AN EXPLORATION ON MILK RUN CONCEPT ON INVENTORY MANAGEMENT IN HYUNDAI MOTOR INDIA LIMITED

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ABSTRACT

The purpose of this paper is to review the literature on Milk Run Logistics and to present an overview of its implementation practices adopted by the manufacturing organizations. The paper also discusses milk run logistics in the procurement system with a special emphasis on the automobile industry. Milk run system is all about logistics support for the supply chain. Milk run system results in reduction in cost of transportation, travelling path and fuel consumption. The effects of the direct shipment on the traffic conditions and on the environment have also been studied. By introducing the milk run logistics under heavily congested traffic conditions, the supplier can have full control on the procurement process. Also, the number of trucks on road can be reduced thus resulting in improvement in traffic conditions. The effect of the milk run logistics on the reduction of CO_2 is also discussed. The promotion of Milk Run logistics can be highly evaluated from the viewpoint of environmental policy.

INTRODUCTION

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 resultsin 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.

LITERATURE REVIEW

Bowersox et al. (2002) concluded that Milk Run is an important element for an integrated lean logistics strategy.

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 Shangahi GM to pick up from different suppliers timing and then directly transport to Shangahi GM.

Mehmet et al. (2004) presents principles to design the procurement system with the introduction of this logistics Shangahi GM inventory war 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%.

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.

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 helpof 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.

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.

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.

OBJECTIVES

- To study on Milk RUN Concept in Inventory Management in Hyundai Motor India.

- 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.

RESEARCH DESIGN AND TECHNIQUE

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.

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 help of study, observation. comparison and experiment.

Hyundai Motors India, is India's first smart mobility solutions provider and the number one car exporter since inception in India. HMIL's fully integrated state of the art manufacturing plant at Irungattukottai boasts of advanced production, quality and testing capabilities.

Research is the process of systematic and in- depth study of any particular topic, subject or any are of investigation backed by collection, compilation, presentation and interpretation relevant data in detail.

INSTRUMENT DESIGN

This section included an overview of the research questions open handed & close handed, and instructions for completing the instrument under category of questions. It also included a statement regarding the anonymity and confidentiality of the data collected using mixed open handed and closed handed questions.

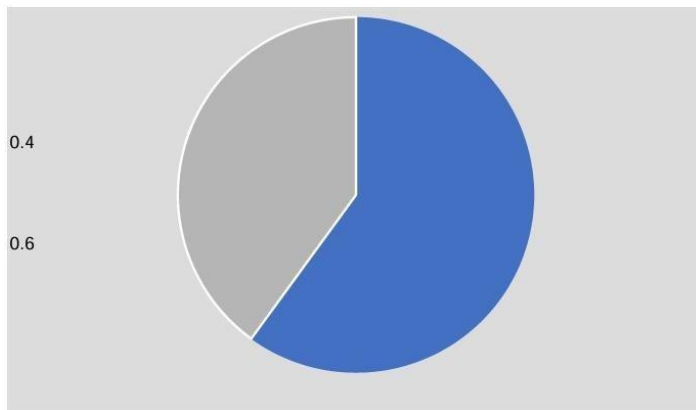- Instrument used for data collection: Questionnaire

RESULTS AND DISCUSSION

TABLE 1

The best inventory controls techniques

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

CHART 1

INFERENCE:

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.

TABLE 2

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 2
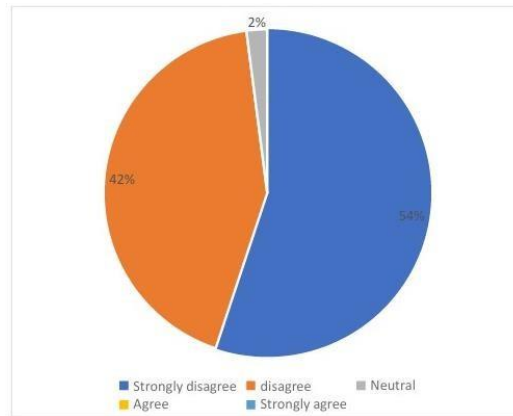
INFERENCE:

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%.

TABLE 3

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 3
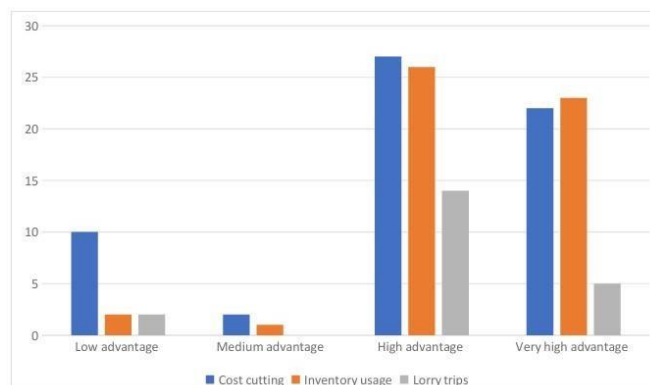
INFERENCE:

- 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

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
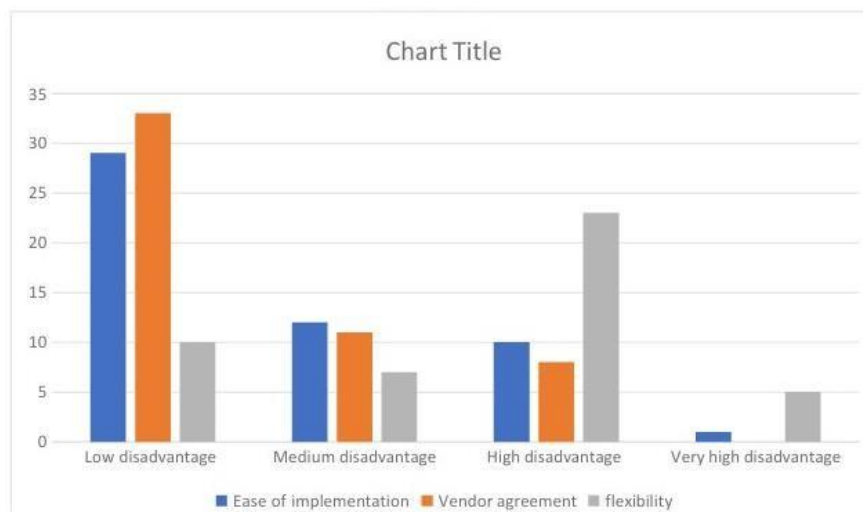
INFERENCE:

- 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 5

Will milk concept will bring change in HMI

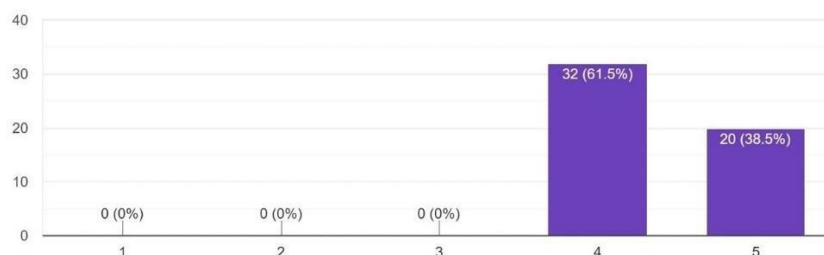| S.NO	Particulars	No. of Respondents	Percentage
A	Strongly disagree	1	2
B	disagree	0	0
C	Neutral	0	0
D	Agree	7	13
E	Strongly agree	44	85
	Total	52	100

CHART 5
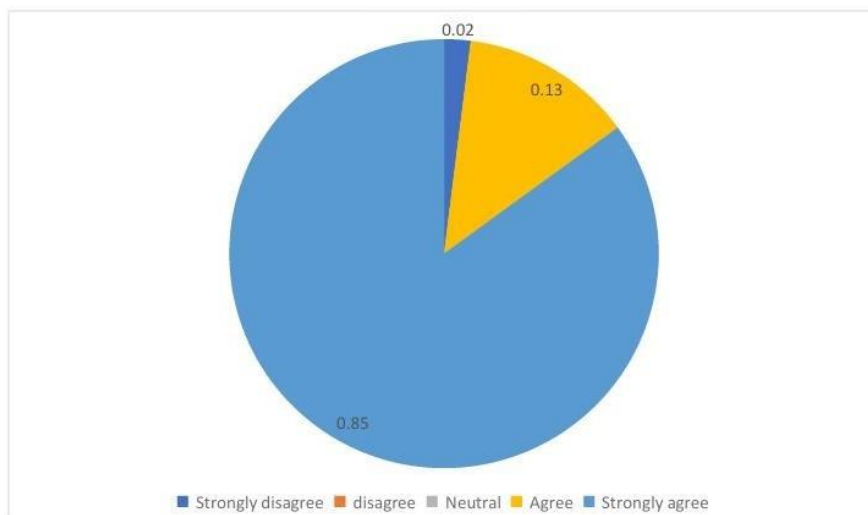
INFERENCE:

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%.

CHART 6

CONTINGENGY TABLE

1) CHI SQUARE TEST:

Case Processing Summary

| | Cases | | | | | |
| | Valid | | 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	5.828ᵃ	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.

RESULT:

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

2) 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

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

Result:

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

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 agreed.

- Majority 54% of the respondents are strongly disagreed.

- 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.

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 number 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 is from the transportation industry. MR deliveries are not only cost-efficient, but they're also a more environmental-friendly logistics option. Fewer delivery trips mean 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 reduce 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.

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