## ANALYZING THE OPERATIONAL AND LOGISTICS REQUIREMENTS BY EVALUATING THE MARKET POTENTIAL FOR E-LOGISTIC SUPPORT PROVIDER

## Nikhil Satpute<sup>1</sup>, Ramkrishna Manatkar<sup>2</sup>

<sup>1,2</sup> Symbiosis International (Deemed University), Symbiosis Institute of Operations Management, Nashik, India

#### ABSTRACT

In the year 2017-18, the logistics Industry benefits represent US\$ 160 Billion and it is relied upon to reach US\$ 215 Billion continuously 2020. The Indian government has made a declaration that it is working at the approach to build up the new logistics plan in India. The point is to build up the most prudent approach to transport products by 2035.

As we know logistics is a highly diverse gambit consisting many factors and variables, we decided to focus on Trucking segment of logistics in Mumbai region. Mumbai is a city in Maharashtra, India. To know more about the market and its potential we needed to know more about the transporters and manufacturing industries in Mumbai. As transporters in Mumbai can get us about the idea of logistical truck movements inside and outside Mumbai, and the manufacturing industries can suggest us about which type of trucks are required by them according to the raw materials they need or the final products they distribute. Apart from the logistic movement in and out of Mumbai, we also tried to capture the openness of transporter to sign up for e-logistic service provider and try to expand their business by adding a technological aspect to it.

Research contains detailed and verified information of 57 transporters and on all possible combination of types of trucks provided by transporter and their operational routes. Also, we have recognized total of 125 Manufacturing companies from various industries, having one or more plant in or around Mumbai. Also, we classified the 125 companies into 15 Industries These companies have some raw material movements into Mumbai and some finish goods movement from Mumbai to various parts of India.

By analyzing the collected data, we found out which type of truck have how much demand on which route. Also, we could figure out the willingness of transporter to work in collaboration with e-logistics company.

#### **KEYWORDS:**

TL: Truck Load, LTL: Less than truck load, GPS: Global positioning system

Article Received: 10 August 2020, Revised: 25 October 2020, Accepted: 18 November 2020

#### Introduction

The logistics market is one of the booming industries of this era, accounting for 9.6 trillion in 2018, according to research and consulting firm Armstrong and associates.

Following are key salient features to support the same:

- Trucking accounts for 43% of total logistics.
- Logistics incur 18% of product cost in India,8-12% in China and Europe.
- In logistics 85% cost is of transportation and 15% storage
- Indian logistics sector is valued at \$160 Bn. or Rsl 2.132Lakh Crore in 2019
- Indian logistics sector employs more than 22 Million People.
- India ranks 44(2018),35(2016),54(2014) in World bank's logistics performance index

Logistics Industry plays a vital role in supply chain management and has a direct impact on product cost. Despite the high importance of this sector, major chunk of it is still unorganized. Hence, organizing this sector is a great opportunity to improve the profitability for customers, industries as well as transporters. In this era of digital world, majority of logistics industry is still working on old aged conventions and has a necessity to upgrade their techniques. As we all know, we can improve only those things which are being measured. Hence, digitalized recording and measuring is the first step towards improving the logistics industry.

For all the research and studies we decided to collect the data and analyze all the information for Mumbai, a city in Maharashtra, India. A research about supply-chain domain was conducted in order to know more about logistics of transporters and industries in Mumbai region. Research started from understanding the basics of logistics sector and building up of a database, insights of both the transporters and industries in Mumbai region. Further making interpretations from the collected inputs by analyzing the collected data.

## **LITERATURE REVIEW**

As we all know how important is digitalization in order to stay ahead of competitors. The third party logistics is no different from others and they also need to focus in implementing IT and starts its journey towards digitalization. As the quality of delivery and transparency are of utmost importance in order to stay competitive, there are many practices and models placed into system in order to improve delivery quality. E-logistics plays an important role in making better communication simpler and trust worthy by providing the customer with the exact information about their package in the supply chain. [1] Around more than half of the world's population stays in urban cities of the nation. As time passes more people are expected to come to urban cities. Hence more of logistics and trucking will revolve around Urban cities, and it could get congested and have a negative impact on environment. Never the less, there will be a demand for new type of effective and transparent logistic service provider. [2]

If we try to collect information about the truck movements on the roads, information like what is the frequency of the tuck using the same road, which is the high traffic time on the road, which is the main preferable routes of trucks. Then we can use big data analysis to study more about the routes and it's traffic. Hence, can build a better logistics schematic and also can help to strategies various logistics related businesses. [3] India is one of the fastest growing economy in the world. India still being one of the developing nations, has a lot more to achieve and hence the government, industries, investors and the people are looking forward to it. With the growing physical infrastructure there are lots of roads, ports, warehouses are being built at a great speed. With the growing infrastructure and the growing consumer demands. India is looking forward to a lot of capital and revenue in logistics sector. Indian logistic center will be revolving around two important issues, which are costs and reliable deliveries. [4]

## **OBJECTIVES OF THE STUDY**

Two objectives were identified to guide the study:

- 1. Collecting and analyzing the information about the operational routes and various trucks that operate on them.
- 2. Check readiness of the conventional transporter and the manufacturing industries to work with e-logistics service provider to help with their trucking requirements

## **METHODOLOGY**

Our research required information about the manufacturing plants and the industry they served, transporters and the types of trucks they have and to which all routes do they operate. Our work started from scratch as there was no prior information about anything in the Mumbai region. We started with making a database of existing transporters in the city, to find the existing transporters and build data base we used internet to google about the contact information about transporters, sites like just dial and some edirectories helped to fetch this information.

As we all know everything on the internet is not verified and reliable, therefore we had to manually verify the complete database. Our job wasn't only to verify the transporters, but also to know about their routes and type of trucks they have. So, we designed a questionnaire to find more relevant information which could be used for further analysis. We verified the transporters manually on calls and also extracted the relevant information which could be used further. Data on transporters was only the half data for research, while the other half is about data the manufacturing plants which requires truck to move their load and goods.

Gathering information and making of industry data base was also carried out from scratch. Google Maps helped us to locate companies in and around Mumbai. Once the company name was known, we visited their site in-order to know more about which industry does it serve and how many plants they have at various locations. We designed two questionnaires in order to know more about both the transporters and the industries, and also to know more about if they wanted to work with e-logistic service provider. Transporter's questionnaire was designed to know information about the from transporter. Manufacturing Industry's questionnaire was

designed to know about the manufacturing companies.

## 4.1. TRANSPORTER'S QUESTIONNAIRE

The Transporter's questionnaire consists of 22 questions in total. We designed our questionnaire in order to extract maximum information about the types of trucks available in Mumbai, on which route they operate, what type of industry they serve to, what type of trucks are required for a specific type of industry. Also we tried to find about the services e-logistic service provider provides, and accordingly we designed some question in order to know if the transporters/truck owners also provide the same benefits from their end. And if they will be interested to register on a e-logistic service provider and enjoy benefits. Transporter's questionnaire is given in Annexure A

# 4.2.MANUFACTURING INDUSTRY'S QUESTIONNAIRE

The Manufacturing Industry's questionnaire consists of 18 questions in total. We designed our questionnaire in order to extract maximum information about the types of trucks they require, frequency of various types of truck, operational route of truck, what type of trucks are required for a specific type of industry. Also we tried to find about the services e-logistic service provider provides, and accordingly we designed some question in order to know if the manufacturing industries enjoys the same type of benefits. And if they will be interested to register on a e-logistic service provider and enjoy benefits. Manufacturing Industry's questionnaire is given in Annexure B.

#### **RESULTS AND DISCUSSION TRANSPORTERS:**

We had collected a database of 118 transporters, after manually verifying all we had 57 legit transporters

From 57 verified transporters, following is their region wise break-up.

**TABLE 1: Transporters region wise break-up** 

A	NOR TH	SOU TH	EA ST	Mahara shtra	Guj rat	Del hi
OI						
17	11	7	2	6	9	5

- Also, there are some specific transporters who serves only for Maharashtra, Gujrat and Delhi which contributes to 35 % of our total data.
- These 3 states also have a major customer base, and manufacturing plants in their province, therefore followed by high truck movements on those routes.
- And if we are able to connect and link the data of trucks, routes and load accurately, there is a possibility of getting load on return trip as well.

Our data base consists verified data of 24-Open trucks, 33-Containers, 29-Trailers, following is the region wise distribution:

TABLE 2: Region	wise	distribution	of	types	of
trucks					

	Α	NOR	SOU	EA	Μ	G	D
	OI	TH	TH	ST	Η	UJ	EL
Open	4	5	3	0	2	7	3
truck(24							
)							
Contain	13	5	6	0	0	7	2
er(33)							
Trailer(2	6	5	2	2	4	8	2
9)							

- 50 % of Open trucks, 27% of containers, 48% of trailers are operational on Maharashtra, Gujrat, Delhi route.
- Hence, showing an already existing movement and a market on those routes from Mumbai.

## Manufacturing industry:

After collection of data, our research has recognized total of 125 Manufacturing companies from various industries, having one or more plant in or around Mumbai. These companies have some raw material movements into Mumbai and some finish goods movement from Mumbai to various parts of India.

We can broadly classify the companies into 15 Industries. Following is the break-up of number of companies in a specific industry.

Sr. No	Industry	No. of
51.110	Industrial equipment	Companies
1	Manufacturer	45
2	Chemical	19
3	Steel Industry	10
4	Electrical & Electronics	8
5	FMCG	7
6	Plastic	6
7	Pharmaceuticals	5
8	Cosmetic	4
9	Oil and Petroleum	4
10	Stationery	4
11	Textile	4
12	Rubber Industry	3
13	Furniture	2
14	Industrial Safety Equipment	2
15	OEM Manufacturer	2
		125

## TABLE 3: List of Industries, Mumbai

From the above mentioned industries we tried to predict which types of truck are needed for material movement in these industry.

TABLE 4:	Types of	trucks and	their	demand
----------	----------	------------	-------	--------

Type of truck	Demand
Open truck(61)	48.80%
Container (55)	44%
Trailer(9)	7.20%

This also gives us a glimpse of already existing movement in Mumbai region.

## **CONCLUSION, Future scope**

## 6.1 Conclusion:

We successfully verified 57 transporters and 125 manufacturing plants in Mumbai region. As Mumbai has a population of approximately 1.84 crores, it is one of the prime customer market for various types of consumer products across all price range and serving all sections of society. Mumbai attracts a lot amount of truck carrying various types of loads and plenty of business opportunity for logistic service provider. By analyzing the data collected on Manufacturing Industry in Mumbai region, we got the following result.

• Open truck seeks the highest demand of 48.80%, followed by container and trailer respectively with 44% and 7.20% demand in the respective order.

By analyzing the data collected on Transporters in Mumbai region, we got the following result

- Transporter from Mumbai region have 50 % of Open trucks, 27% of containers, 48% of trailers operational on Maharashtra, Gujrat, Delhi route.
- Also, there are some specific transporters who serves only for Maharashtra, Gujrat and Delhi which also contributes to 35 % of our total data.
- So, we can say Transporters from Mumbai make a significant business by operating in Maharashtra, Gujarat, and Delhi.

As many of the transporters were still using the conventional ways, they didn't know about the benefits and the services they could get if they were registered for e-logistics support provider organizations. Therefore, the transporters were ready to get along with e-logistics support provider platform.

## **6.2 FUTURE SCOPE:**

- Getting to know about which trucks are on which destination will also help to explore the angle of loads on return trips. Return trip will not only bring more business and higher profits, but also it will help to decrease the carbon foot print and maximize the utilization of fuel.
- Collecting a large amount of data about the load and trucks on road will help to design some hubs and pit stops for strategical advantages and will help the transporters to make this industry more efficient.

## REFERENCES

- [1] Gunasekaran, A., Ngai, E. W., & Cheng, T.
   E. (2007). Developing an e-logistics system: a case study. International Journal of Logistics, 10(4), 333-349.
- [2] Savelsbergh, M., & Van Woensel, T. (2016). 50th anniversary invited article city logistics: Challenges and opportunities. Transportation Science, 50(2), 579-590.
- [3] Taniguchi, E., Thompson, R. G., & Yamada, T. (2016). New opportunities and challenges for city logistics. Transportation research procedia, 12, 5-13.
- [4] Chandra, P., & Jain, N. (2007). The logistics sector in India: Overview and challenges. World Scientific Series on 21st Century Business, 105.
- [5] Mitra, S. (2006). A survey of third-party logistics (3PL) service providers in India. IIMB Management Review, 18(2), 159-174.
- [6] Jothimani, D., & Sarmah, S. P. (2014). Supply chain performance measurement for third party logistics. Benchmarking: An International Journal.
- [7] Mothilal, S., Gunasekaran, A., Nachiappan, S. P., & Jayaram, J. (2012). Key success factors and their performance implications in the Indian third-party logistics (3PL) industry. International Journal of Production Research, 50(9), 2407-2422.

- [8] Speranza, M. G. (2018). Trends in transportation and logistics. European Journal of Operational Research, 264(3), 830-836.
- [9] Graham, D., Manikas, I., & Folinas, D. (Eds.). (2013). E-logistics and e-supply chain management: Applications for evolving business. IGI Global.
- [10] Hamdan, A., & Rogers, K. J. (2008). Evaluating the efficiency of 3PL logistics operations. International journal of production economics, 113(1), 235-244.
- [11] Nagarajan, A., Canessa, E., Nowak, M., Mitchell, W., & White, C. C. (2005). Technology in trucking. Trucking in the Age of Information, 147-182.
- [12] Aritua, B. (2016). Unlocking the Potential of Freight Logistics in India.

## **ANNEXURE A:**

## **TRANPORTER'S QUESTIONNAIRE**

I. To which all routes do you serve? Name the cities

- 2. Types of trucks used on those routes?
- -Open truck 6 tyres
- -Open truck 10 tyres
- -Open truck 12 tyres
- -Open truck 14 tyres
- -20 ft. container
- -32 ft. container
- -32 ft. multiaxle container
- -Car carriers
- -Trailers
- **3**. Customer Industries?
- -Automobile
- -Electronics
- -FMCG
- -Health care and pharmaceuticals
- -Chemical
- -Textile
- -Dairy
- -Oil and Gas
- -Industrial equipment manufacturer
- 4. Frequency of use of Open trucks (all types) per month?

5. Most frequently supplied materials by open truck (all types) and to which locations, at what quantity?

**INDUSTRY'S** 

**6**. Frequency of use of Containers (all types) per month?

7. Most frequently supplied materials by containers (all types) and to which locations, at what quantity?

8. Frequency of use of Trailers (all types) per month?

**9.** Most frequently supplied materials by the trailer (all types) and to which locations, at what quantity?

10. What is the total number of trucks that you own?

**II.** Where are the main interstate hubs or pit stops for your organization?

12. Do you inform clients about certain factors such as shipping options, timelines, transfers, or regulations affecting shipments?

-YES

-NO

**13.** Do you use certain technology to monitor or record locations of goods in transit like

GPS tracking? -YES -NO

14. Are the drivers provided with any support to handle in-transit truck breakdowns?

-YES

-NO

**I 5.** Do you face difficulties in finding loads on return trips?

-YES

-NO

**16.** Does your client provide you payment flexibility?

-YES

-NO

**17.** Are you provided with Fuel and toll discounts?

-YES

-NO

**18.** What technology does the organization have in place to verify proper packaging, count, and labeling of goods transported?

**19.** What challenges are faced by the organization while finding new customers? Is your organization in contact with any firm that directs customers towards the company? How much would you trust the third party to find customers for your organization?

**20.** During this crisis situation, do you require help from external agencies? If yes, what is the process of onboarding?

**21.** Are you willing to work on a contract basis, helping you to fetch a long term business? -YES

-NO

**22.** Will you like to increase the business by coming in collaboration with an online logistic support provider?

-YES

-NO

## **ANNEXURE B:**

#### MANUFACTURING OUESTIONNAIRE

I. You belong to which Industry: -Automobile

-Electronics

-FMCG

-Health care and pharmaceuticals

-Chemical

-Textile

-Dairy

-Oil and Gas

-Industrial equipment manufacturer

2. To which all routes do you require trucks for transportation? Name the cities \*

3. Types of trucks used on those routes? \*

-Open truck 6 tyres

-Open truck 10 tyres

-Open truck 12 tyres

-Open truck 14 tyres

-20 ft. container

- -32 ft. container
- -32 ft. multiaxle container

-Car carriers

-Trailers

**4.** Frequency of use of Open trucks (all types) per month? \*

**5**. Most frequently supplied materials by open truck (all types) and to which locations, at what quantity?

6. Frequency of use of Containers (all types) per month?

7. Most frequently supplied materials by containers (all types) and to which locations, at what quantity?

8. Frequency of use of Trailers (all types) per month?

**9.** Frequency of use of Trailers (all types) per month?

10. Does your transporter provide a live GPS tracking service in order to keeping track of the exact location of the goods?

-YES

-NO 11. What technologies are used by your company for information transfer with the transporters? 12. Do you face transporters' inconvenience due to payment problems? -YES -NO 13. Are you provided with eDocumentation? -YES -NO 14. Do you have SCM solutions available in order to be economically efficient? If no, are you interested in the same? -YES -NO 15. Will you like to get help to apply for insurance of your load? -YES -NO 16. Are you willing to work on a contract basis, helping you to keep a steady business with transporter? -YES -NO Will you like to collaborate with an online 17. logistic supporter, to handle major transporter facing issues and provide more reliable and trustworthy deliveries? -YES -NO

How are new transporters selected and evaluated in the organization?