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Gap Analysis of the Workshop of Transportation Vertical

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Abstract*: This paper aims to identify the gaps in cold chain logistic service providers. Data has been collected using on field observations. The proposed methodology has been applied to the case study of a transport and logistics company ABC PVT LTD in order to find an optimal solution for five major processes. Different scenarios have been examined with real data provided by the company. The purpose of this research is to conduct gap analysis for cold supply chain processes namely (i) Fuel consumption, (ii) Maintenance of Trucks, (iii) Trip settlement, (iv) Driver Scheduling and (v) Vehicle Tracking. The results of this study show standard operating procedures or corrections in existing process to be adopted at each phase in these processes to make them more efficient and effective one. The results demonstrated the feasible recommendations to avoid gaps in major five processes with respect to transport operations.

Keywords: Gap analysis, Cold chain, Fuel consumption, Maintenance of Trucks, Trip settlement, Driver Scheduling, Vehicle Tracking.

I. INTRODUCTION

Global Scenario:

The cold chain market is divided as type, product type, application, and region. The cold chain infrastructure types considered in the analysis are refrigerated storage and refrigerated transport. The product types taken into consideration are frozen food products and the relevance considered are fruits & vegetables, bakery, dairy & desserts, meat, fish & seafood. North America accounted for the largest share 40.0% of the cold chain market in 2013. The market is grown-up in regions such as North America and Europe due to the technologically advanced systems for refrigerated storage & refrigerated transport, the rise in demand for perishable foods. The Asia-Pacific region is the fastest-growing and leading market players while considering China as a potential market for growth opportunities. The most important factor determining the growth of rising markets is the increase in consumption of perishable foods such as frozen foods and the government support in these areas. The key (3PL) players in the market identified in this study are AmeriCold Logistics (U.S.), Lineage Logistics (U.S.), Swire Cold Storage Pty (Australia), Preferred Freezer Services (U.S.), and Nichirei Logistics Group, Inc.(Japan).

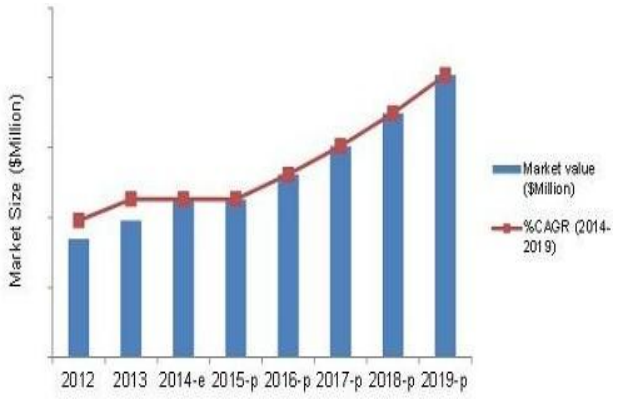

Figure: Market Growth of Cold Chain Supply Management

Cold Chain Market In India:

- Cold Chain is an important infrastructure for agriculture productivity in India.
- Only 2% of fruits and vegetables in India get processed as compared to 65% in USA and 70% in Brazil.
- While 80% of Fruits and vegetables production in USA go through cold storage, only 0.2 % of it goes through in India.
- Wastage of fruits and vegetables due to lack of cold chain facilities have been estimated at INR 500 bn annually.

Figure: Top Player in India of Cold Chain Supply

II. OBJECTIVES

- To conduct gap analysis for the workshop in Transportation vertical.
- To set up a process which will results in cost saving on the basis of above gap analysis

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Background:

- ABC PVT LTD is a Supply chain solution specialist providing Warehousing and Transportation services majorly catering to the QSR and FMCG sector
- In the Transportation vertical, they have a workshop where they refer and ambient trucks are maintained and repaired. However, the setup processes are not followed rigorously.

III. LITERATURE REVIEW

Wang Z. et al [1], pointed out that the total cost and distribution part of cold chain logistics are optimized, while the total cost comprises of cargo damage cost, refrigeration cost, transportation cost, fuel cost, penalty cost of time window and operation cost of distribution centers. The resultant Pareto solution set gives diverse options for a decision maker to select a appropriate cold chain logistics distribution network in the significance of the logistics company.

Sedláček, M. [2], elaborated about the Software SIMUL8, This will help customer to scrutinize bottlenecks in an organization's processes and find most favorable solutions using simulation experiment. Optimization is determined on the organization's warehouse, where a progression of vehicles loading and unloading operations and emerging downtime are discovered.

Corteset al [3], focused on Vehicle Routing Problem with delivery Consolidation (VRPC), a model that considers split deliveries and delivery exchanges between unlike vehicles at specific customer locations (a process referred to as mid-route shipment consolidation). Results show that up to 10 percent savings may be achieved through the VRPC, which engages that the efficiency of last-mile delivery can be enhanced by allowing mid-route shipment consolidation at specific customer's locations.

Tilk et al [4], found that the bidirectional branch-and-price-and-cut approach is notably faster than unidirectional counterparts.

Nizamet al [5], explored that The IoT can inspect the motion of the truck parcel and stays updated about the arriving parcel to the client. The goal of using IoT for tracking and monitoring is due to the excellent benefits it presents.

This chapter provides gap analysis of the workshop of transportation vertical literature broadly organized by flowchart technique. It begins with a presentation of the major transportation processes flowcharts that have persisted in the literature. A detailed examination of the literature is provided within the context of these fundamental solution generation flowcharts. An analysis of the literature, grouped by the solution generation technique used, is then presented.

View Points:

- Fleet (vehicle) management can include a variety of functions like vehicle financing, vehicle maintenance, vehicle telematics, driver management, speed management, fuel management and safety management.
- Fleet Management is a function that allows organization to rely on transportation in business to remove or minimize the risks associated with vehicle investment, improving efficiency, productivity and reducing their overall transportation costs, providing 100% compliance with government legislation.
- These functions can be dealt with by either an in house fleet management department or an outsourced fleet management provider.

AREA	DESCRIPTION
Inbound-outbound vehicle scheduling	To maintain 3-PL logistics, vehicle scheduling is done
Fuel consumption	Main era which decides per case cost
Maintenance	Before starting a trip, maintenance is performed to have a safe and secure journey
Trip settlement	Trip settlement is done for maintain trip Expenses
Drivers Alert	Alerts are given to drivers on speed limits, refer temperature
Fleet tracking	tracking through GPS and Mahindra Telematics software to control route diversions
Vehicle remarketing	After completing maximum life, a vehicle needs to be remarketed to gain extra income

IV. RESEARCH METHODOLOGY

The research design used for the optimum utilization of available resources follows the conclusive research design. The detailed study about the system and all the processes relating to the transportation vertical makes it a descriptive research type. As the study of this project is for two months, which is a short span and also because certain factors are considered for the detailed study, the research design further penetrates to form the cross-sectional pattern.

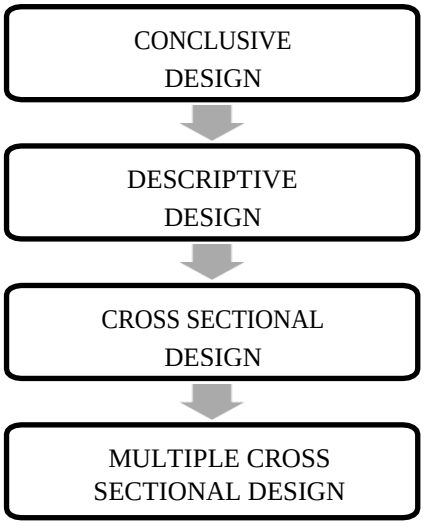


Figure: Research Design used in Transportation Vertical

The multiple cross-sectional designs are undertaken as more than one factor is considered for the study.

Sampling Design:

The type of sampling considered in this study is simple random sampling.

In case of driver scheduling, simple random sampling is a basic type of sampling, since it can be a part of other complex sampling methods.

The principle of simple random sampling is that every object has the equal probability of being chosen. For example, suppose *N* drivers are available in the Distribution Center (DC), but there are only *X*<*N* drivers needs to be go on vehicle, so they decide to chose a fair way to see who will go. Then, everybody is given a number in the range from 0 to *N*-1, and random numbers are created, either electronically or from the record. Numbers outside the range from 0 to *N*-1 are overlooked, as are any numbers previously selected. The first *X* numbers would identify the drivers to go on vehicle.

V. ANALYSIS, RESULT AND DISCUSSION

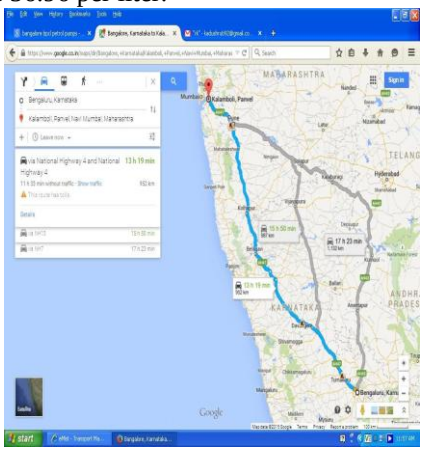
Entire Transportation Vertical represented as follows:

Figure 9: Transportation Overview

Analysis Of Processes Involved In Transportation Vertical

PROCESS 1: FUEL CONSUMPTION

OBJECTIVE-To reduce cost involved in fuel consumption
EXAMPLE-a trip between Bangalore to Kalamboli (veh no. 4606-DRY) Time duration is 13 hrs 13 min
What actually happens is driver asks for fuel diesel rates in Bangalore 56.96 per liter.



MAP 1: CRITICAL PATH TRACING

Case 1: route via nh4 (via kolhapur) if we completely filled the fuel at bangalore only.
Total distance between Bangalore to Kalamboli is 951.5 km by the most efficient way Average of vehicle is 3.6
Total diesel requirement=distance/average Diesel required=951.5/3.6
=264.30 lit
Rate is 56.96
Cost involved=264.30*56.96
=15054.53
If the fuel is filled first for Bangalore to Pune so that driver can cover journey during night and then again fuel filled for Pune to Kalamboli journey In this case, what happens is Bangalore has rate 56.96 and Pune has rate 59.67 which itself has 2.71 rupees profit per lit
That means,
For Bangalore- Pune
Distance=837.4 Average=3.6
Diesel required=837.4/3.6
=232.61
Cost required=232.61*56.96
=13249.46
For Pune-Kalamboli
Distance=119.4 Average=3.6
Diesel required =119.4/3.6
=33.17
Cost required =33.17*59.67
=1979.25
Total cost involved by adding bangalore-pune & pune-kalamboli is,
13249.46+1979.25
=15228.71
Cost saved by filling fuel at bangalore all together is rs.174.18 fuel saved by fuel at bangalore all together is 1.48 lit
(**Risk** involved is driver risk -unnecessary fuel consumption, driver mishandling with fuel)
Case 2: route via nh13 (via solapur)
Time duration is 15 hrs 53 min Total Distance=987 km
If we completely filled the fuel at bangalore only.
Total distance between Bangalore to Kalamboli is 987 km by some other way (NH13) Average of vehicle is 3.6
Total diesel requirement=distance/average Diesel required=987/3.6
=274.17 lit
Rate is 56.96
Cost involved=274.17*56.96
=15616.72
If the fuel is filled first for Bangalore to Pune so that driver can cover journey during night and then again fuel filled for Pune to Kalamboli journey In this case, what happens is Bangalore has rate 56.96 and Pune has rate 59.67 which itself has 2.71 rupees profit per lit that means,
For Bangalore-Pune
Distance=868 Average=3.6
Diesel required=868/3.6
=241.11
Cost required=241.11*56.96
=13733.62
For Pune-Kalamboli
Distance=119.4 Average=3.6
Diesel required=119.4/3.6
=33.17
Cost required=33.17*59.67
=1979.25
Total cost involved by adding bangalore-pune & pune-kalamboli is,
13733.62+1979.25
=15712.87

Cost saved by filling fuel at bangalore all together is rs.96.15
fuel saved by fuel at bangalore all together is 0.11 lit
(**Risk** involved is driver risk -unnecessary fuel consumption, driver mishandling with fuel)

Table 2: Comparison between NH4 & NH13

Route	Direct Distance	Distance In Parts	Bangalore-Kalamboli Direct Fuel	Bangalore To Pune & Pune To Kalamboli Fuel	Direct Cost	Total Cost In Parts
NH4 (time 13hrs 13 min)	**951.5**	**837.4+ 119.4 =956.8**	**264.3**	**232.61+ 33.17 =265.78**	**15054.53**	**13249.46+ 1979.25 =15228.71**
NH13 (time 15hrs 53 min)	**987**	**868+ 119.4 =987.4**	**274.17**	**241.11+ 33.17 =274.28**	**15616.72**	**13733.62+ 1979.25 =15712.87**

Analysis

Savings In Diesel And Costs

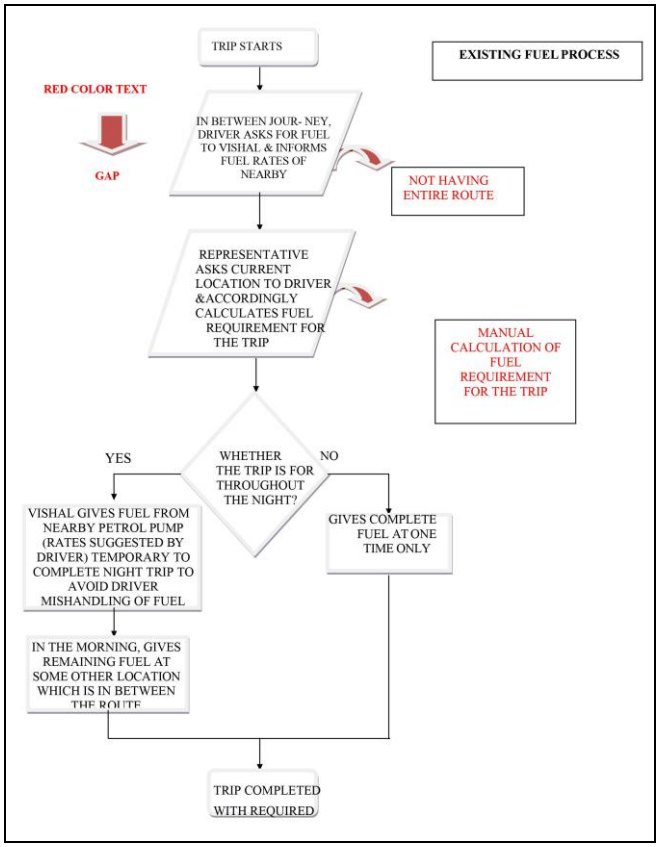
As the above tabular data states comparison between two routes NH4 & NH13:

- Time required, distance to cover, fuel consumption and cost involved is more for NH13 as com- pared to NH4
- Also, it states direct distance, direct total fuel allocation and cost involved have lesser values as compared to distance covered in parts, fuel allocation in parts and cost involved

NOTE:

- NH7 is distance, cost and fuel all the way is too much costly so not advisable this route in any conditions.
- We discussed NH13 because in any case NH4 is not possible then we can adopt NH4 in case of emergency
- Also, allocate the vehicle which is of more fuel capacity i.e. fuel required for complete journey (Bangalore- kalamboli). That is vehicle has fuel capacity=fuel required for complete journey.

Means in this case fuel requirement for complete journey is 264.3 lit. So capacity of allocated vehicle needs to be minimum 300 lit.



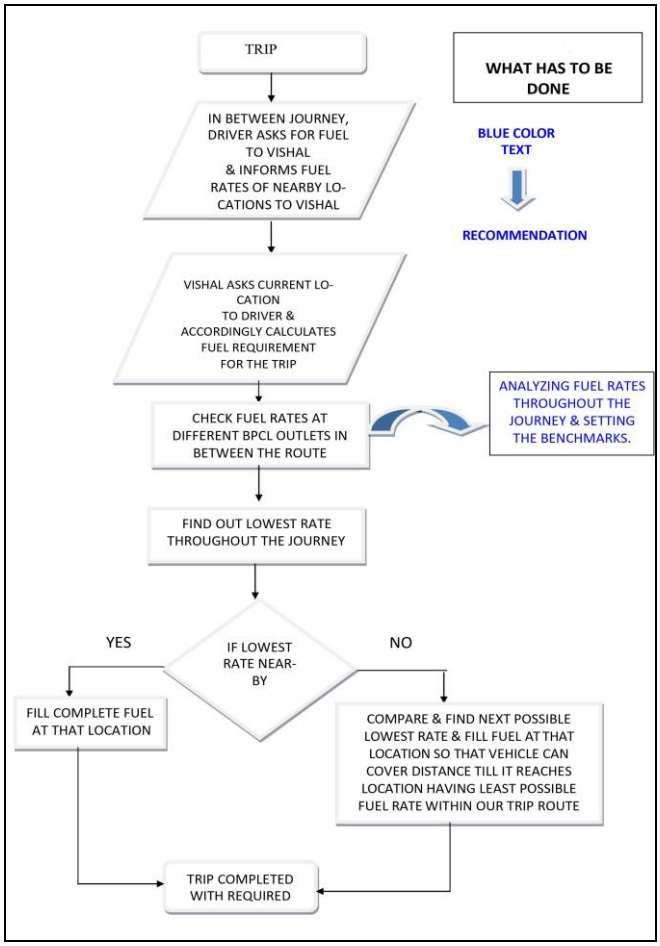


Table : GAPS AND RECOMMENDATIONS ON FUEL CONSUMPTION PROCESS

Sr. No	Gaps	Recommendations	Benefits
1	Fuel analysis of the near- by locations during a trip	Current fuel rates of all the BPCL outlets in-between the route	Least fuel rates in- between the route
2	Carry forward fuel quantity in the list	System changes	Actual quantity and system quantity will match
3	Vehicle average	System changes	Fuel requirement calculation would be more accurate
4	Fixed petrol pump for lo-cal route	Need to set benchmark for local routes	Cost and time saving
5	Manual calculation of fuel requirement	System oriented	More accurate and less manual intervention

Recommendation:

For various trips, analyze diesel outlets with minimum rate in- between the routes for example-For Kalamboli to Hyderabad,

Sr. No.	Name	Location Name	Radius (Meters)	Latitude	Longitude	Distance (km)	Time (HH:MM)	Fuel Rates
1	A	Kalamboli DC	200	19.0453	73.1047	0	00:00	58.29
2	B	Pune, Maharashtra,	2000	18.5206	73.85674	120.3	06:00	59.67
3	C	Solapur,Maharashtra, India	200	17.6599	75.90639	250.6	12:31	58.53
4	D	B091-MCD - INORBIT HYD	300	17.4345	78.38468	298.7	14:56	59.1
5	E	B105 -McDHimayat Nagar Hyder	100	17.4014	78.48685	17.7	00:53	59.1
6	F	B042-Prasad Hyderabad	100	17.4127	78.46543	4.4	00:13	59.1
7	G	B-044 McD – SANALI	200	17.3931	78.47609	3.6	00:10	59.1
8	H	B-134 McD-Hyderabad Tolichowki	200	17.4062	78.40352	9.7	00:29	59.1

PROCESS 2: MAINTENANCE

OBJECTIVE-To minimize cost involved & time required for maintenance in an effective manner.

Problems Involved Are:

1. Tire scrap value not reflected in tire factsheet
2. Cross verification required for the tires
3. In job cart, in maintenance, Logistic Executive gives job cart that should be visible to Spare Part Supervisor whereas Spare Part Supervisor only seems to have job cart entry and not details
4. If you know that the vehicle is reaching its desired distance limit through PM (Preventive Maintenance) & reaching to DC (Distribution Center) then system alert must be given to Spare Part Supervisor as well as to Logistic Executive for maintenance if any PM entry should get highest priority so that maintenance cost will be reduced.
5. PM entry should give alert on due date instead of Spare Part Supervisor to check how much distance, vehicle has covered daily basis through trip settlement report when driver comes to DC & said him that vehicle has arrived. In that case, sometimes it is the possibility that vehicle can cross specific limit of distance say 22000 km.
6. Close job cart done after the vehicle maintenance done time to time but not reflected in the system. it should become inactive that should not able to enter anything but we can add more fields in job cart even after entering out date and time.
7. Some fast moving spares are recommended for stocking to reduce the vehicle downtime (already there is some stock but not all. That can be taken what stock would be required through maintenance schedule in advance)
8. Vehicle maintenance schedule is not maintained time-to-time.

Solutions:

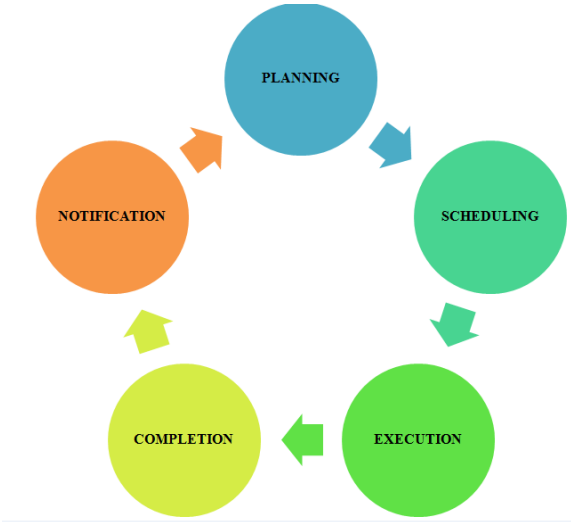
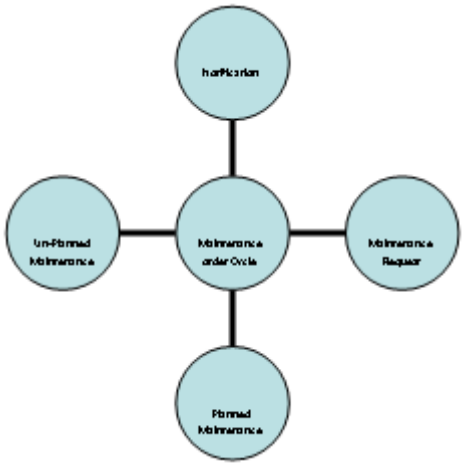


Figure: High Level Process

High Level Process explanation

- Planning orders in advance
- Maintenance orders for all maintenance and repairs
- Four step maintenance order cycle:



- Planning
  - ➢ assesses the maintenance requests
  - ➢ Plans components and time needed
  - ➢ Creates maintenance orders
- Scheduling
  - ➢ Schedules maintenance orders
  - ➢ Releases maintenance orders

- Execution
  - ➢ Vendors or internal shops perform the maintenance on vehicle
- Completion
  - ➢ Verifies maintenance performed
  - ➢ Completes maintenance orders

Case Study

Analysis On One Vehicle: 5682

Tasks:

Vehicle arrives in DC & driver complained about hub greasing & engine oil change

1. Started maintenance at 12 PM
2. Vehicle has 10 tires. First hub greasing is done for rear 8 tires-requires 2 hrs
3. Then, hub greasing is done for front 2 tires-requires 2 hrs more and simultaneously engine oil changed
4. But, time wasted because of not having spare parts available for hub greasing -1.5 hr wasted
5. Scheduled time was 4 pm but because of delay in spare parts availability, vehicle ready at 5.45 PM

Recommendations:

1. As job sheet has distance covered by vehicle, that could be linked with PM entries & also de- sired limit should be given like 22000km so that it will give alert after completing 22000km.No need to wait & manual checking distance.
2. By having visibility of job cart to Spare Part Supervisor, he can take appropriate action for spares in advance.
3. Otherwise, when vehicle maintenance starts, at that time only logistic executive/mechanic should identify which spare parts would be required. List it down and forward it to Spare Part Supervisor so that when other work is going on, in that duration, Spare Part Supervisor could order the spares. Time for receiving ordered spare parts will be reduced.
4. A master vehicle inspection and servicing schedule should be prepared for one year- a wall chart is recommended

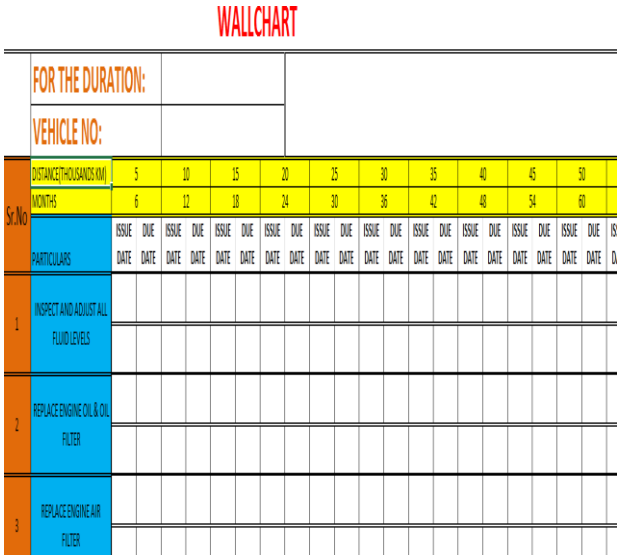
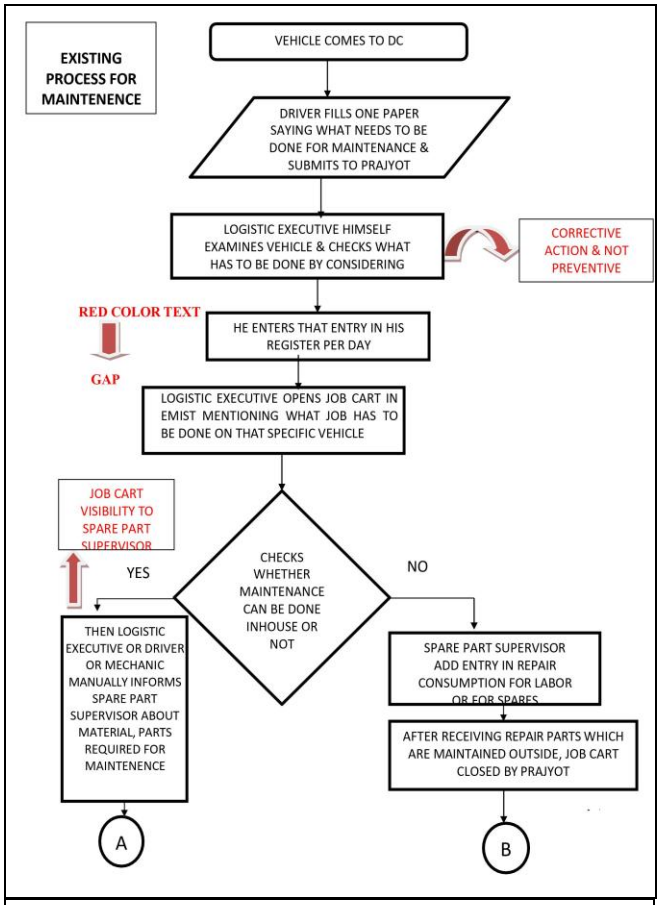
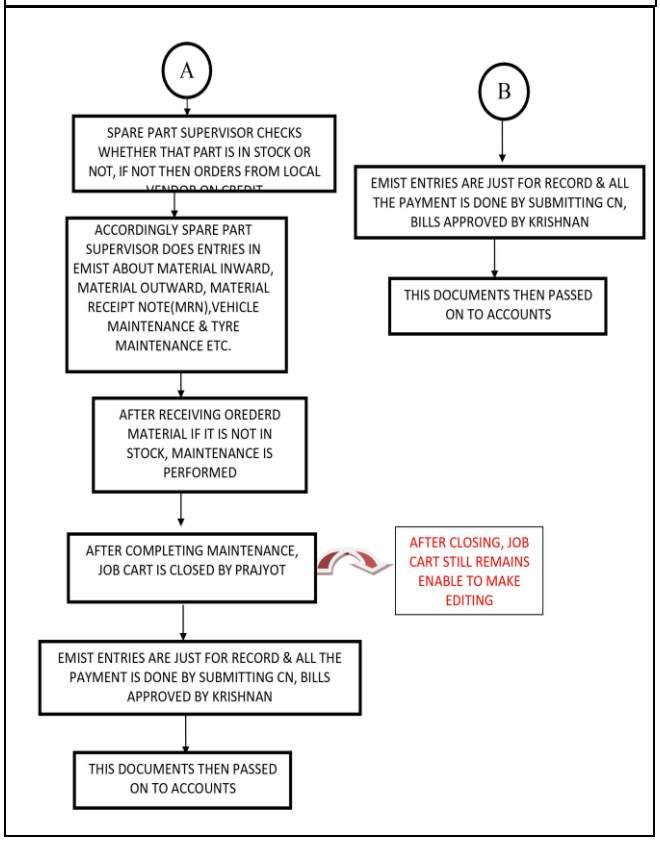
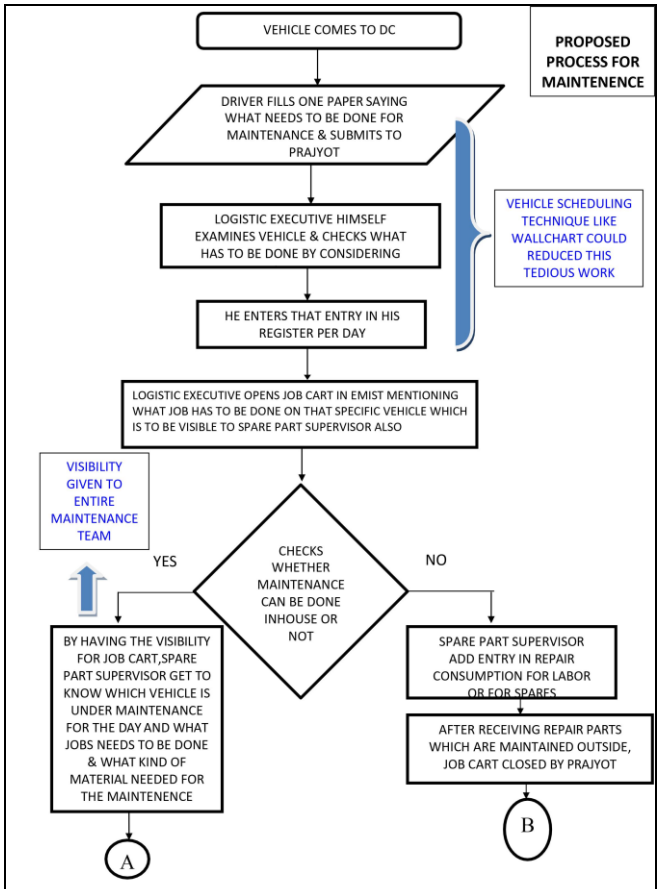


Figure: Wallchart







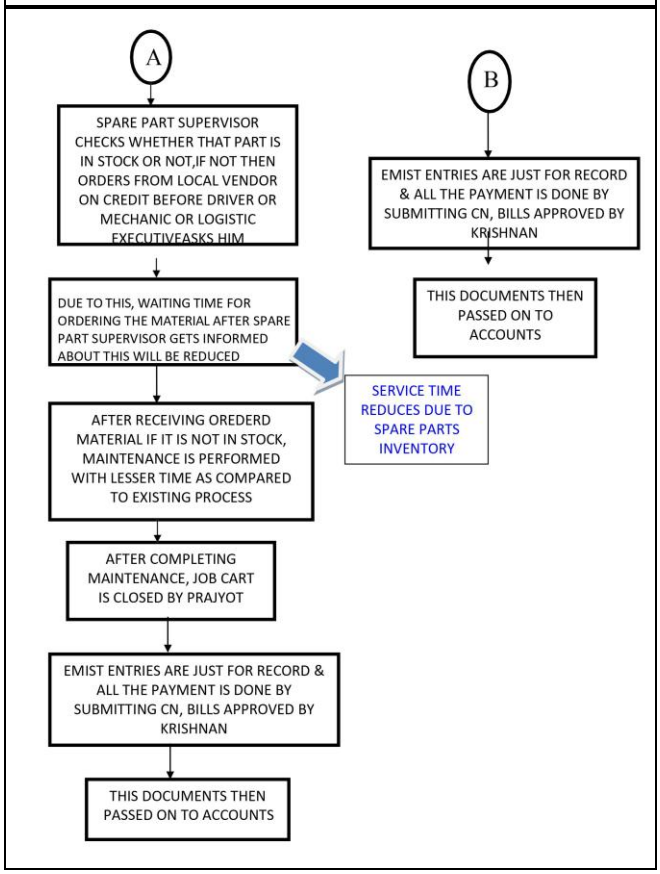


TABLE: GAPS AND RECOMMENDATIONS ON MAINTENANCE PROCESS

	Gaps	Recommendations	Benefits
1	Preventive maintenance entry in the list	It should be active and should give pre-alerts of due dates	• Spare parts availability • Reduces service time • Intimation of vehicle availability • Unnecessary corrective expenses will be reduced
2	Job cart entry remains enable after closing it	Job cart needs to be disable after closing it	Cannot make changes
3	Certain fast moving spares inventory not maintained	Needs to be maintained time-to-time	Reduces vehicle down- time
4	Parts recycling	Reengineering of vehicle parts	• Cost saving Optimum utilization of vehicle parts
5	Vehicle maintenance schedule is absent	Vehicle maintenance schedule techniques like wall charts	Get a pre-alert to both river as well as to maintenance team
6	Tier numbers on vehicle and in the list does not match	• Cross verification of tire numbers • Needs to be updated in system time- to-time	Accuracy in tire inventory
7	Vehicle parts identification	Identification mark (in no's) in all our vehicle accessories	• Misplacing of parts is avoided • Unique identification is given
8	Limited visibility of job cart	Visibility of job cart to entire maintenance team	• Entire maintenance team get notification for the entire day • Waiting time for spares availability is reduced

PROCESS 3: TRIP SETTLEMENT

OBJECTIVE-To find out factors increasing amounts in trip settlement

Existing Process-

- According to driver details designated person checks detail entered by driver and examined it manually
- In manual checking, he checks DRS (Delivery Run Sheet) report for refer readings whether refer is operated more than requirement and settled at desired value only. If operated more than requirement then he asks reasons to driver what was the reason, if the reason is satisfactory then don't take any action and if not then action is taken.
- About toll checks receipts and enters total amount

ANALYSIS

1. **Average analysis:** Fuel consumed calculated for total distance in spite of considering whether vehicle loaded, empty. e.g.For Vehicle no.4606,
(Bangalore- hoskote- dahisarmori-kalamboli) Total distance=1021
In that 23 km is empty and 998 km is loaded
Hence, in reality fuel consumed should be calculated as follows: For loaded,
998/3.6=277.22
For empty, 23/4.1=5.6
Hence, total fuel consumption according to average=282.83

Note:

- In average analysis, this value should be there instead of 268.11
- Also, refer fuel requirement should added in total fuel consumption with its average No. of hrs of refer*average of refer fuel required of refer.

This value should be added in total fuel required along with loaded and empty fuel requirement

2. *Labour charges in trip expenses-*

Labour charges for loading should be permitted which is written on the back of the paper with signature. e.g.

Rs.1800 written back side but given 1850

For every vehicle let's say given 50 more than for 120 vehicle, it would be 120*50=6000

3. *Toll amount-*

Toll amount varies due to double toll naka. has to be fixed and said to driver to take double toll at only once.

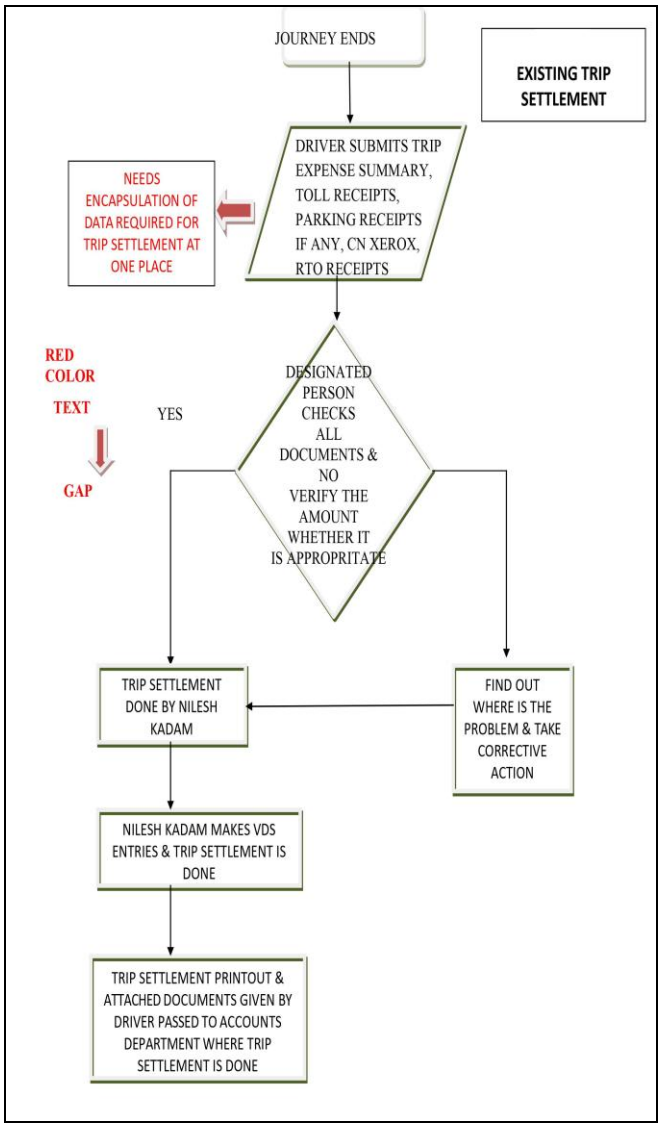
Sometimes due to not having change, driver allows passing and gives lesser toll amount than it has to be. e.g. 5339 in one case, 5340 in other case

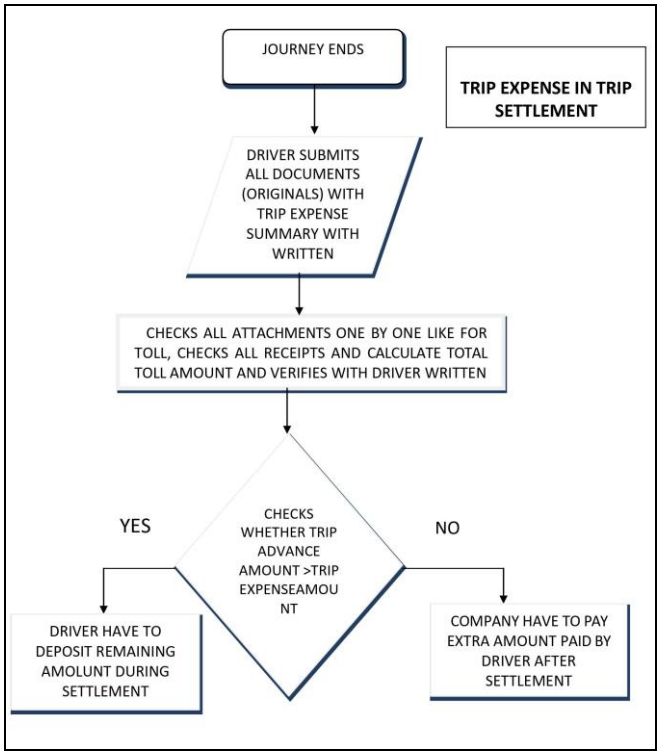
Difference is because of toll taken separately at double toll naka say at kini double toll Naka

Note:

Less amount of Rs.1 also matters a lot when it repeatedly happens and for many vehicles carries forward fuel in vehicle: Carry forward amount is not same as the fuel remains in fuel tank after the trip. It varies all the time.

Hence, actual fuel amount and system fuel amount varies.





	GAPS	RECOMMENDATIONS	BENIFITS
1	Carry forward amount of fuel is not same as the fuel remains in fuel tank	System linkage with earlier records of fuel consumption	1. Let you know accurate amount of fuel without manual checking in Vehicle 2. No need of adjusting variance manually
2	Data gathering	Encapsulation of all the data required for trip settlement at one place	Minimizes time and increases accuracy with transparency
3	No comparative analysis	Comparative analysis must be there for the same trip at different time intervals	• Easy to find out bottlenecks • Needs to set benchmarks for trip advance
4	Toll amount	Total toll amount should be known for all routes	Cross verification enables to compare total toll amount and total of toll receipts to find out the difference

Table: Gaps and Recommendations on Trip Settlement Process

PROCESS 4: DRIVER SCHEDULING

OBJECTIVE-Allocation of available driver on specific vehicle to avoid on-time conflicts and delay in vehicle departure on scheduled time

Existing Process:

1. Vehicle comes to DC for unloading & undergoes for maintenance if any.
2. Then the vehicle is scheduled for the next trip
3. According to availability of vehicles, Dennis and Quinton planned the vehicles and make every- day plan for the demanded deliveries.
4. This plan is then shared with all transportation team and ask ravi to provide drivers for vehicles
5. Then Ravi, depending on the availability & physical presence of drivers, schedule the driver to specific vehicle. (Drivers are hired on contract basis and not on permanent basis)

Let's say, for an e.g. vehicle scheduled are 13 in numbers for a day then driver requirement is 13 in numbers and after getting vehicle scheduled plan, ravi can allocate drivers to vehicles.

6. If driver is not available then If driver requires for second shift then first shift or third shift driver would be asked for extra trip If he is ready then allocated for the vehicle & if not then consider availability of other drivers If this is also not possible then check out the possibility of rented drivers
(As we can delay the trip by few hours but cannot cancel out the trip for the day because of shortage of drivers)

Problems*:*

1. If driver not allocated while loading, unloading then need to find out another driver to dock vehicle from chiller to dry & vice versa and if he is also not available then Ravi has to do it.
2. Driver allocated after the vehicle scheduled & depending on availability of drivers in DC whereas it should be done irrespective of checking whether that driver is in DC or not.
e.g. Plan should be done for every driver say if one driver is going for Mumbai-Pune trip (small distance) on Monday and he is coming back on Tuesday then we can planned out a long journey say Mumbai-Kolkata or Mumbai-Bangalore for him as next trip so that he would also be stressed out and feel relax instead of having two long back-to-back trip & also having two small distance trip back-to-back which also not good for company for proper utilization of labor.

Suggestions:

1. Proper database of driver & his earlier history with vehicle, trip & goods details should be maintained and should be fetch out when hiring him for the similar trip & assigning him the preference for the trip
2. Keep restrictions while allocating driver for national and local routes like national route drivers should be applicable to national route only & local route driver should be applicable to local route only. They should not be interchanged.
3. For local drivers weekly schedule should be prepared like Maximum no. of trip he should covered in a week and for that he must be available within his contract period saying that he is liable to company so that in case of emergency driver shortage won't be there.

Weekly Driver Trip Count:

Driver name	Maximum no. of trip he should cover for the week

4. For national route drivers, for taking the vehicle from one dock to other dock, there must be some adjustment of drivers done prior because after doing national route journey, driver rest must be considered. Organization cannot ask him to dock vehicle during his rest time.
5. For national route, driver must be segregated according to routes follows. Like for Mumbai- Bangalore, certain no. of drivers dedicated. Similarly for other routes like Mumbai-Goa, Mumbai- Kolkata etc.
6. Firstly, driver distribution must have done by following ways:

- Route wise-To certain routes, driver should be allocated route-wise
- Vehicle wise-For specific vehicle, driver should be allocated

e.g.

Vehicle no.	Route	Driver name
5606 MH 06 AC –2515	KALAMBOLI - Aurangabad	XYZ

- Shift-wise-For first shift, second shift, third shift ,night; driver should be clustered
- Experience-wise: experienced driver must be allocated to long trips with main items with more loads. Known locations-at the time of recruitment, recruiter should ask driver about the known locations and routes so that driver doesn't need to rely on DA (Driver Assistant) for route assistance, can rely on DA only for store locations.
- Spare drivers-less experienced drivers must be kept as spare drivers & allocate in case of emergency

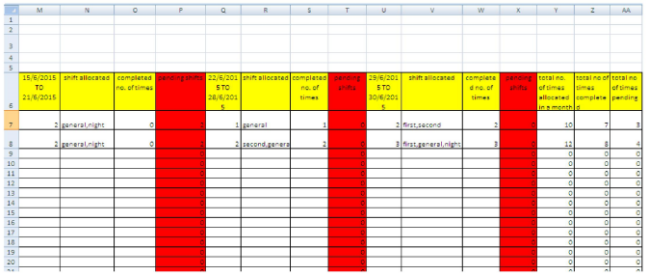
7. Above criteria for driver distribution must be done for every contract renewal
8. DA must be allocated according to driver awareness and experience about route. More experienced driver should get less experience DA and vice versa for effective utilization of DA.
9. Driver needs to be communicated after a regular interval to know and concern about their problems.

Recommendations:

Assign weekly counts to driver to indicate the number of times they may require:

FIGURE: COUNT ASSIGNMENT TO DRIVER

Table: Gaps and Recommendations on Driver Scheduling Process



	GAPS	RECOMMENDATIONS	BENIFITS
1	Driver requirement to dock vehicle from chiller to dry and vice versa	Allocate drivers for DC only to move vehicles inside DC	Avoid delay in moving vehicle from chiller to dry and vice versa
2	Pre-allocation of driver absent	• Pre-intimation to drivers • Spare drivers availability	Driver shortage can be avoided at a certain level
3	Driver distribution strategy absent	1. Route wise 2. Experience-wise 3. Vehicle wise 4. Known locations 5. Shift wise 6. Spare drivers	Clear and sorted information about drivers
4	New driver allocation to vehicle	For the initial period, new driver should be assigned with experienced driver for training and guidance	Risks like accidents, damages, route illiteracy can be avoided
5	Hr policies for drivers	• Reward points needs to be allocated to driver • Training and guidance needs to be updated time-to-time	Driver gets guide-lines towards driving for company's consignment
6	Driver shortage	Needs a proactive risk management plan	Addresses to issues responsible for driver shortage

PROCESS 5: VEHICLE TRACKING

For tracking a vehicle, control tower is operated 24*7 to trace vehicle whether in route or not and if it is out-of-route, immediately intimated to driver. Also, for cold chain, maintenance of refer temperature is very important and that can be controlled using control tower

TABLE: GAPS AAND RECOMMENDATIONS ON VEHICLE TRACKING PROCESS

	GAPS	RECOMMENDATIONS	BENIFITS
1	Quality of sensors	Needs to be of good quality	Generates accurate temperature report to have control on refer activities & temperature violations
2	Harsh braking and rapid acceleration alerts not given	Should be given via control tower	Reduces maintenance & accident problems
3	Out of route notification / route diversion notification	Notification must be given via email to control tower	Alert can be given to driver and can concern with him
4	Temperature violation	Temperature violation alarm	• Instant attention can be given and corrective action can be taken • Helps to maintained product temperature
5	Manual switching off of refer	Refer off alarm/alerts need to set the logic of duration of refer being off	Differentiate between the defrost cycle and the intentional switch off.
6	Km run in distance report	Drop down list of vehicles in distance report	Easy to trace km run of our owned fleet and hired separately

Recommendations In General

- HR POLICIES FOR DRIVER:

HR policies needs to be revised so that drivers should feel that their presence is valuable to company

- COLLECT AND EVALUATE DRIVER COMPLAINTS AND SUGGESTIONS:

Similar to employee empowerment, driver should also be empowered for suggestions and recommendations.

- REWARDS & RECOGNITION:

Necessary for motivation and appreciation

- CHANGE MANAGEMENT

There should be a proper management for changes that happens in the system and to handle different reactions against it

- AUTOMATION

To reduce manual intervention and to increase accuracy, efficiency and effectiveness

- CONTINUOUS IMPROVEMENT

Needs to have continuous improvement along with the time to maintain the system up-to-date

- MONITORING THE WORKING

Continuous monitoring and observation necessary for proper working

- ADAPT NEW METHODOLOGIES AND TECHNIQUES TO REDUCE COST LIKE CROSS DOCKING

Up gradation in the existing system requires the execution of productive work which will be beneficial for future perspective in terms of cost and time.

VI. CONCLUSION

1. To save cost involved in fuel consumption, the fuel filling locations need to indentified and fixed with respect to fuel prices at that location.

2. To minimize cost involved and time required for maintenance in an effective manner, it is necessary

i. To track spare parts of vehicle which are in use

ii. To monitor inventory of spare parts for planning Preventive Maintenance

iii. To make the job cart visible to concern process owner

3. Updating the database as real time information flows in the system and it should be maintained with respect to

i. Ideal fuel requirement (min-max) with respect to distance and considering traffic conditions

ii. Toll amount with respect to location

4. To avoid the unavailability of drivers, drivers database has to be maintained with respect to

i. Rout wise

ii. Experience wise

iii. Vehicle wise

iv. Drivers available on call

Human Resource policies have to be communicated from time to time for new joined drivers.

5. To track the vehicle, technology usage like censors which will notify temperature, distance travelled using GPS, harsh driving alerts and to notify rout diversion is necessary wherein the control point is kept centrally.

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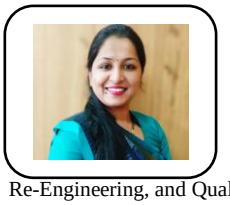

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