Backhaul Utilization Trend and Trucks Turnaround Time (TAT) in Indian Logistics System

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***Abstract* - The purpose of this paper is to provide insights on the validation of the efficiency of TAT and Backhaul in Indian logistics system. Both exploratory and analytical research design was adopted for this research study. Logistics managers in selected sectors were chosen as samples for the study. Cluster sampling method was adopted to derive 186 samples from the Universe. A self-administered structured Questionnaire was used to collect primary data. This research study would contribute to the existing body of knowledge or literature by advancing the understanding of TAT and Backhaul in Indian logistics system. The researcher has studied only the selected factors influencing to validate efficiency of TAT and Back Haul in Indian logistics system. This study indicated that the factors influencing to validate efficiency of TAT and Backhaul in Indian logistics system undertaken for the study are cost estimation, forecasting, reduction in procurement cost, avoid wastages, reduce manpower, outbound logistics relations, internal relations between logistics and material manager.**

Keywords *- Back Haul, Turnaround Time (TAT), Cost Estimation, Reduce Manpower and Outbound Logistics Relations*

1. Introduction

Recently countries are gaining opportunities and confronting confront obstacles arising from global supply chain integration [1]. Cost reduction is a challenging issue and it has been observed that most companies often try to cut headcount to achieve quick cost reductions. This method of cost reduction is not always the best strategy to adopt. To begin with, cost reduction involves understanding all costs and segregating them into variable and fixed costs. It is crucial to measure the correct parameters and processes. The measurements should be meaningful and pegged against suitable volume indicators. Starting with the bigger picture in mind and then going into intricate details is the key.

2. Back Haul Utilization Trends for Trucks

A backhaul, refer to the trucking industry, it is the return trip of a commercial truck that is transporting cargo over all or part of its return journey, from destination back to the originating destination. Freight brokers and motor carriers depend largely on each other for backhauls. Once the delivery of the customer's freight is complete, motor carriers require their trucks to be back to the home base as quickly as possible in order to cater to another load for one of their prime customers. Upon the unavailabity of the required vehicle when a prime customer calls results in a lost revenue opportunity as the customer is most likely to call another carrier. Most Carriers typically depend on freight brokers to provide them with loads back home. In exchange for this, freight brokers are bale to earn a profit as they try and negotiate a reduced per mile freight of 10-30%. Backhauls result in time and money saving.

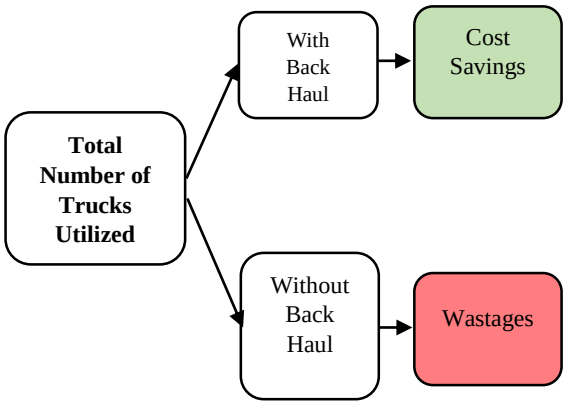

Table No 1: Back Haul Survey Sheet - Template

S. No	Truck Number	With Back Haul	Without Back Haul	Cost
1	TR No 01			Saving
2	TR No 02			Waste
3	TR No 03			Saving
4	TR No 04			Waste
5	TR No 05			Saving
6	TR No 06			Saving
7	TR No 07			Waste
8	TR No 08			Waste
9	TR No 09			Saving
10	TR No 10			Saving

3. Trucks Turn Around Time (TAT)

Trucks Turnaround Time (TAT) is defined as the time taken by the transport vehicles to complete the whole process of loading finished goods, starting from the point of entry to its exit from the factory premises.

Turnaround time as one of the most critical key performance indicator of any logistics operation [2]. Shorter turnaround time is economically advantageous and make the most optimum use of time and materials [3].

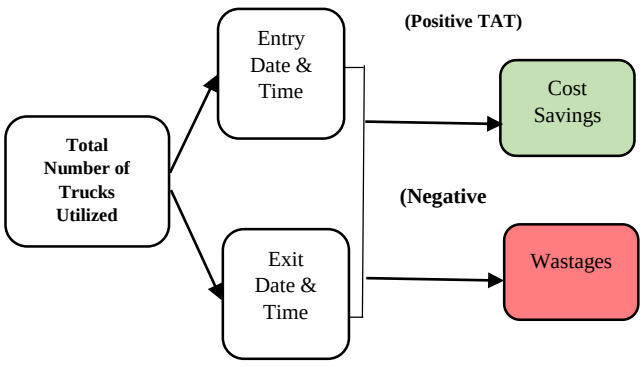

Table No 2: Trucks Turn Around Time (TAT) Survey Sheet - Template

S.No	Truck Number	Entry or Starting		Exit or Ending		TAT (In Hours)
		Date	Time	Date	Time	
1	TR No 01	1/1/2018	0.01	1/1/2018	3.26	3.25
2	TR No 02	2/1/2018	1.23	2/1/2018	5.23	4.0
3	TR No 03	3/1/2018	2.05	3/1/2018	5.23	3.18
4	TR No 04	4/1/2018	3.45	4/1/2018	11.21	7.76
5	TR No 05	4/1/2018	9.10	4/1/2018	10.10	1.00
6	TR No 06	5/1/2018	11.2	5/1/2018	12.35	1.12
7	TR No 07	5/1/2018	13.4	5/1/2018	9.15	6.10
8	TR No 08	6/1/2018	9.51	6/1/2018	10.21	1.10
9	TR No 09	6/1/2018	5.12	6/1/2018	21.25	16.13
10	TR No 10	7/1/2018	3.12	7/1/2018	20.18	17.06
					Average TAT	5.99
					Maximum	1.10
					Minimum	17.06

4. Literature Review

A recent research study proposed an Analytical modelling methodology quantify the effect of slow steaming on carrier's trip cost and on the shipper's total landed logistics costs. This model can be used by a carrier and a shipper in their contract negotiation to determine the division of savings between the two parties resulting from slow steaming [4]. Investment and planning decisions of governments and infrastructure authorities is influenced by the delays and turbulences of the freight transport system. Traditionally, they have relied on Cost Benefit Analysis for estimating the effects of disturbances on freight. This method is dependent on accurate and updated input data. However, not much success has been seen by following this method [5].

Backhauling companies one fourth of the expenditure in outbound logistics can be saved. If a company utilize this empty truck for the distribution of its product to the original destination that is the

vehicle's starting point, the company can save expenditure in logistics in addition to the savings in fuel, reduction in atmospheric pollution, wear and tear of vehicles etc. Backhauling has become an attractive cost saving technique in logistics [6]. The third party logistics providers should utilize this method for cost reduction [7].

Importance of truck turnaround time in heavy manufacturing industries. As the number of parts involved in heavy manufacturing industries is large, parts are huge in size and cost effective and are typically outsourced to vendors around the world, truck turnaround time becomes a crucial aspect to ensure high efficiency of the plant [8].

5. Methods

Both exploratory and analytical research design was adopted for this research study. Logistics managers in selected sectors were chosen as samples for the study. Cluster sampling method was adopted to derive 186 samples from the Universe. A self-administered structured questionnaire was used to collect primary data. This research study would contribute to the existing body of knowledge or literature by advancing the understanding of TAT and Back Haul in Indian logistics system.

6. Results and Discussions

In the present study, the selected industry profile factors of the logistics personnel has been included to examine the background of the respondents. They are categorized on the basis of their industry domain and years of experience. The logistics personnel with less than 8 years of experience are treated as less experienced whereas the logistics personnel with 8 and more than 8 years of experience are treated as highly experienced. The distribution and frequency of profile factors of the logistics personnel on the basis of their industry domain and years of experience in the logistics field is represented in Table 3.

Table No 3: Profile Factors (In Percentage)

Industry	Logistics Personnel		Total %
	Less Experienced	Highly Experienced	
Cement Industry	6.62	9.39	16.02
Steels Manufacturing	6.07	7.18	13.25
Food and Confectionary	5.52	7.73	13.25
Dairy Products	7.18	9.94	17.12
FMCG warehouse	8.28	7.18	15.46
Paint Manufacturing	3.86	7.73	11.60
Automobile Industry	6.62	6.62	13.25

The important profile factor of the respondents were cross tabulated with industry wise domain. The major profile factor of the respondents in the present study are from Dairy and Cement Industry which constitute 17.2 and 15.5 per cent respectively of the total respondents. Among the less experienced respondents, the first two important industry domains were dairy products and FMCG with a frequency of 13 and 15 respectively since these two constitute only 7.18 and 8.28 per cent respectively of the total. Amongst the highly experience respondents, the first two important industry domains were dairy products and cement industry which constitute 9.9 and 9.3 percent respectively of the total respondents.

Table No 4: Level of Acceptance

Industry	Logistics Manager			
	Less Experienced		Highly Experienced	
	Back Haul	TAT	Back Haul	TAT
Cement Industry	S	S	S	S
Steels Manufacturing	S	NS	S	S
Food and Confectionary	NS	S	NS	NS
Dairy Products	NS	S	S	S
FMCG warehouse	NS	S	S	S
Paint Manufacturing	S	NS	S	S
Automobile Industry	S	NS	S	S

Table 4 represents the industry wise logistics personnel acceptance level of the importance of backhaul utilization trend and trucks turnaround time (TAT).

Highly experienced logistics personnel in the selected industry domain displayed high interest on implementing or maintaining back haul utilization trend and trucks turnaround time (TAT) as their logistics cost reduction strategy.

The highly experienced logistics personnel in the food and confectionary industry had not adopted

back haul utilization trend and trucks turnaround time (TAT) as their logistics cost reduction strategy. Less experienced logistics personnel in the selected industry domain showed low interest on implementing or maintaining back haul utilization trend and trucks turnaround time (TAT) as their logistics cost reduction strategy. However, the less experienced logistics personnel in the Cement Industry showed high interest to adopt back haul utilization trend and trucks turnaround time (TAT) as their logistics cost reduction strategy.

Table No 5: Significance of Back Haul Utilization Trend and Trucks Turnaround Time (TAT)

Variables	Less Experienced		Highly Experienced		t	Sig
	Mean	SD	Mean	SD		
Cost estimation	4.50	.669	3.20	1.17	16.528	.000
Forecasting	3.39	1.116	3.20	1.25	1.953	.061
Reduction in procurement cost	3.69	1.270	3.80	1.16	-1.090	.276
Avoid wastages	4.01	1.092	3.19	1.07	9.127	.000
Reduce manpower	3.81	1.246	3.20	1.08	6.343	.000
Outbound logistics relations	4.20	1.161	3.39	1.20	8.364	.000
Internal relation between logistics and material manager	4.50	.500	3.50	1.20	13.142	.000

The highly viewed attributes of significance of back haul utilization trend and trucks turnaround time (TAT) in Indian logistics system by the less experienced respondents are cost estimation and internal relation between logistics and material manager since its mean score are 4.5019 and 4.5017 respectively.

Amongst the highly experienced respondents, Reduction in procurement cost and internal relationship between logistics and material manager since its mean score are 3.8014 and 3.5000 respectively.

Regarding the view on attributes, the significant difference among the less experienced and highly experienced have been noticed in their view on five out of seven attributes of significance of back haul utilization trend and trucks turnaround time (TAT) in Indian logistics system since their respective‘t’ statistics are significant at five per cent level.

7. Implications

The present financial and cost effective situation and the complexity of the business environment, as well as gap and future trends in the past literatures led to implement effective logistics or supply chain cost reduction, procurement and estimation strategies inside and outside of the business firm. Thus, the concept of logistics cost estimation, which can be found in the Indian logistics system, but which is a delicate subject in literature because of the difficulty encountered in defining this concept on back haul utilization trend and trucks turnaround time (TAT).

At the same time, the awareness of the need for back haul utilization trend and trucks turnaround time (TAT) implementation in a logistics or supply chain model and also to know the chain cost reduction, procurement and estimation strategies has an important impact on the dynamics in the Indian logistics system.

Also, in the research study, the authors identified the attributes on significance of back haul utilization trend and trucks turnaround time (TAT) in Indian logistics system, developed as a result of the research of the activity carried out in the selected industry which needs to improve their cost reduction.

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