

Cost Factors of Road Freight Transportation for Sustainability in Unorganized Sector of Third Party Logistics Service Providers in Urban India

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Abstract:

The Transportation Industry which is the main part of Third Party Logistics (3PL) service provider has been going through hard time in India as majority of the players are in unorganized sector not very educated with little or no knowledge of new technology and trends, having one or two trucks in there fleet due to which they can't calculate the optimum cost of freight they should charge so as to have a sustainable business. This paper highlights the structure of the trucking industry comprising its core actors, the providers of the tangible elements and support services, present detailed comparative cost factors of Road Freight Transportation for sustainability of small Truck operators in the long run. It attempts to determine and categorize cost factors from a different point of views which include On Road Cost, Maintenance Cost and Asset Cost

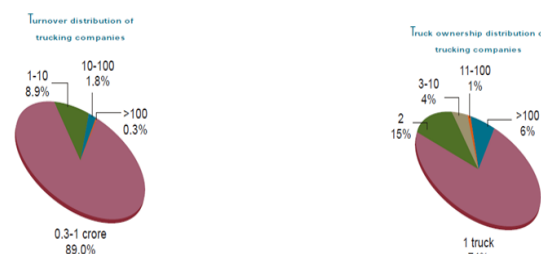
Keywords: 3PL, Unorganized, Sustainable, Cost Factor.

I. INTRODUCTION

Logistics is an important part of the business economic system and is a major global economic activity. The activities like freight transportation, warehousing, material handling, protective packaging, inventory control, order processing, marketing, forecasting and customer service are the basic parts of Logistics Industry [4]. Third Party Logistics (3PL) has been the main external logistics service provider offering single or multiple logistics activities to its customers, which typically is on contract basis. 3PL has many definitions and interpretations, there is no uniform or standard definition that seems to satisfy academic researchers as well as company managers.

The concept of 3PL is a recent past culture in India which mainly deals with single activity of Transportation, as the logistics and supply chain management sector is very informal and fragmented and most of its actors are not very sophisticated [5], with 75% percent of the trucking 'companies' are single truck operators and almost 90

percent of trucking companies have a turnover of less than INR 10 million [6], consisting of only one or two persons which are unorganized and whose workload is very volatile.



Source: Logistics Summit 2007

Figure 1: Turnover and Truck Ownership Distribution of Trucking Companies

The large number of operators of the trucking industry has been the result of lower capital requirements, ease of obtaining truck driving licenses and permits and low mental skills as compared to physical abilities [1]. This

has resulted in a cut throat competition in the Trucking Industry. With the dependence on the brokers who give them business, the small operators just provide the haulage service. The small operators are involved mainly in the physical movement of goods and depend on brokers and other fleet operators who, in turn, depend on booking agents for obtaining business. In addition to slowing down the business, these layers of intermediaries eat into truckers' margins and add to their operating costs. For every INR 100 a shipper is willing to pay for a shipment, only INR 80 reaches the trucker making the delivery. The remaining amount is absorbed as a commission by brokers and agents [7], also trucks can be idle for 25–30% [8] of the time due to inefficient demand/supply matching.

As the small operators are not very much educated and operator's profitability is a function of freight rates and operating costs with Truck freight rates decided by cargo operators which is governed by demand for transport. On lower demand, operators to avoid keeping trucks idle [12] works on lower freight rates without considering the long term expense making the business non-profitable [9].

There has been many studies and reports which have highlighted that transport Industry has become a loss making Industry for the small operators as due to not having access to the new technology driven tools, being uneducated and dependency on broker for loads [13].

The main objective of this research is to understand the various variables of cost estimation/ calculations of freight for small Truck Operators which takes into account the short term and long term expenses. For identification of cost variables Mallard and Glaister (2008) classifies transport costs according to their nature as: fixed costs, variable costs, and semi-variable costs. Oum (1979) [16] mentions in his paper that a cost function for freight transport can be classified as

$$C(Y, P_K, P_L, P_t)$$

Where

P_K is a rental price of capital,

P_L is a price of labor, and

P_t is prices of freight transport services

Lingaitiene (2008) [13] proposes that a function of transport costs is:

$$Z = \sum C + \sum T(t) + \sum D$$

Where Z represents the total costs of transport; C is technological costs of transport; T (t) is the total time expenses; T is time of transport, loading, and storage; t is relative expenses in terms of time; and D is insurance expenses.

Butler et al (1996) [15] gave three equations for transport cost model

Total Transportation Cost = Capital Costs + Operating Costs

Where

Capital Costs = Facility Cost + Equipment Costs

Operating Costs = Facility maintenance costs + Equipment costs + Transport costs + Traffic costs + General Costs

II. METHODOLOGY

In order to identify the cost parameters of Road Transport and their effect on the overall cost a focused survey and data collection has been done which has kept in view the need for identification of expense cost parameters in third Party Logistics service provider in unorganized sector of urban India. For this interview of focus group and data collection of Trip Expense of trucks moving from central India to all Parts India was conducted the list is given in the table 1 with sample size as below:

S.No.	State Name	No. Of Trips From Central India
1	Madhya Pradesh	121
2	Uttar Pradesh	75
3	Delhi	65
4	Haryana	23
5	Bihar	78
6	West Bengal	78
7	Telangana	106
8	Andhra Pradesh	110
9	Rajasthan	123
10	Gujarat	87
11	Maharastra	116
12.	Jharkhand	41

13.	TamilNadu	35
14.	Punjab	28

Table 1: No. Of Trips Made By various Trucks to Various States from Central India (Sagar/ Satna/Jabalpur)

III. RESULTS

Modified cost components Per KM Per Ton of Load for the small Operators who are 3PL Service provider in unorganized sector of urban India has been developed from the analysis of the above collected data and from Lingaitiene (2008)[14] and Butler et al (1996) [15]. The modified composes of the following inputs as per author:

Total Cost = On Road Travel Cost + Maintenance Cost + Fixed Cost

a. On Road Cost: It Amount to the expense that occur during the completion of Trip.

On Road Cost = Commission/Loading/Unloading Cost + Fuel Cost + Toll Taxes + Miscellaneous Cost

1. Commission/Loading/Unloading Cost: This is the Labor cost that is to be paid for loading and Unloading of Goods into the Truck. Commission is the amount paid to the Broker. This is 9.55% of the total On Road Expense.

2. Fuel Cost: This is the cost of Fuel that is to be paid for completion of Trip. This is 58.75% of the total On Road Expense.

3. Toll Taxes: While moving on the National/State Highways Toll Taxes are to be paid by the Trucker for using the roads. This is 11.00% of the total On Road Expense

4. Miscellaneous Cost : This cost include the Daily allowance for the Driver and the Cleaner, any maintenance done during the trip like repair of tries, top up of Engine Oil and other small repairs if required on the way. But the major part of this is the "Danda Tax" that is to be paid to the Police as bribe which may account to 50% of the total Miscellaneous Expense. This is 20.70% of the total On Road Expense.

b. Maintenance Cost: This is the cost which is required to be paid on periodic basis. The main component of this are :

1. Tire Replacement. This is 63.00% of the Maintenance Expense.

2. Lubricants for Engine, Brakes, Gear Box, Transmission, etc. This is 6.50% of the Maintenance Expense.

3. Body Repair and Maintenance. This is 6.00% of the Maintenance Expense.

4. Clutch Repair and Maintenance. This is 4.50% of the Maintenance Expense.

5. Fuel Pump Repair and Maintenance. This is 3.50% of the Maintenance Expense.

6. Suspension Repair and Maintenance. This is 1.50% of the Maintenance Expense.

7. Engine Overhauling Repair and Maintenance. This is 5.00% of the Maintenance Expense.

8. Tire Greasing. This is 5.00% of the Maintenance Expense.

9. Miscellaneous. This is 5.00% of the Maintenance Expense.

c. Fixed Cost (Asset Cost): This cost includes:

1. Depreciation: It is defined as the amount that should be recovered per year from the vehicle so that full amount is recovered during its life time. The average life of a truck has been considered as 12 Years. This is 23.00% of the Fixed Cost.

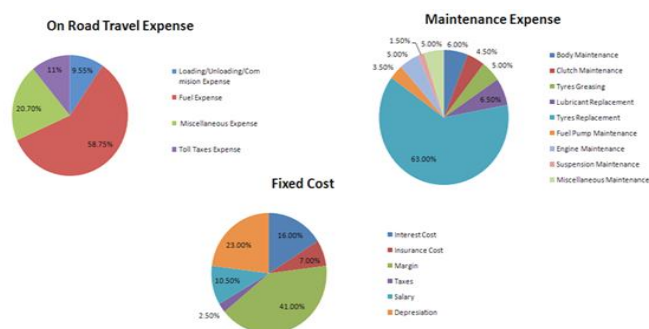
2. Interest Payments: This is the amount that is paid per year additional to the principal amount on the loan. This is 16.00% of the Fixed Cost.

3. Salary: The amount that is paid to the Driver and Cleaner of the Truck. This is 10.50% of the Fixed Cost.

4. Taxes: Amount Paid to the State / National Authorizes against permission for ownership of truck. This is 2.50% of the Fixed Cost.

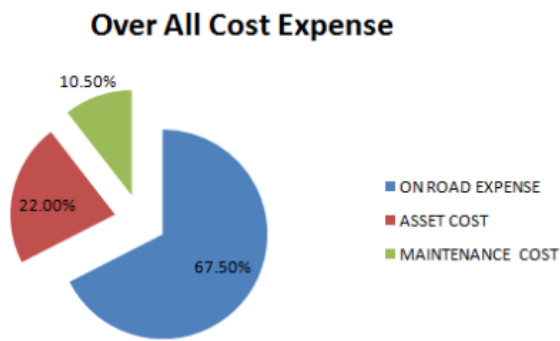
5. Insurance Premium: Amount Paid to Insurance Company as a safeguard for damages to the Vehicle, Person travelling in the Vehicle and any Third Party if comes across accident with the Vehicle. This is 6.75% of the Fixed Cost.

6. Margin: Amount that the person owning the truck should earn. As per Income Tax Act section 44AE per month income of the truck owner if audit of the income and expenditure is not done is equal to the Gross Vehicle Weight. This is 41.00% of the Fixed Cost.



Source : Author

Figure 2: Various cost parameters and their ratio part Per KM Per Ton



Source: Author

Figure 3: Total Cost Distribution of Freight Per Km Per Ton

IV. CONCLUSIONS

From the Data Analysis using the IBM SPSS Software it has been found that of the total cost about 2/3 cost expense takes place during the execution of road trip from Loading/Unloading of the Goods to destination, 1/10 cost expense are required for Maintenance which is spend over time whereas 1/5 cost is the fixed cost which do occur irrespective whether the Truck is in operation or not. The calculation has been done for a 50000 Kms Per Year average run of truck on Per Km Per Ton basis.

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