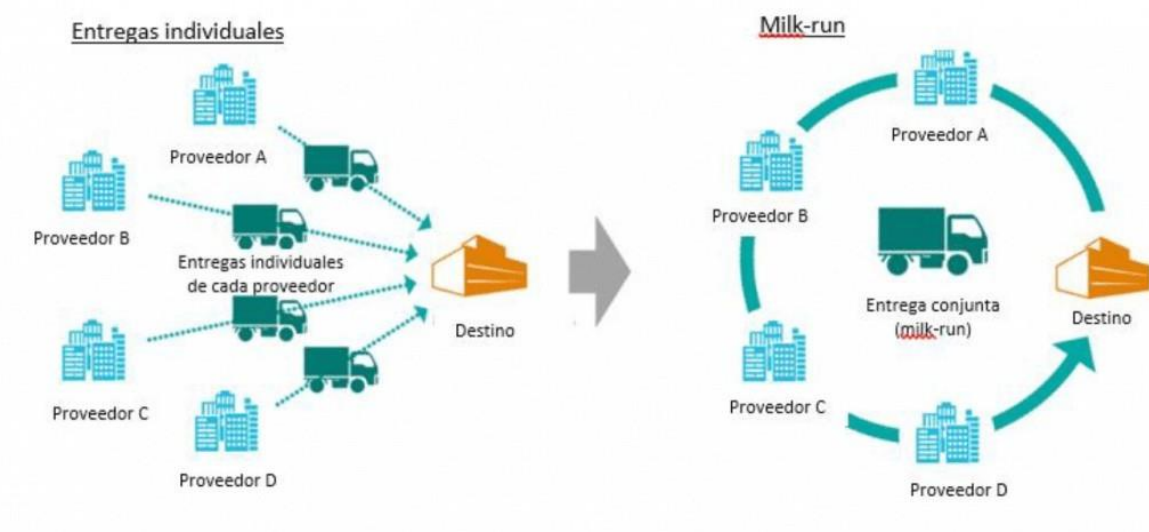
- Raw materials bought out as Local Products (LP) from local vendors within a limit of 40kms have been tabulated.
- All these LP will be used within 4-8 hours from the time they reach the inventory.
- Now Hyundai Motors India – Irungattukottai, looks to minimize the inventory time and improve the cost cutting.

S.N	Vendor	Parts & Model	W/H Location	Distance to HMI (KM)	Trucks Count & Shift Operation
1	ZANINI	Wheel Hub Cap (HCI)	MANNUR	12	1 Truck / 2 Shift
2	BOSCH LTD	ECU (All)	SIPCOT	9	1 Truck / 1 Shift
3	MRF	Tire (AH2 / AI3)	CHETTIPEDE	6	8 Trucks / 1 Shift
4	VALEO INDIA	Starter Motor (HCI)	MANNUR	11	2 Trucks / 2 Shift
5	AMARA RAJA	Battery (HCI / BI3 / SU2)	MADHAVARAM	38	3 Trucks / 2 Shift
6	PADMINI VNA	Fuel Cap (BI3 / AI3 / AH2)	NAZRATPET	18	1 Truck / 1 Shift
7	TRITON VALVES	Tire Valve (All)			
8	WINNERCOM	Feeder Cable (SU2i, PS7i, HCI)	SIPCOT	6	2 Trucks / 3 Shift
9	HELLA	Acc. Pedal (QX, BA, AI3, AH2)			
10	KALYANI MAXION	Wheels (HCI / AI3 / BI3)	CHETTIPEDE	6	5 Trucks / 3 Shift
11	MAXION WHEELS	Wheels (BI3, QX1, SU2i & PS7i)			
12	PARACOT PRODUCT	Anti Pad (All)	SRIPERUMBADUR	3	1 Truck / 1 Shift
13	GESTAMP	Pillar OTR (BI3)	PILLAIPAKKAM	10	3 Trucks / 2 Shift
14	AUTOGEN	Member Dash (BI3)	SIPCOT	6	
15	UFI FILTERS	Fuel Filter (HCI / AI3)	SUNGAVARACHA TRAM	24	1 Truck / 1 Shift
16	SHIVANI LOCKS	Hood Stay Rod (BI3 / SU2 / PS7i)			
17	VENUS	Checker Arm (BI3)	MEVALUR KUPPAM	7	1 Truck / 2 Shift
18	VIBRACOUSTIC	ETM Brackets (HCI)			
19	S E G	Starter (BA, HCI & AI3)	-	-	-
20	WOORYOUNG	DR Frame (BI3)	-	-	-

The above mentioned data are obtained from Hyundai Motors India – Irungattukottai.

Milk Run Concept

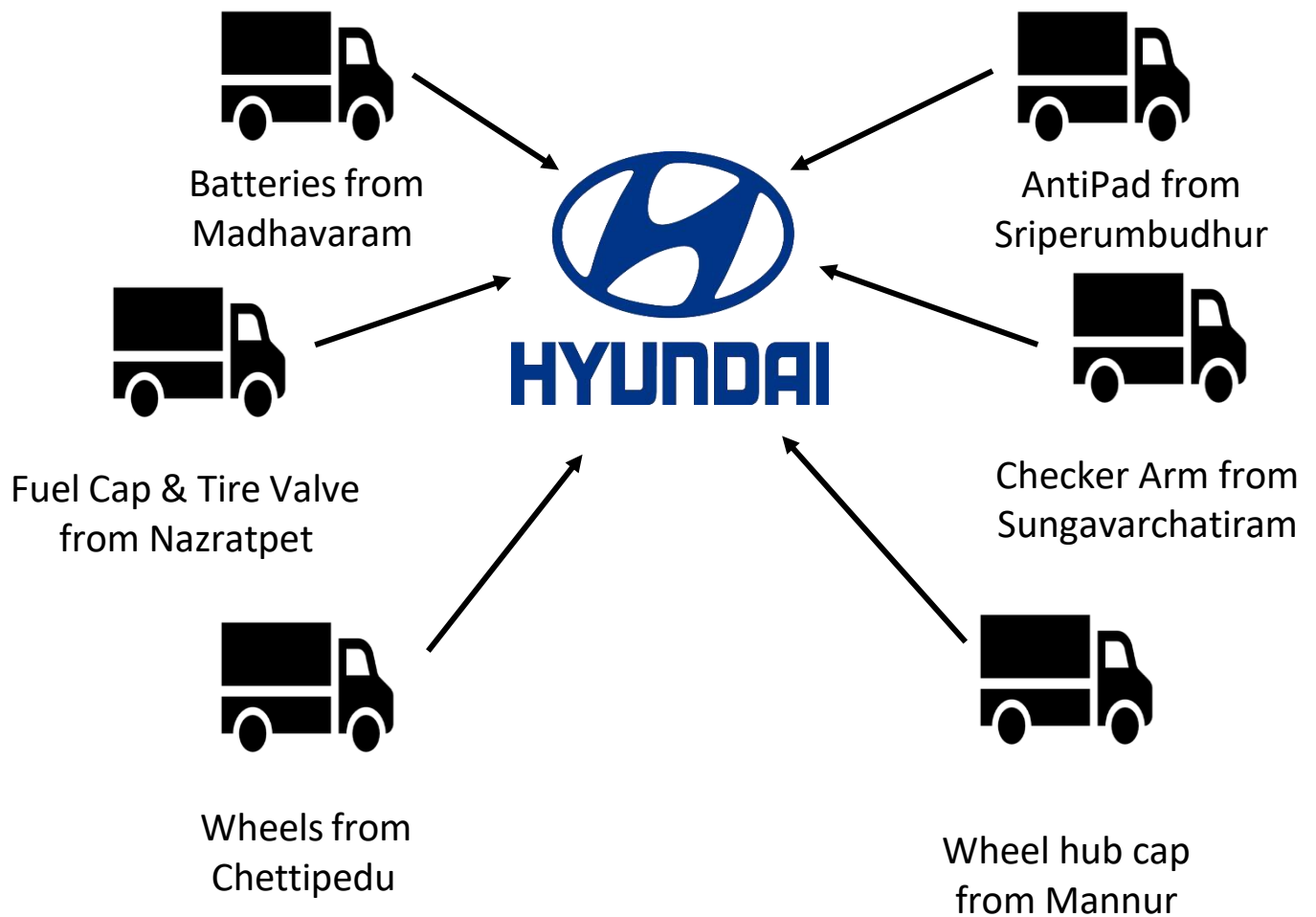
- Milk run is a delivery method in logistics which ensures that different deliveries from different vendors can be handled with maximum capacity utilization and minimal costs.
-
- The name Milk Run has been derived from the method used by the trucks to deliver the daily requirements of milk to the dairy co-operatives picking up milk from multiple suppliers and delivering it to a common point for further process.
- A milk run ensures that that minimum distance is travelled and the maximum demand is carried into the truck or delivery vehicle so as to meet both the demand requirement and effective transportation with least cost.
- This is applied where the load is scattered in many different places and in smaller units.
- In such a case carrying from each center individually would be very expensive, hence a scheme is designed as per the requirements and accordingly all different units are procured and transported.

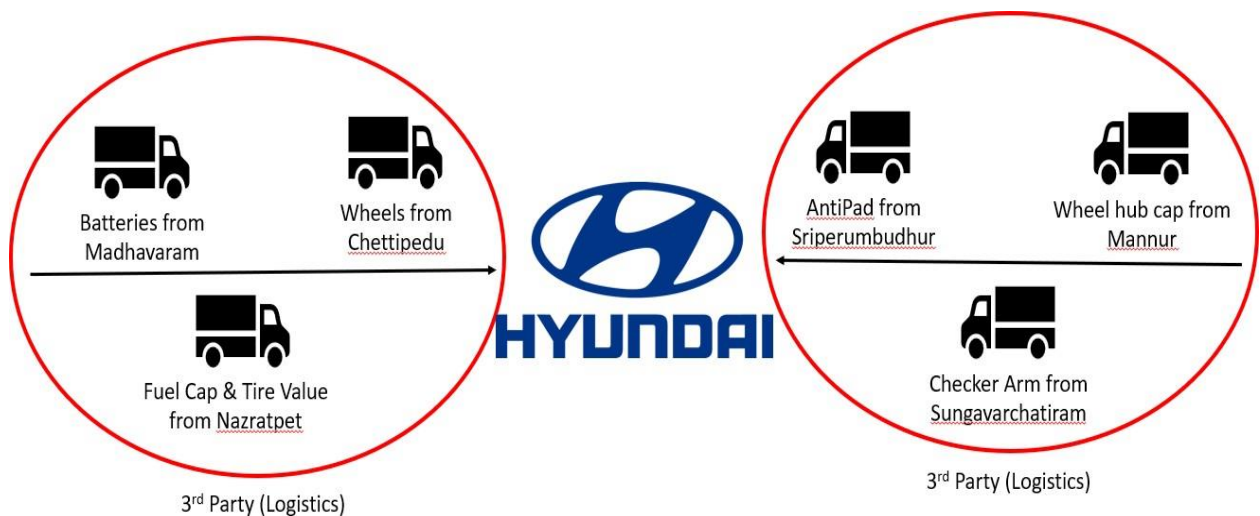


WHY MILK RUN

- Milk run as a process in Operations is quite important as it advocates a method which results in minimal costs at higher efficiency.
- Instead of each supplier or vendor sending multiple deliveries to a central point of demand, a single delivery vehicle makes trips to different points and picks up the goods.
- This makes sure that the costs are less and one vehicle is completely utilized. It goes around in a circular motion.
- It has become a critical concept in lean and agile companies where saving costs is very important.
- It is quite aligned with just in time and makes sure that the deliveries of materials happen at optimum times.
- It involves routing of materials with multiple pick up points and delivery to locations where the demand is high.
- One of the main aspects of milk run is the planning and routing aspect.
- A route which maximizes the pickups from multiple points and brings them to a central point with minimum amount of time and cost.
- Once the route is optimized, milk run starts showing a lot of benefits in the long run.

MILK RUN IMPLEMENTTION





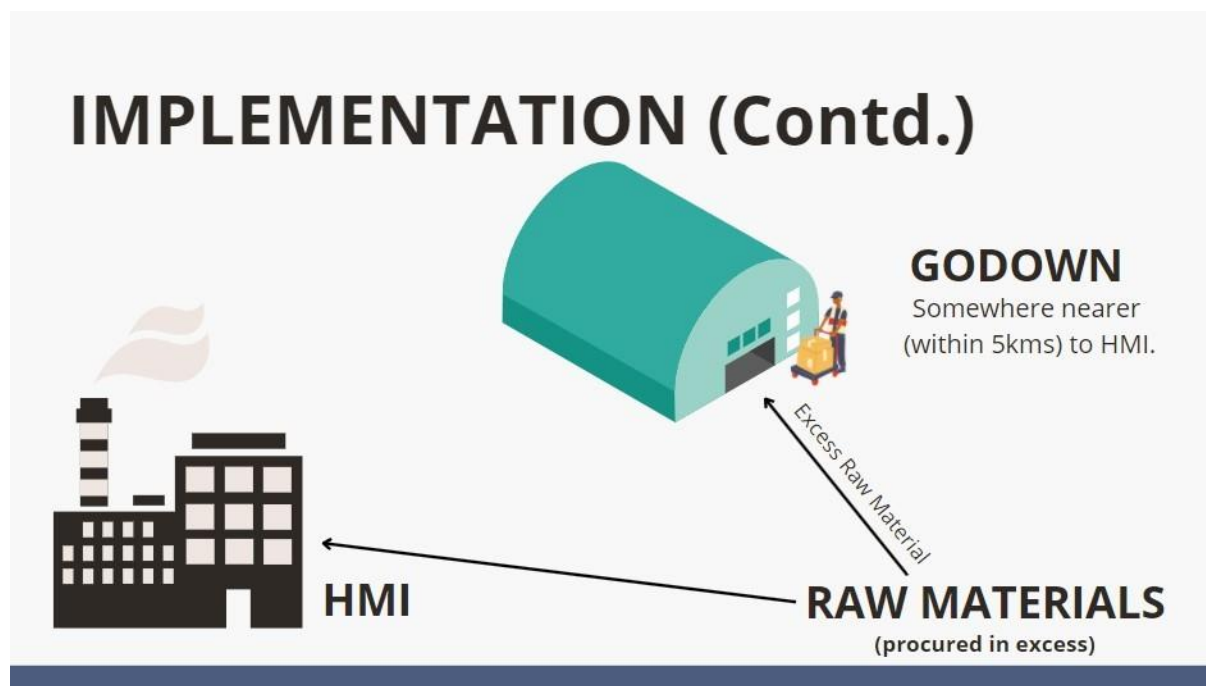
We can split the raw materials based on their vendors, i.e., From Madhavaram to HMI and Sungavarchathiram to HMI.

As both these regions in opposite direction

- To reach HMI – Irungattukottai from Madhavaram , one has to cross Nazratpet and Chettipedu. So we can organize all these vendors under one 3rd party logistic agent.
- Similarly to reach out HMI – Irungattukottai from Sungavarchattiram, one has cross Sriperumbudur. So all these vendors under another 3rd party logistic agent.
- This helps us to minimize the number of trucks involved in the same route and thus the cut the cost.
- Also the management can plan and estimate the amount of raw materials required for that particular working day and can procure the raw material such that nothing or very less remain as ideal in the inventory.
- By this one can make sure that the inflow of raw material to the outflow as value added products are maintained.
- Also the vendors and logistic agent can get a livelihood on a continuous basis.
- Also the reduction of trucks in the same route can help in achieving lesser carbon emission as per the Paris Agreement.

IN CASE OF TRAFFIC

- During peak traffic hours, it may be difficult for the raw materials to reach HMI-Irunggattukottai.
- This has caused lot of problems for HMI - Irunggattukottai to meet the required production.
- To avoid this, HMI - Irunggattukottai, can built a godown nearer to HMI, such that 1-2 loads of required raw material can be procured in excess and stored there, which can be used during the peak traffic hours.



SAMPLE SIZE:

50 staffs of Hyundai Motors India - Irungattukottai were asked to answer my questionnaires regarding to this project through Google forms.

AREA OF INDUSTRY:

- Sample Size : 50
- Location : Irungattukottai
- Target Peoples : Staffs of HMI (Material Management Department)
- Type of Industry : Automobile (Car manufacturing Plant)

STATISTICAL TOOLS USED:

- Chi-square
- Correlation

CHAPTER – 3

3.1 MEANING OF RESERACH

3.2 RESEARCH DESIGN

3.3 SAMPLING DESIGN

3.4 PEROID OF STUDY

3.5 COLLECTION OF DATA

CHAPTER-3

RESEARCH DESIGN

3.1 Meaning of Research:

Research means a search for knowledge". Sometimes, it may refer to scientific and systematic search pertinent information on a specific topic. Intact researcher is an art of scientific investigation. Redman and Moray define researcher as a "systematic efforts io gain new knowledge".

According to Clifford woody, researcher compromise," define and redefining problem, formulating hypothesis or suggested solution; collecting organizing and evaluating data; making deduction and reaching conclusion: and at last, carefully testing the conclusion to determine whether they fit the formulating hypothesis".

Researcher is thus an original contribution to the existing stock of knowledge making for its advancement. It is the pursuit of truth with the helpof study, observation. comparison and experiment.

3.2 RESEARCH DESIGN:

A research design is simply the framework or plan for a study that is used as a guide in collecting and analyzing the data. It is blueprint that is followed in completing a study. The research work was carried out at inventory management using milk run concept in Hyundai motors India.

3.3 SAMPLING DESIGN

SAMPLING:

Sampling may be defined as the selection of some part of an aggregate or totality on the basis of which a judgment or inference about the aggregate or totality is made.

SAMPLING UNIT:

Sampling unit for this study is at inventory management using milk run concept in Hyundai motors India.

3.4 PERIOD OF STUDY:

I am taking survey among Staffs of HMI (Material Management Department) with the help of google forms.

3.5 COLLECTION OF DATA:

Primary data:

For the purpose of the study primary data has been collected from the Staffs of HMI (Material Management Department)

CHAPTER – 4

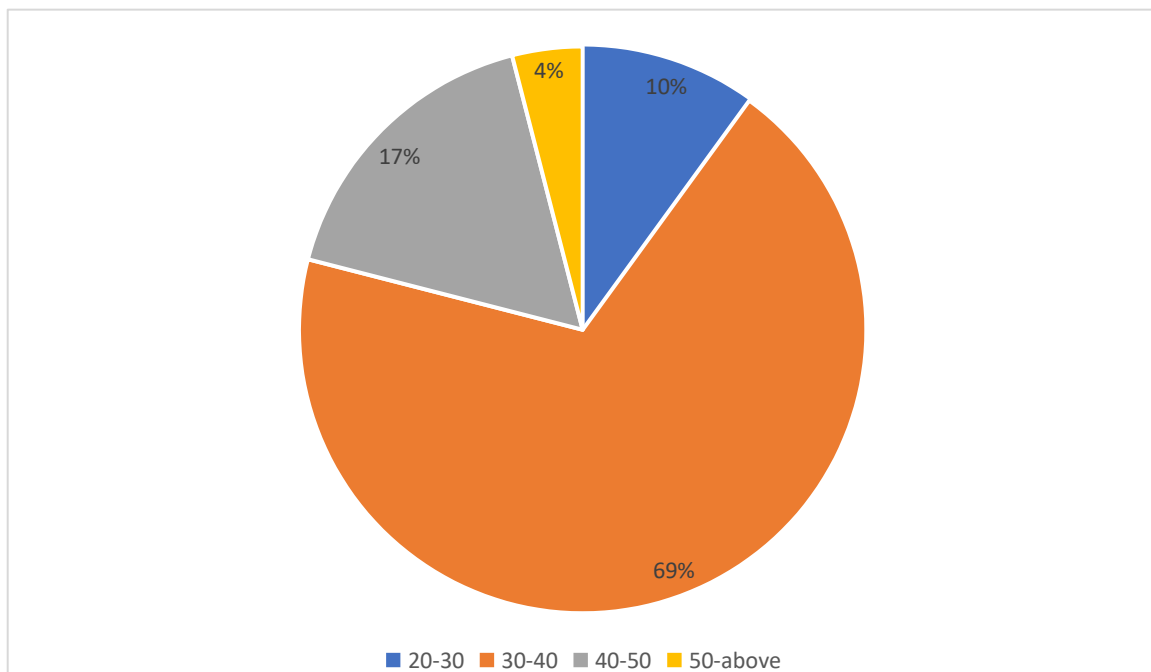
4.1 DATA ANALYSIS AND INTERPRETATION

TABLE NO: 4.1

AGE

S.NO	Particulars	No. of Respondents	Percentage
A	20 – 30	5	10
B	30 – 40	36	69
C	40 - 50	9	17
D	50 - Above	2	4
	Total	52	100

CHART NO: 4.1



INTERPRETATION :

From the above table it is interpretation that the number of respondents between 20-30 is 10%, between 30-40 is 69%, between 40-50 is 17% and between 50-above is 4%.

INFERENCE :

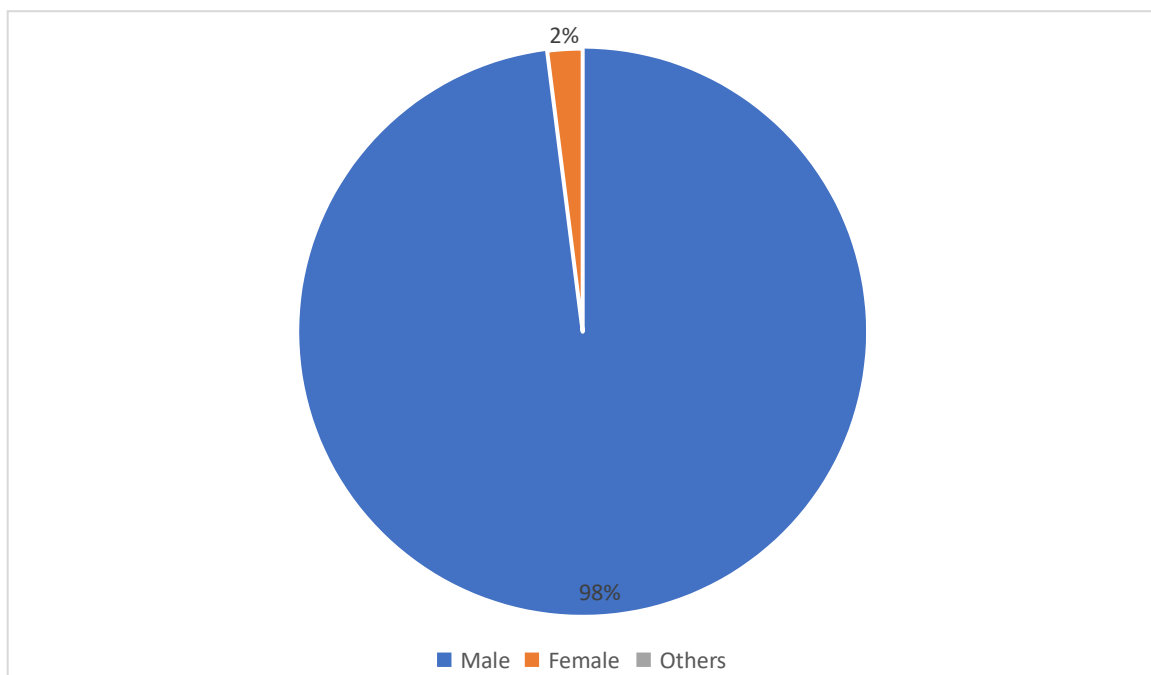
Majority 69 % of the respondents are age between 30–40 years.

TABLE NO: 4.2

Gender

S.NO	Particulars	No. of Respondents	Percentage
A	Male	51	98
B	Female	01	2
C	Others	0	0
	Total	52	100

CHART: 4.2



INTERPRETATION :

From the above table it is interpretation that the number of respondents between male is 98% and female is 2%.

INFERENCE :

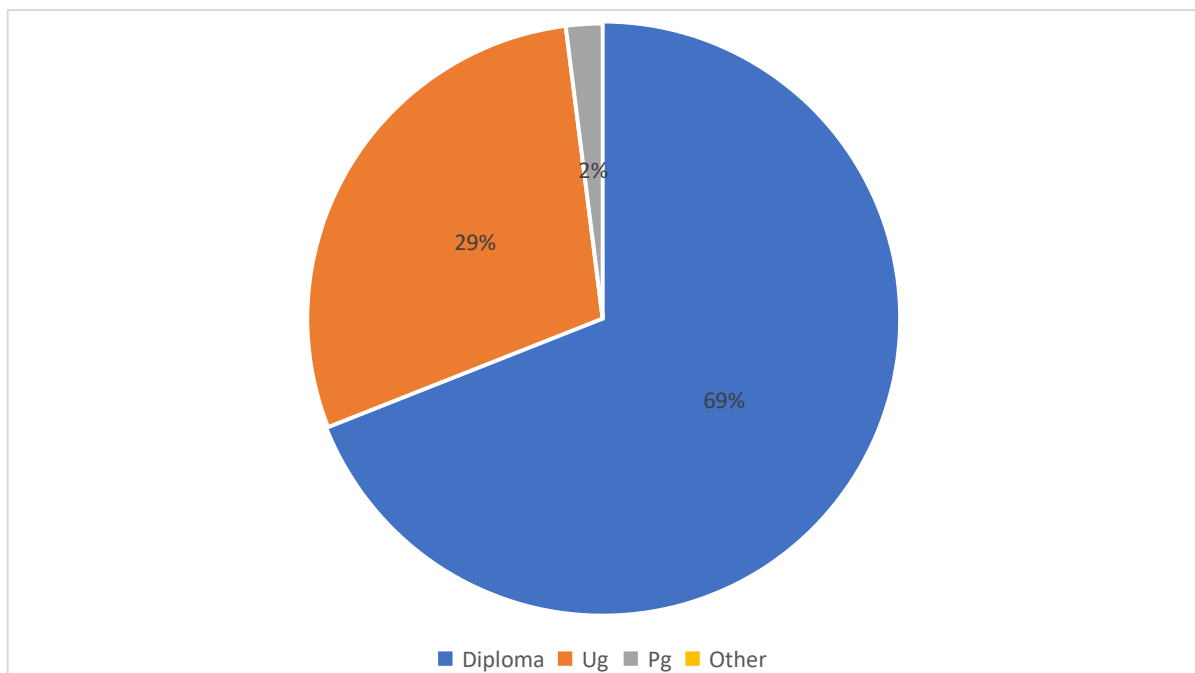
Majority 98 % of the respondents are male.

TABLE NO. 4.3

Qualification

S.NO	Particulars	No. of Respondents	Percentage
A	Diploma	36	69
B	Ug	15	29
C	Pg	1	2
D	Others	0	0
	Total	52	100

CHART 4.3



INTERPRETATION :

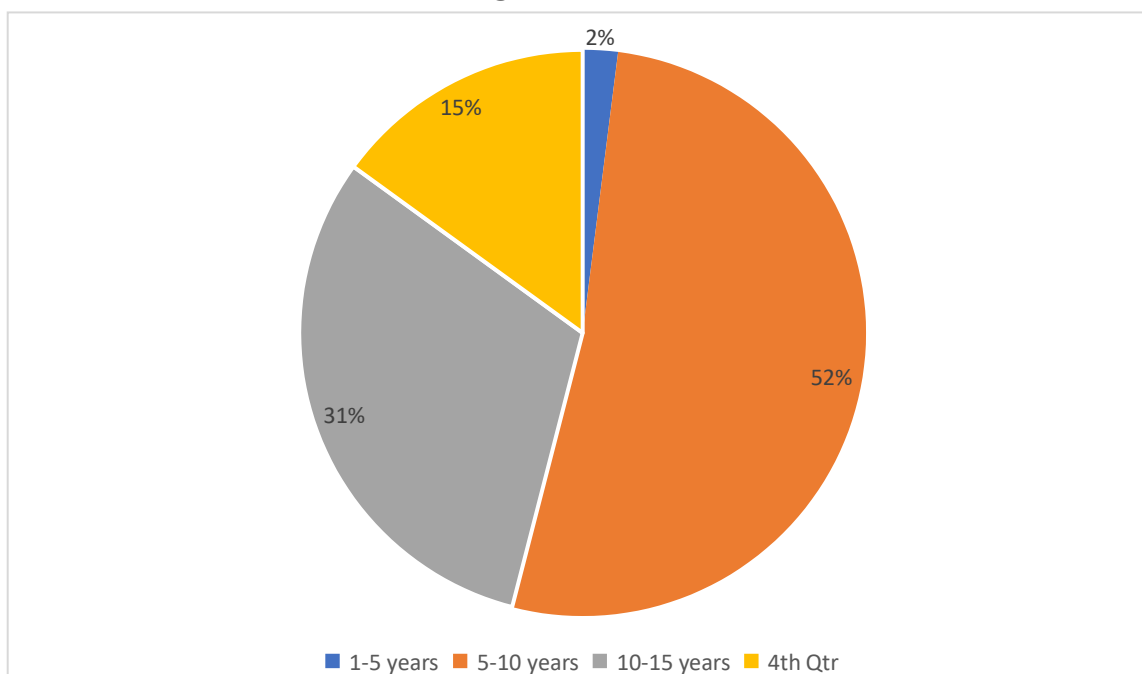
From the above table it is interpretation that the number of respondents between diploma is 69%, Ug is 29% and Pg is 2%.

INFERENCE :

Majority 69 % of the respondents are diploma.

TABLE4.4**EXPERIENCE**

S.NO	Particulars	No. of Respondents	Percentage
A	1-5 years	1	02
B	5-10 years	27	52
C	10-15 years	16	31
D	15-above	8	15
	Total	52	100

CHART 4.4**INTERPRETATION :**

From the above table it is interpretation that the number of respondents between 1-5 years is 2%, 5-10 years is 52%, 10-15 years is 31% and 15-above years is 15%.

INFERENCE :

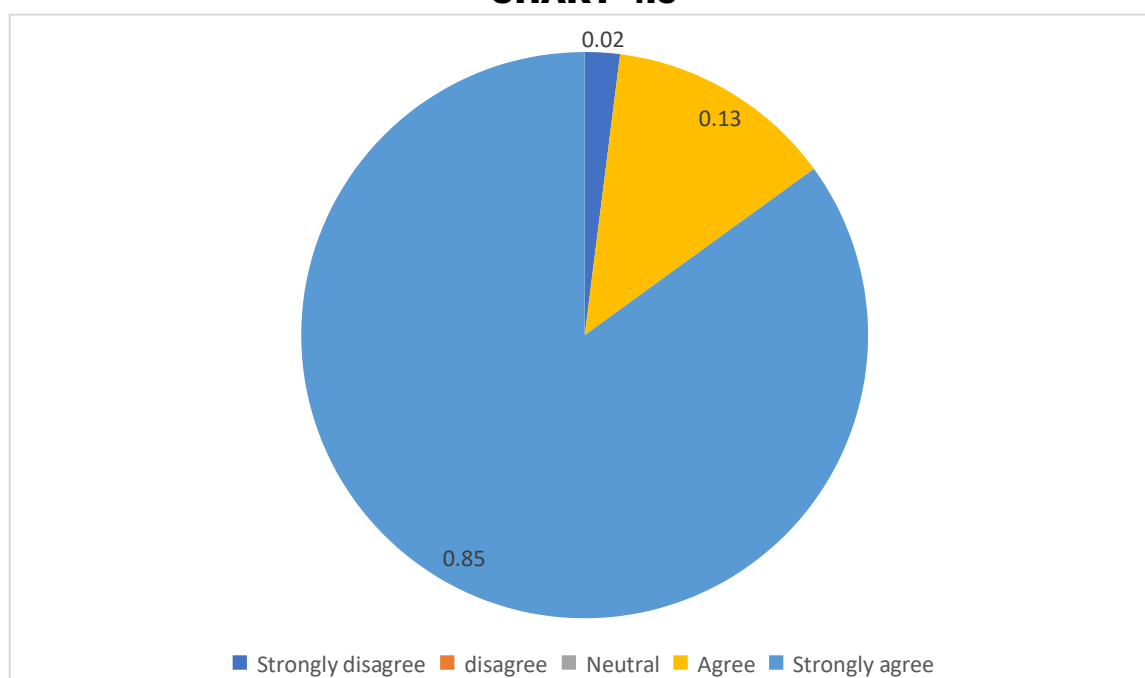
Majority 52 % of the respondents are 5-10 years.

TABLE 4.5

Will milk concept will bring change in HMI

S.NO	Particulars	No. of Respondents	Percentage
A	Strongly disagree	1	2
B	disagree	0	0
C	Neutral	0	0
D	Agree	7	13
E	Strongly agree	44	85
	Total	52	100

CHART 4.5



INTERPRETATION :

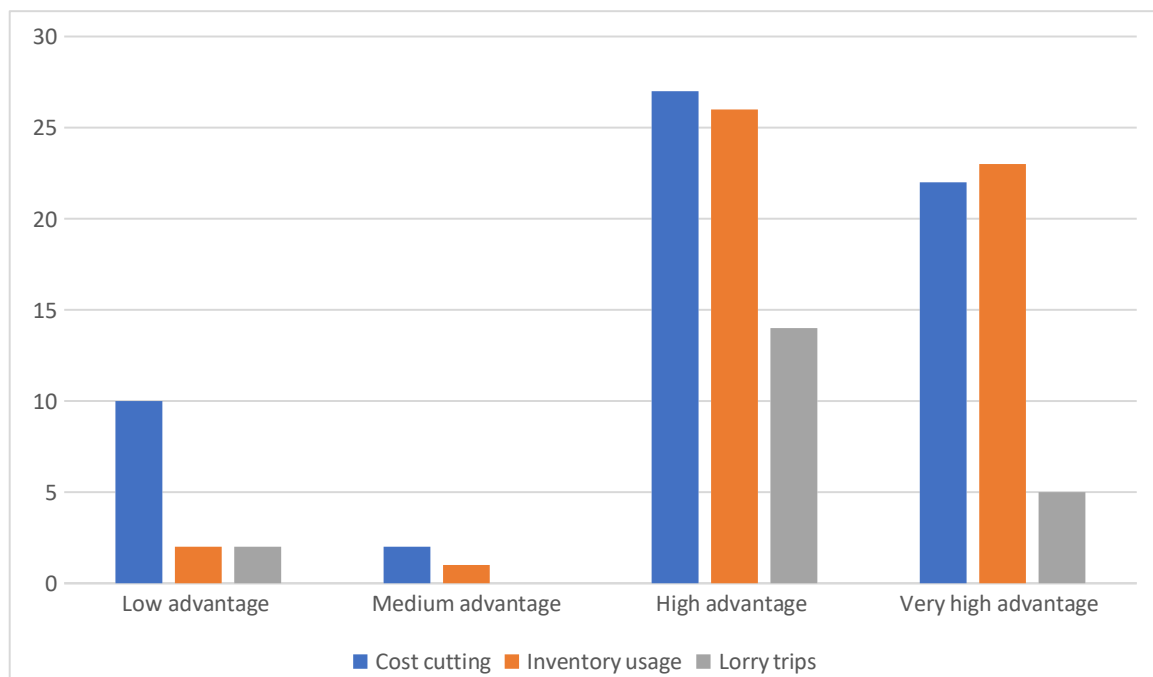
From the above table it is interpretation that the number of respondents between strongly disagree is 2%, disagree is 0, neutral is 0, agree is 13% and strongly agree is 85%.

INFERENCE :

Majority 85 % of the respondents are strongly agree.

TABLE 4.6**Advantages of milk run concept**

	Cost cutting	Inventory usage	Lorry trips
Low advantage	10	02	02
Medium advantage	02	01	00
High advantage	27	26	14
Very high advantage	22	23	36
Total	52	52	52

CHART 4.6

INTERPRETATION :

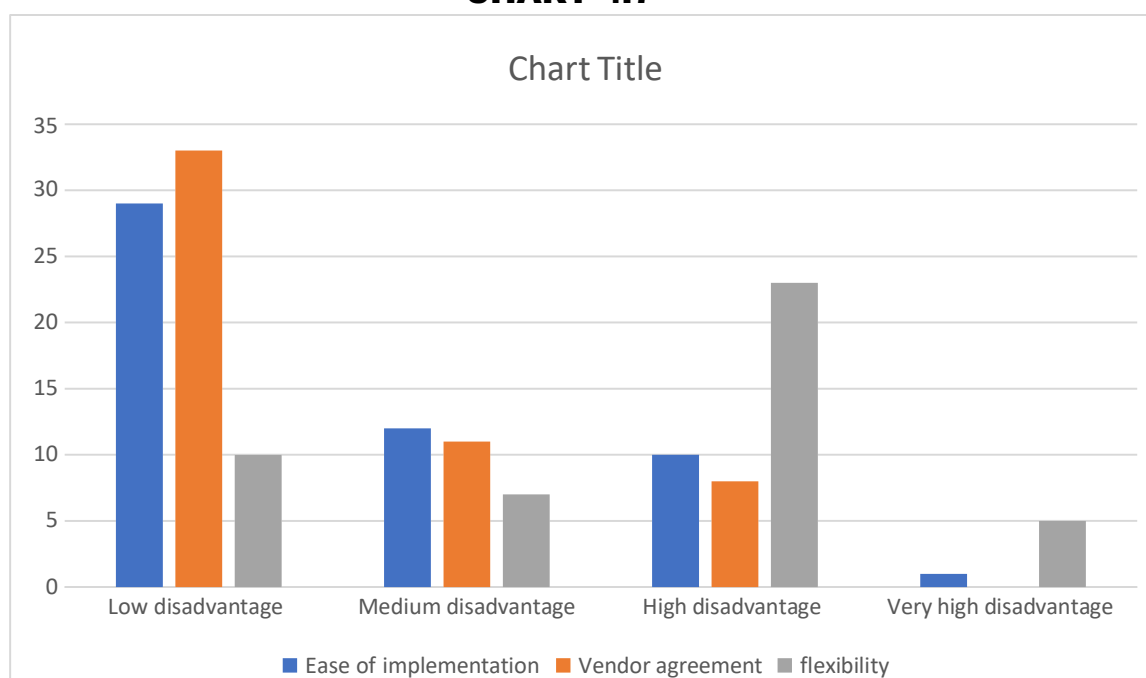
- From the above table it is interpretation that the number of respondents for cost cutting is 10 for low advantages, 2 for medium advantages, 27 for high advantages and 22 for very high advantage.
- For inventory usage is 02 for low advantages, 01 for medium advantages, 26 for high advantages and 23 for very high advantage.
- For lorry trips is 02 for low advantages, 0 for medium advantages, 14 for high advantages and 36 for very high advantage.

INFERENCE :

- Majority 27 responds for cost cutting is high advantage.
- Majority 26 responds for inventory usage is high advantage.
- Majority 36 responds for lorry trips is very high advantage

TABLE 4.7**Disadvantages of milk run concept**

	Ease of implementation	Vendor agreement	flexibility
Low disadvantage	29	33	10
Medium disadvantage	12	11	07
High disadvantage	10	08	23
Very high disadvantage	01	00	12
Total	52	52	52

CHART 4.7

INTERPRETATION :

- From the above table it is interpretation that the number of respondents for ease implementation is 29 for low disadvantage, 12 for medium disadvantage, 10 for high disadvantage and 1 for very high disadvantage.
- For vendor agreement is 33 for low disadvantage, 11 for medium disadvantage, 8 for high disadvantage and 0 for very high disadvantage.
- For flexibility is 10 for low disadvantage, 07 for medium disadvantage, 23 for high disadvantage and 12 for very high disadvantage.

INFERENCE :

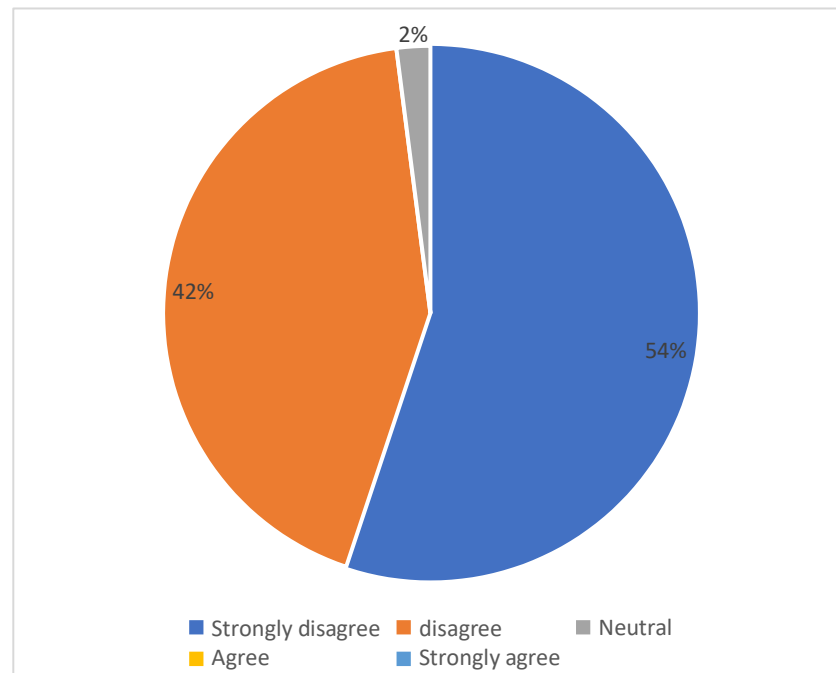
- Majority 29 responds for ease of implementation is low disadvantage.
- Majority 33 responds for vendor agreement is low disadvantage.
- Majority 23 responds for flexibility is high disadvantage.

TABLE 4.8

Are you satisfied with existing method

S.NO	Particulars	No. of Respondents	Percentage
A	Strongly disagree	28	54
B	disagree	22	42
C	Neutral	1	2
D	Agree	0	0
E	Strongly agree	1	2
	Total	52	100

CHART 4.8



INTERPRETATION :

From the above table it is interpretation that the number of respondents between strongly disagree is 54%, disagree is 42%, neutral is 2%, agree is 0% and strongly agree is 2%.

INFERENCE :

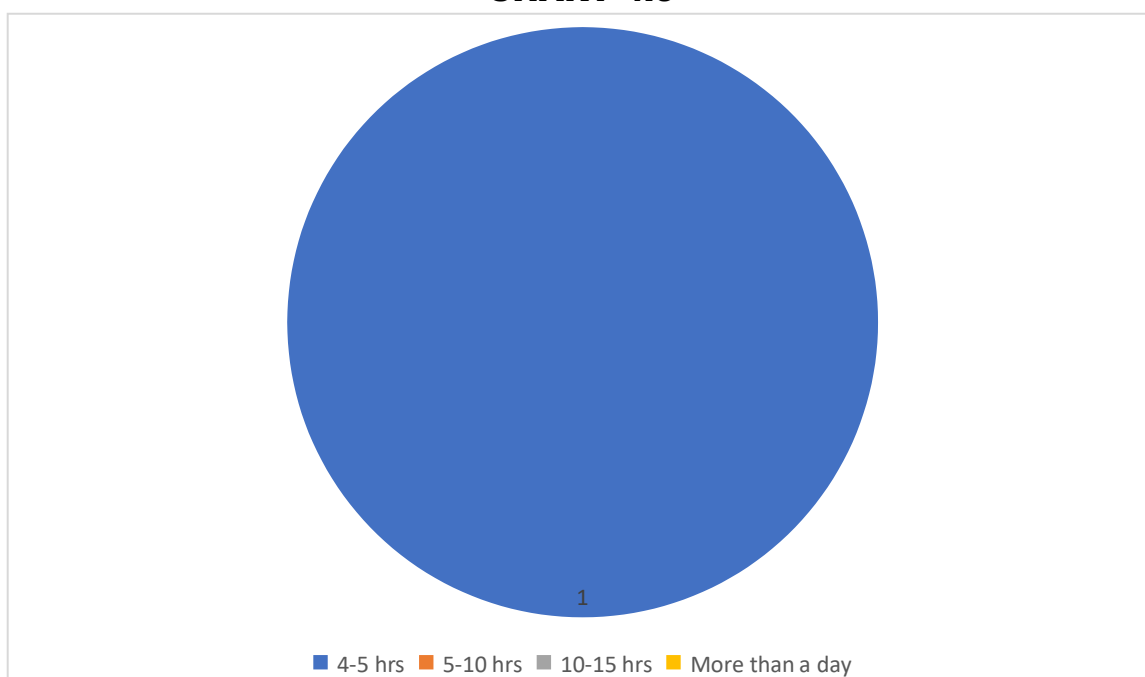
Majority 54% of the respondents are strongly disagree.

TABLE 4.9

How many days does local product (LP) from sipcort stored in inventory

S.NO	Particulars	No. of Respondents	Percentage
A	04-05 hrs	52	100
B	05-10 hrs	00	00
C	10-15 hrs	00	00
D	More than a day	00	00
	Total	52	100

CHART 4.9



INTERPRETATION :

From the above table it is interpretation that the number of respondents between 04-05 hrs is 100%, 05-10 hrs is 0%, 10-15 hrs is 0% and more than a day is 0%.

INFERENCE :

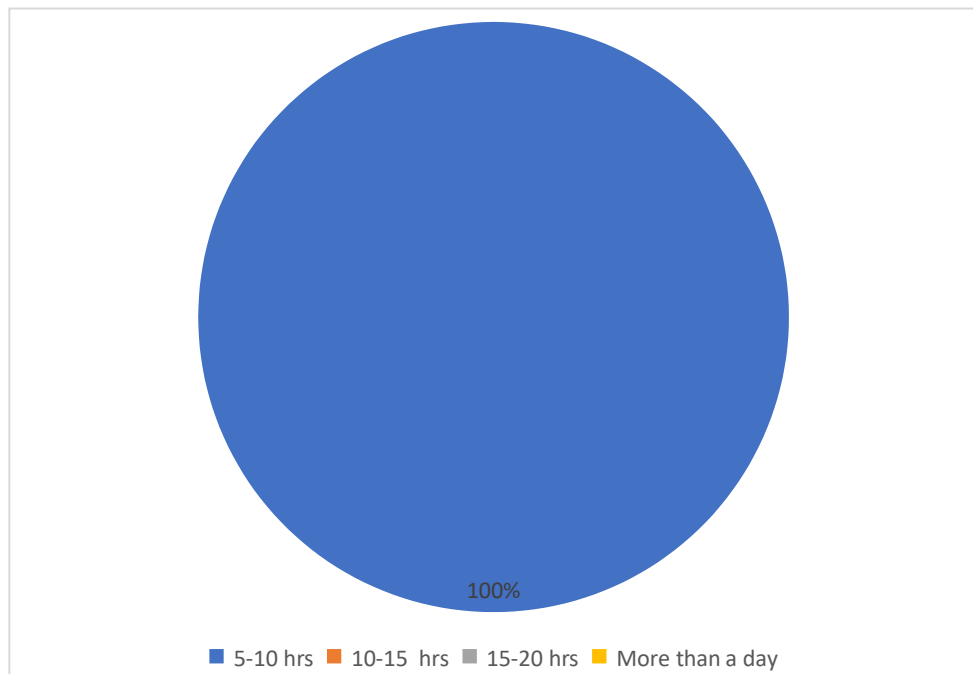
Majority 100% of the respondents are 04-05 hrs.

TABLE 4.10

**How many days does local products (LP) from within
Chennai stored in inventory**

S.NO	Particulars	No. of Respondents	Percentage
A	05-10 hrs	52	100
B	10-15 hrs	00	00
C	15-20 hrs	00	00
D	More than a day	00	00
	Total	52	100

CHART 4.10



INTERPRETATION :

From the above table it is interpretation that the number of respondents between 05-10 hrs is 100%, 10-15 hrs is 0%, 15-20 hrs is 0% and more than a day is 0%.

INFERENCE :

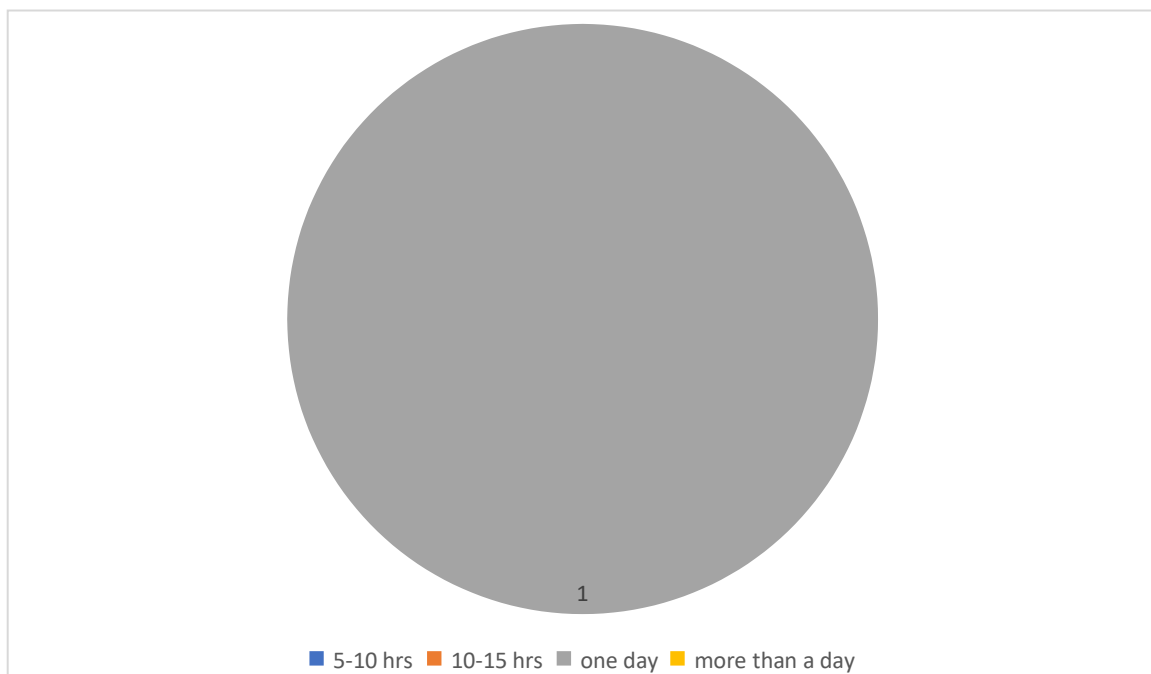
Majority 100% of the respondents are 05-10 hrs.

TABLE 4.11

How many days does local product (LP) from outstation stored in inventory

S.NO	Particulars	No. of Respondents	Percentage
A	05-10 hrs	52	100
B	10-15 hrs	00	00
C	One day	00	00
D	More than a day	00	00
	Total	52	100

CHART 4.11



INTERPRETATION :

From the above table it is interpretation that the number of respondents between 05-10 hrs is 100%, 10-15 hrs is 0%, 15-20 hrs is 0% and more than a day is 0%.

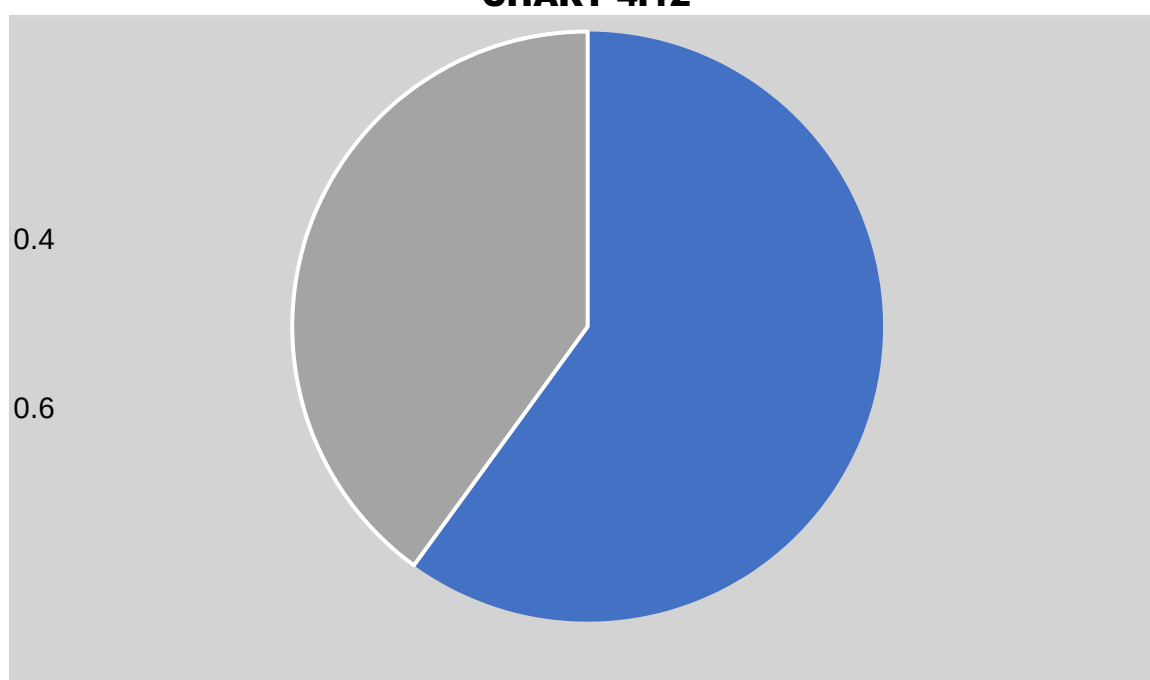
INFERENCE :

Majority 100% of the respondents are 05-10 hrs.

TABLE 4.12
The best inventory controls techniques

S.NO	Particulars	No. of Respondents	Percentage
A	FIFO	31	60
B	LIFO	00	00
C	JIT	21	40
D	Others	00	00
	Total	52	100

CHART 4.12



INTERPRETATION :

From the above table it is interpretation that the number of respondents FIFO is 60%, 0% for LIFO, 40% for JIT and 0% for others.

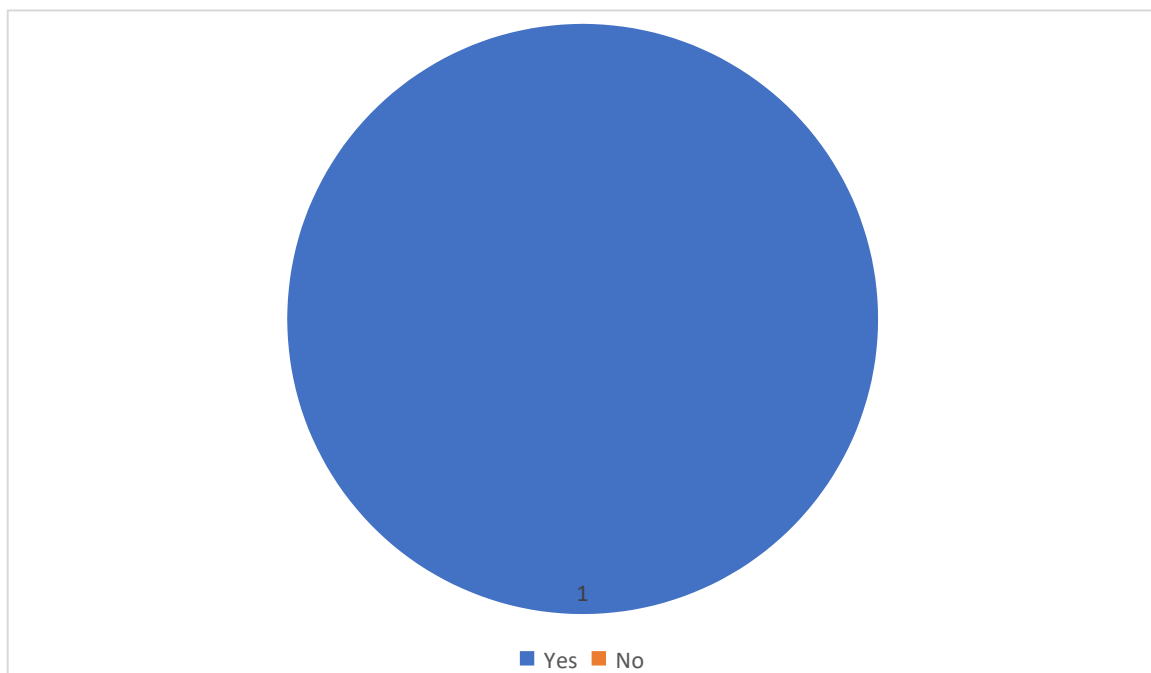
INFERENCE :

Majority 60% of the respondents are FIFO.

TABLE 4.13
**All purchase order transactions are completely prepared on a
timely basis**

S.NO	Particulars	No. of Respondents	Percentage
A	Yes	52	100
B	No	00	00
	Total	0	100

CHART 4.13



INTERPRETATION :

From the above table it is interpretation that the number of respondents yes is 100% and 0% for no.

INFERENCE :

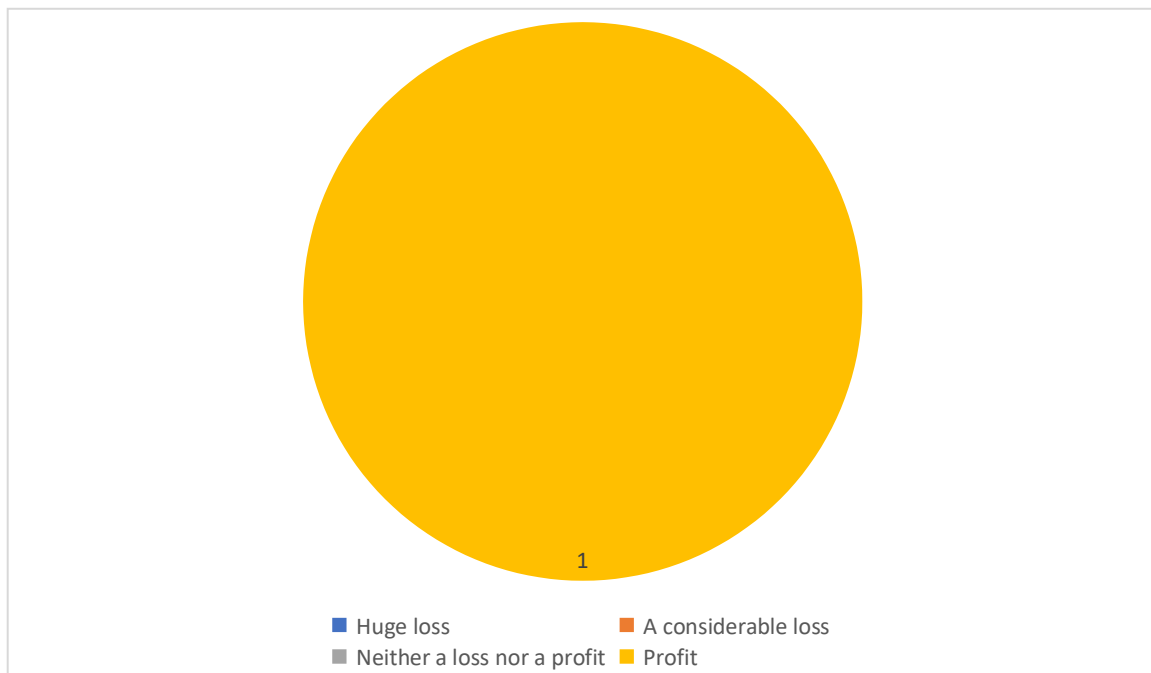
Majority 100% of the respondents are yes.

TABLE 4.14

What is the loss incurred in milk run was a successful concept and HMI failed to implement it.

S.NO	Particulars	No. of Respondents	Percentage
A	Huge loss	00	00
B	A considerable loss	00	00
C	Neither a loss nor a profit	00	00
D	Profit	52	100
	Total	52	100

CHART 4.14



INTERPRETATION :

From the above table it is interpretation that the number of respondents between profit is 100%, huge loss, a considerable loss and neither a loss a profit is 0%.

INFERENCE :

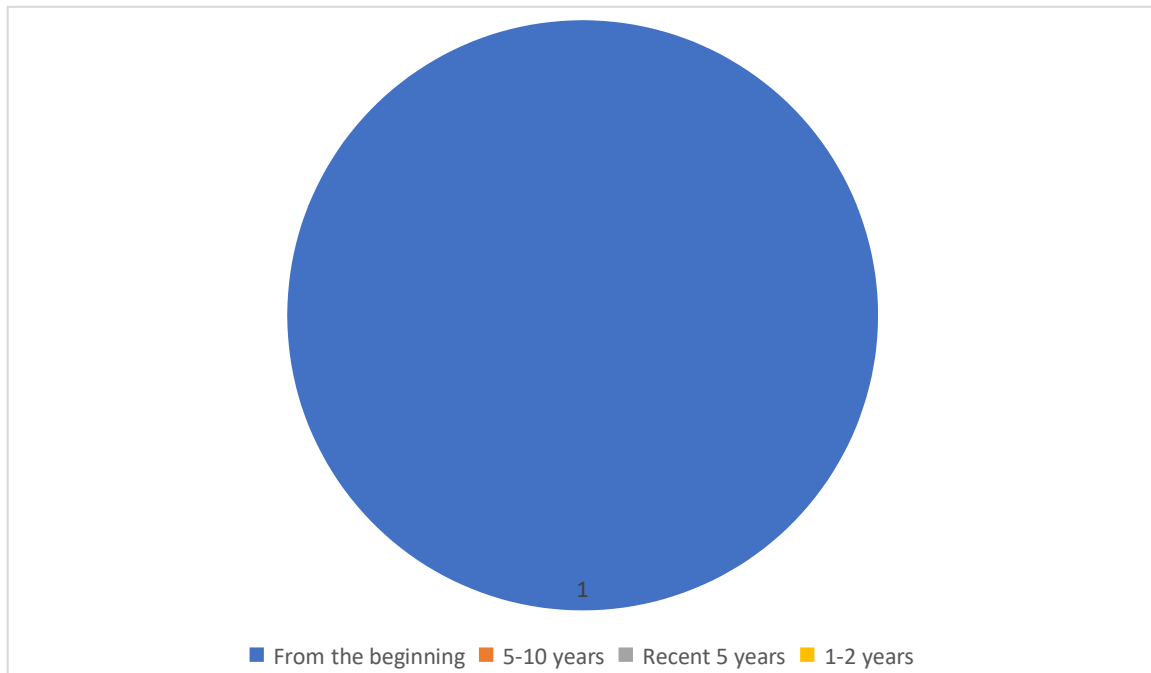
Majority 100% of the respondents are profit.

TABLE 4.15

For time scale, the current methodology is being in implementation at HMI

S.NO	Particulars	No. of Respondents	Percentage
A	From the beginning	52	100
B	5-10 years	00	00
C	Recent 5 years	00	00
D	1-2 years	52	100
	Total	52	100

CHART 4.15



INTERPRETATION :

From the above table it is interpretation that the number of respondents between from the beginning is 100%, 5-10 years, recent years and 1-2 years a 0%.

INFERENCE :

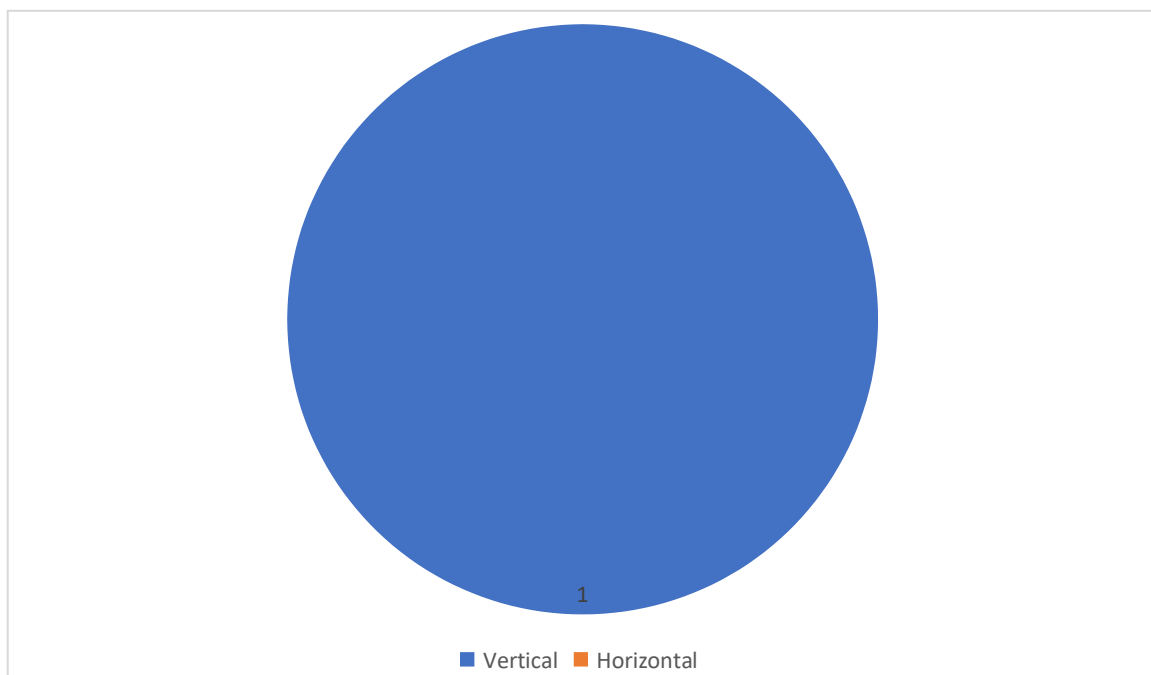
Majority 100% of the respondents are from the beginning.

TABLE 4.16

If material comes from truck what portion of total space can be used for storage and material handling

S.NO	Particulars	No. of Respondents	Percentage
A	Vertical	52	100
B	Horizontal	00	00
	Total	52	100

CHART 4.16



INTERPRETATION :

From the above table it is interpretation that the number of respondents vertical is 100% and 0% for horizontal.

INFERENCE :

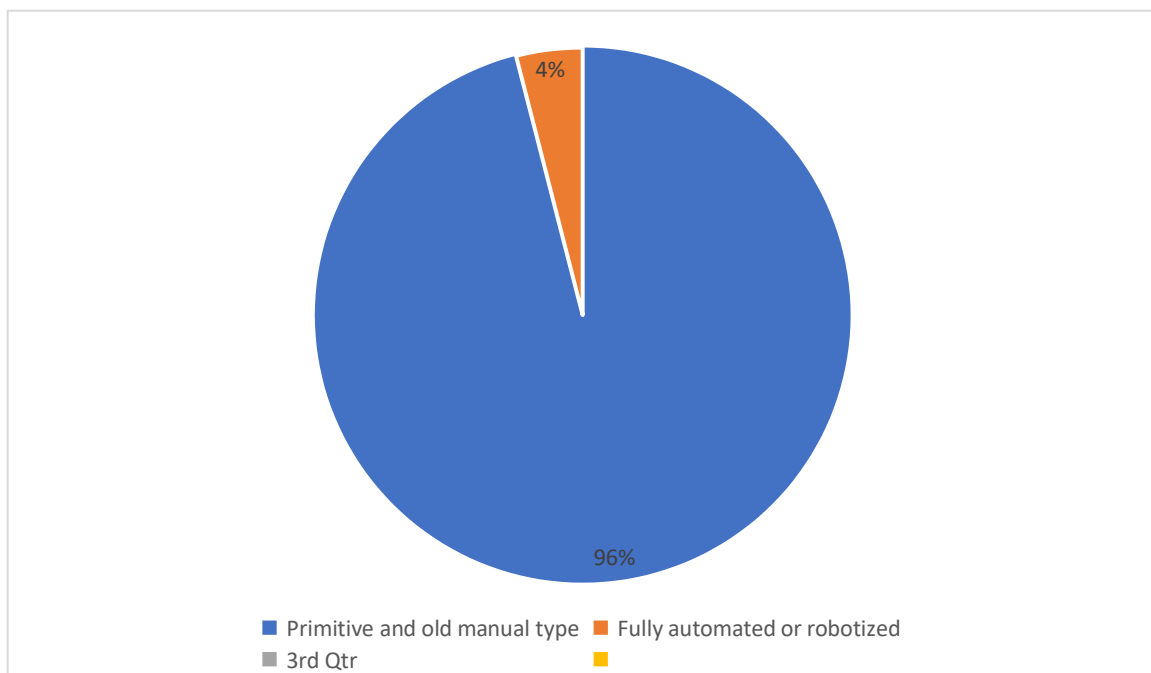
Majority 100% of the respondents are vertical.

TABLE 4.17

Due to time conception which way is best for material handling system in store. What is your suggestion

S.NO	Particulars	No. of Respondents	Percentage
A	Primitive and old manual type	50	96
B	Fully automated or robotized	02	04
	Total	52	100

CHART 4.17



INTERPRETATION :

From the above table it is interpretation that the number of respondents for primitive and old type is 96% and fully automated or robotized is 4%

INFERENCE :

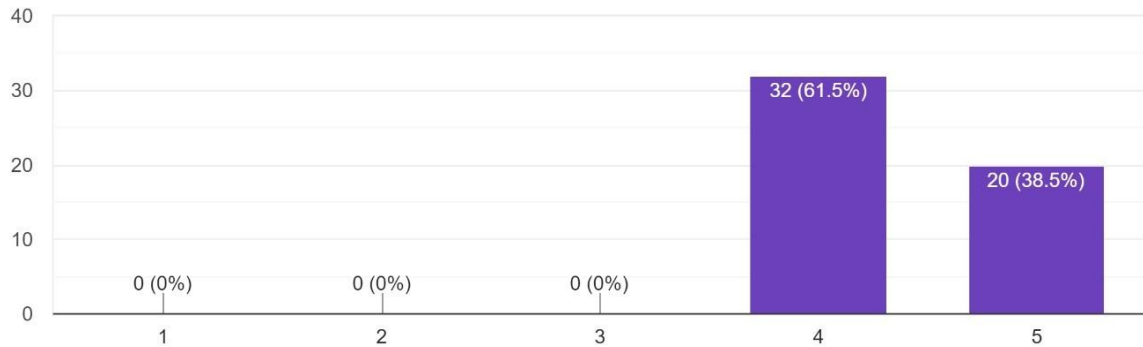
Majority 96% of the respondents are .

TABLE 4.18

Will milk run concept bring changes in HMI give your agreeable

Will milk run concept bring changes in HMI give your agreeable

52 responses



INTERPRETATION :

From the above table it is interpretation that the number of respondents are from 61.5% for 4 and 38.5% for 5. and rest of 1, 2, and 3 are 0%.

INFERENCE :

Majority 61.5% of the respondents are 4.

HYPOTHESIS TOOTLS

Analysis using chi square

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Experience * Are you satisfied with existing method	52	100.0%	0	0.0%	52	100.0%

Experience * Are you satisfied with existing method Crosstabulation

Count

		Are you satisfied with existing method				Total
		Disagree	Neutral	Strongly agree	Strongly disagree	
Experience	1 - 5 years	0	0	0	1	1
	15 and above	3	0	0	5	8
	42278	7	1	1	7	16
	5 - 10 year	12	0	0	15	27
Total		22	1	1	28	52

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.828 ^a	9	.757
Likelihood Ratio	6.402	9	.699
N of Valid Cases	52		

a. 12 cells (75.0%) have expected count less than 5. The minimum expected count is .02.

Here P value = 0.757 which is greater than 0.05, so accepting null hypothesis.

Analysis using Correlations

Notes		
Output Created		20-APR-2022 05:21:13
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	52
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax		CORRELATIONS /VARIABLES=Best_inventory_control_technique Satisfied_with_existing_method /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.01

[DataSet0]

Correlations

		Which is the best inventory controls techniques ?	Are you satisfied with existing method
Which is the best inventory controls techniques ?	Pearson Correlation	1	-.159
	Sig. (2-tailed)		.261
	N	52	52
Are you satisfied with existing method	Pearson Correlation	-.159	1
	Sig. (2-tailed)	.261	
	N	52	52

Since P value is -.159 hence there is negative correlation between inventory control techniques and satisfaction in existing method.

CHAPTER – 5

5.1 FINDINGS

5.2 SUGGESTION

5.3 CONCLUSION

5.1 FINDINGS

- Majority 69 % of the respondents are age between 30–40 years.
- Majority 98 % of the respondents are male.
- Majority 69 % of the respondents are diploma.
- Majority 52 % of the respondents are 5-10 years.
- Majority 85 % of the respondents are strongly agree.
- Advantages
 - Majority 27 responds for cost cutting is high advantage.
 - Majority 26 responds for inventory usage is high advantage.
 - Majority 36 responds for lorry trips is very high advantage.
- Disadvantages
 - Majority 29 responds for ease of implementation is low disadvantage.
 - Majority 33 responds for vendor agreement is low disadvantage.
 - Majority 23 responds for flexibility is high disadvantage.
- Majority 54% of the respondents are strongly disagree
- Majority 100% of the respondents are 04-05 hrs.
- Majority 100% of the respondents are 05-10 hrs.
- Majority 100% of the respondents are 05-10 hrs.
- Majority 60% of the respondents are FIFO
- Majority 100% of the respondents are yes.
- Majority 100% of the respondents are profit.
- Majority 100% of the respondents are from the beginning.
- Majority 100% of the respondents are vertical.
- Majority 96% of the respondents are primitive and old manual type.
- Majority 61.5% of the respondents are 4.

5.2 SUGGESTIONS

- Instead of having separate trips to purchase materials from different suppliers, MR deliveries only take a single trip to all those suppliers to save time and resources. Fitting numerous materials in one transport vehicle requires the vehicle to be utilized to its fullest extent.
- By scheduling the supply of materials, manufacturers can also control their production. Producing just the right amount of finished products can minimize the risks of overproduction thus preventing a surplus and thereby reducing inventory and storage costs.
- A big part of greenhouse gas emissions are from the transportation industry. MR deliveries are not only cost-efficient, but they're also a more environmental-friendly logistics option. Fewer delivery trips means less carbon emissions and petroleum use.
- Using third-party logistics significantly reduces in-process inventory, increases capital flows, and reduces investment risks. A fully loaded trip leaves parent companies with fewer tasks on their plate.
- Having a regular delivery schedule allows you to plan and condense the use of vehicles and the workforce needed to discharge materials.

CONCLUSION

Due to the huge production at Hyundai Motors India, the availability & storage of raw materials are always a matter of high concern. Currently due to this, about 2500 trucks enter and exit HMI. The inventory required to manage such a huge load of raw materials are very high and the safety related to this has been questionable.

To avoid such chaos, based on my research at HMI, I have suggested Milk Run Concept which will come handy in managing the inventory and helping in cost cutting. This will reduce the total number of trucks entering and leaving HMI dramatically.

Milk-Run logistics has been planned to improve loading rates at possible levels and reduce the number of trucks and travel distances. As a result, it is an excellent transport method in which exhaust gases from trucks can be controlled. Therefore, the promotion of Milk- Run logistics can be highly evaluated from the viewpoint of environmental policy. The Milk-Run logistics requires accurate management based on the operational plan, we could introduce a logistics policy to increase transportation reliability.

The global warming problem in the environment due to the direct shipment can also reduced by use of milk run logistics. The milk run system reduces the carbon dioxide emission from the distribution system by reducing the truck deliveries in transportation. The overall supply chain cost can be minimized by using milk run system in transportation instead of direct shipment.

ANNEXURE

QUESTIONNAIRE ON A STUDY ON INVENTORY MANAGEMENT USING MILK RUN CONCEPT IN HYUNDAI MOTORS INDIA

1. Name:

2. Age:

3. Gender:

4. Qualification:

5. Experience:

6. Will milk run concept bring changes in HMI give your agreeable.

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly disagree

7. How important are the following factors as advantages of milk run concept ?

	Low advantage	Medium advantage	High advantage	Very high advantage
Cost cutting				
Inventor y usage				
Lorry trips				

8. How important are the following factors as disadvantages of milk run ?

	Low disadvanta ge	Medium disadvant age	High disadvant age	Very high disadvant age
Ease of implementati on				
Vendor				

agreement				
Flexibility				

9. Are you satisfied with existing method

- a. Completely agree b. Completely disagree
- c. Somewhat agree d. Neutral

10. How many days does local product (LP) from sipcort stored in inventory?

- a. 4 – 5 hrs
- b. 5 – 10 hrs
- c. 10 – 15 hrs
- d. More than a day

11. How many days does local product (LP) from within chennai stored in inventory?

- a. 05 – 10 hrs
- b. 10 – 15 hrs
- c. 15 – 20 hrs
- d. More than a day

12. How many days does local product (LP) from outstation stored in inventory?

- a. 5 – 10 hrs
- b. 10 – 15 hrs
- c. One day
- d. More than a day

13. Which is the best inventory controls techniques ?

- a. FIFO
- b. LIFO
- c. Weighted average
- d. Simple average

14. All purchase order transactions are completely prepared on a timely basis

- a. Yes
- b. No

15. What is the loss incurred in milk run was a successful concept and HMI failed to implement it.

- a. Huge loss
- b. A considerable loss
- c. Neither a loss nor a profit
- d. Profit

16. For time scale, the current methodology is being in implementation at HMI.

- a. From the beginning
- b. 5 – 10 years

- c. Recent 5 years
- d. 1 - 2 years

17. What portion of total space is used for storage and material handling?

- a. Vertical
- b. Horizontal

18. How effective is the material handling system in store ?

- a. Primitive and old manual type
- b. Fully automated or robotized

19. Will milk run concept bring changes in HMI give your agreeable (LIKERT SCALE)

1 2 3 4 5

20. Any suggestion related to milk run concept on your perception.

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