



Research Article

ISSUES AND OPPORTUNITIES OF TRUCK OPERATING COSTS IN INDIA

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ABSTRACT

An Integrated Research and Action for Development (IRAD), report finds that the trucking industry is vulnerable to higher fuel costs, and supports the earlier evidence that the fuel costs account for around 55 per cent of their total operating costs. The industry’s weakness is primarily grounded in structural constraints that have squeezed profit margins, The industry suffers from oversupply of trucks due to the lack of training stipulations, relaxed registration requirements and easy financing. Eighty per cent of truck operators are small truckers who own less than five trucks. Such small operators cannot reap the benefits of economies of scale and cannot afford to obtain the necessary business information and thereby depend on brokers.

Due to oversupply of trucks and fierce competition, freight rates are mostly determined by demand for trucking and thus, increased fuel costs have little influence on them. But fuel costs being the major cost component of the total operating costs, truck operators are vulnerable to increased diesel price.

Since January 2013, the Indian government has introduced gradual increases to the price of diesel. Fuel subsidies have significantly contributed to the deterioration of India’s fiscal balance. Last year, under-recoveries-the difference between a desired price (based on international prices and other cost elements) and the actual (depot) price charged to dealers-cost INR 81,192 crore (USD\$15 billion).

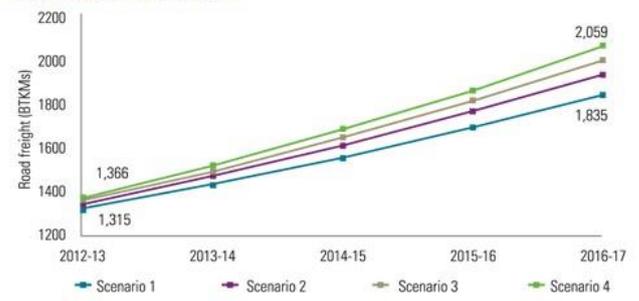
A substantial amount of evidence suggests that a reduction in diesel under-recoveries will have significant fiscal and economic benefits to India’s economy as a whole. However, higher prices will negatively affect industry and diesel-intensive sectors-of which the trucking industry is one of the most obvious. The article focus on allocation of variable cost components in the trucking industry and the techniques that are available to reduce the operational costs currently there by increasing the truck operators profitability.

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INTRODUCTION

About half the goods transported in India are carried by truck and the lorry operator’s profitability is a function of freight rates and operating costs. Truck freight rates are in turn governed by demand for transport, the number of freight trips and capacity utilization. When demand is weak, part of the fleet is grounded and fewer freight trips are made every month. In such cases, freight rates fall as operators try to avoid keeping the trucks idle. Road transport continues to be the dominant mode of transport in India despite the country being home to one of the largest rail networks in the world. Poor design and maintenance of the roads coupled with rash driving has made India’s roads the most unsafe in the world. Corruption and poor traffic management add to the sector’s woes. Road transport is the primary logistics provider in India. In the last few years, roads have over taken rail in terms of freight movement. As the backbone of an economy, the logistics sector has to provide cost-effective, prompt and reliable transportation of goods

Projected road freight market



Note: Road Freight Elasticity with respect to GDP = 1.2  
Source: "Passenger and Freight Traffic Assessment in the Twelfth Five Year Plan", Ministry of Road Transport & Highways' Report, September 2011; KPMG in India analysis

Scenario	GDP growth	Freight CAGR
1	6.1%	7.3%
2	8.0%	9.6%
3	8.5%	10.2%
4	9.0%	10.8%

Sources: <http://www.kpmg.com/in/en/issuesandinsights/articlespublications/investing-in-india/pages/tl-june12.aspx>

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Road transport is largely in the hands of private parties, each with a small fleet of trucks of the single-axle type. Most truck owners in India have less than five trucks; the 'ownership profile' has given rise to a number of middlemen exerting varying levels of influence on profitability and efficiency. A significant player in the movement of goods, the trucking industry is highly competitive. Factors that plague truck transport include low capacity utilization, poor road quality, vehicle overloading, high transit times, barriers to free movement and safety concerns. Low utilization results typically from trucks being overloaded and underpowered. Fluctuating fuel prices and high toll charges increase the running costs of the trucks.

## LITERATURE REVIEW

Truck operating cost for each firm can be divided into fixed and variable costs. Fixed costs are insensitive to the volume of output, but variable costs change with the level of output. Daniels (1974) divided vehicle operating cost into two different categories, running costs (includes fuel consumption, engine oil consumption, tire costs and maintenance cost) and standing costs (license, insurance and interest charges). Daniels identified speed as the most important factor in fuel consumption and found maintenance costs rise with increase in speed. If fuel consumption and maintenance cost change, operating cost will change as well. Vehicle size is another factor that affects fuel consumption and thus influences operating cost. Watanatada (1987) divided the variables that affect truck operating cost based on truck characteristics (weight, engine power, maintenance), local factors (speed limit, fuel price, laborcost, drivers attitude), and road characteristics (pavement roughness, road width). McMullen (1987) estimates a log-linear truck costing model for truckload firms (TL) using ton miles, average length of haul, average load, average shipment size, insurance payments (per ton mile) and the utilization of brokerage firms (rented ton-miles divided by total ton miles) as dependent variables. The results presented evidence of constant returns to scale. TL firms may produce the same output in terms of ton-miles, but may carry different commodities with varying weight loads and lengths of haul. McMullen and Stanley (1988) attempt to account for this by framing the cost function as a function of outputs, input prices, and firm attributes. The measure of output they used was ton-miles, the input prices included prices of capital, rented capital, fuel, and labor. Cost estimates were obtained by employing a translog model. Waters (1997) explains different costing methods that are useful to estimate the relationship between outputs and costs. One of the methods that has been used in transportation studies is the statistical costing method. In this method the relationship between outputs and costs is estimated using different statistical techniques. Multiple regression analysis shows how costs change by changing any of the variables. Managers need to have enough information about their costs to make the right decision about the type of services to provide and the prices to charge (Braeutigam, 1999). Economies of scale have been analyzed for a variety of modes and Barnes (2003) estimated the operating cost for commercial trucks based on fuel, repair, maintenance, tires and depreciation costs. He also considered adjustment factors for cost, based on pavement roughness, driving conditions and fuel price changes.

## Objectives

- Brief understanding of calculation of operating costs in trucking sector.
- Current issues of operating costs in transportation.
- Opportunities available to reduce the operational costs in the current scenario.

## The variable cost components in trucking industry.

**Fuel:** – Fuel price is the biggest pain-point for most transporters and this variable depends upon the current market rates of crude oil. Fuel economy on the other hand is a function of engine horsepower, speed, terrain, wind, and weight. At the same time speed is a function of engine horsepower, terrain, wind and weight. Since truck manufacturers manufacture competitive engines at the prevailing raw material cost and sell at competitive prices fuel economy is controlled by adjusting speed.

To calculate the *average fuel cost per km* we need to have the GVW of the truck (loaded and empty), average speed is assumed to be 20 km/hr, diesel price in India is assumed to be Rs.60, also the truck is said to be loaded for 50% of time. First we need to calculate the diesel cost/km for a loaded truck and then for an empty truck. Now the average diesel cost/km can be calculated by simply summing loaded and empty diesel cost per km and then dividing by the percentage of time the truck is empty.

**Labor Charges** – Labor in terms of helper charges in India are not uniform, often the driver themselves bring along family members to help along the trip. Most common parameters for measuring are Labor charges per km and Labor charges per hour.

To calculate the labor charges, first the labor rate per mile (LM) is calculated, then the wait time (WT) and the time the labor will spend travelling in the truck is calculated, the sum of which is then multiplied with the Labor rate per hour (LH), the result obtained is then added to the Labor rate per mile and finally divided by the trip distance (TD).

$$\text{Labor Charge} = (\text{LM} + ((\text{TD}/\text{S}) + \text{WT}) * \text{LH}) / \text{TD}$$

**Tire Cost** – The combination of tire cost and tire wear & tear makes up the tire cost. As is obvious, tires are weight sensitive and wear more if more weight is applied. They are normally calculated in terms of cost per tire and miles per tire. Chinese brands are also easily available in India but most transporters and truck owners are picking up on the use of radial tires. Earlier radials were not preferred because they were said to increase resistance and hence decrease mileage and were considered a sunk cost because of the high replacement cost.

**Maintenance and Repair Cost** – Maintenance and repair costs are a function of the age of the vehicle, route driven on, driving style, type of freight transported and the driving conditions. Almost all truck manufacturers provide component warranty which can be extended for a longer period of time.

In India, the service cost per vehicle per km comes out to be Rs. 0.10 per km, this may vary up to +25% if the truck is overloaded or in case driven empty or driven below full capacity. Therefore maintenance and repair cost per km is 0.10 +- 25%. Once we know the GVW for the loaded and the empty truck we can calculate the maintenance and repair cost per mile. The total variable cost per mile is the sum of maintenance and repair cost, fuel, labor and tire cost.

**Issues in Trucking Sector**

Higher borrowing costs and a 24% increase in the price of diesel in the past 12 months is hurting the margins of truck operators, especially small fleet owners (with six to 20 trucks), who make up 75% of the market and are the worst hit in the supply chain. Higher fuel prices have dealt a big blow to road transporters because fuel accounts for 55% of a transporter’s operating costs, according to study by Transport Corporation of India LTD 2012 in association with Indian Institute of Management, Calcutta.

Truck makers have been hit too because of a drop in demand for new vehicles. Truck sales in India have been declining for 20 months in a row, according to the Society of Indian Automobile Manufacturers (Siam), an industry lobby group. The impact is most pronounced in the heavy duty trucks that are deployed for long-distance haulage. Sales of such vehicles fell sharply by 29% to 95,000 units from 133,489 units in the seven months to October compared with a year ago, Siam says. Truck manufacturers, who have been operating at 40% of installed capacity, don’t see any hope of recovery just as yet and Tata Motors which sells one in every two trucks bought in India, saw overall commercial vehicles sales drop 22% to 1,98,266 units in the month of October 2015 compared with a year ago. To be sure, trucks have been idling not only because of the freight volumes shrinking, but also due to a shortage of drivers A well-meaning government notification has complicated matters by raising the educational bar for truck drivers. To ensure road safety, in 2007, the roads ministry made it mandatory for drivers transporting hazardous materials such as chemicals, kerosene and diesel to at least pass the class X examination; those who carry regular cargo need to have studied at least until class VIII.

The slowdown has not spared large fleet operators either. According to TCI Supply Chain Solutions, the company’s cash flow has remained positive, but operating costs has been going up. The company’s operating margins shrunk to 4.46% in the September quarter from 5.15% a year ago.

**Savings in The Operating Costs**

ACC Limited has reported almost 5% savings in operations cost at its Tikaria plant in Amethi due to implementation of Radio Frequency and GPS based logistics management .The company had deployed Radio Frequency Identification Device (RFID) and Global Positioning System (GPS) in logistics operations under a pilot project. While, RFID tracks the historical data of the truck and time taken from Gate In and Gate Out, GPS tracks their movement outside the plant. A truck, which earlier took 4-5 hrs for loading until it exited the gates, is now taking one-and-half hours. This enables the faster movement to destination, thus saving on fuel cost and saving time both for the factory and the truckers.

Aemetis Inc. recently announced that biodiesel sales activity is accelerating in India with truck operators in the logistics industry. Aemetis has expanded sales activity in India since government of India allowed biodiesel manufacturers to sell to customers directly, without distributing through the three national oil marketing companies. The Indian diesel market is currently estimated at 25 billion gallons per year, which is significantly larger than the current gasoline market of 5 billion gallons per year.

According to a study conducted by Nielsen Research for the Department of Petroleum Planning and Analysis, Ministry of Petroleum and Natural Gas, Government of India, trucks consume about 30 percent of diesel fuel annually in India. Diesel use by trucks equates to 7.5 billion gallons of annual consumption in India, of which more than 3 billion gallons is consumed in Southern and Western India providing a potential source of significant demand for the Aemetis biodiesel plant in the state of Andhra Pradesh. Large truck fleet operators in India are taking the opportunity to decrease fuel costs and improve the environment.

Tire maintenance is also major factor in deciding operator profit. Customer choice in the commercial vehicle segment is slowly tilting in favor of radial tires as these tires can enhance profits as they offer better mileage, durability and performance.

Metric	Bias	Radial
Price (Rs)	13,000	17,500
Life of new tyre (Km)	55,000	100,000
Cost per retreading (Rs)	3,800	4,200
Total cost of retreading (Rs)	7,600	12,600
Increase in life after retreading (Km)	82,500	225,000
Total life of tyres	137,500	325,000
Retreading Possible (Times)	2	3
Mileage (Km/l)	4.5	4.7
Diesel Cost (Rs/l)	37.8	37.8
Fuel Cost/Km (Rs/Km)	8.4	8
Effective Cost/Km (Rs/Km)	8.5	8.1

Average Indian Radial Vs Cross Ply T&B tyres  
Source:<http://indiatransportportal.com/radialisation-part-iii-different-types-of-radial-tyres-15160>

**CONCLUSION**

Most transporters use technology to aid in timely delivery, also large retailers have begun to understand the sustainability of the independent trucker and are increasingly using the same trucker for the same client over the same route. This reduces the task of truck searching and improves customer experience.

In the long term, structural changes need to be introduced in the industry, such as establishing modern computerized exchange networks to match demand and supply for haulage services (leading to less dominance of brokers), introducing training for truck operators, examining the finance to truck operators and improving mileage of trucks.

In the short-term, there are steps the central and state governments can take to ease the pressure on truckers as fuel prices rise. For example, toll plazas need to be modernized. If the toll stoppages are minimized, more trips are possible in a month, which would improve business for the industry.

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