Performance Analysis of State Transport Undertaking: A Study of Haryana

Devinder S Hooda

NitishaSehrawat

Abstract

Haryana Roadways bus transport has been operated by the Haryana Government to meet the need of Public Road Transport in Haryana. The mission of Haryana Roadways is to surpass and robustness for public transportation services for rural and urban areas in state. The important objective of the study is to assess the performance of Haryana Roadways by firstly performance indicators are classified into categories and evaluate the overall performance and Depot- wise performance of Haryana Roadways.This study has taken some important indicators to measure the performance of depot, through these indictors it has been found that which area need more work. The accident rate was -3.28 in Haryana, which indicates that due to development of roads, trained staff, newly buses on road and proper maintenance of old buses the number of accident has been reduced. In Haryana the consumption of fuel has been growing only by 0.12% rate. This is also a very good sign for the performance. No significant fluctuations in consumption of fuel have been spotted among Haryana Roadways buses.Out of the 20 depots Bhiwani depot performed best, total receipts have shown highest growth rate and the total expenditure was lowest for this depot, in contrary to Ambala depot whose performance was worst. Faridabad and Chandigarh are at the top in term of capacity of providing services. Bhiwani and Grurugram depots are best for their productivity resources are fully utilized in these depots. In term of financial indicators and safety indicators Bhiwani and Jhajjar is on top and Gurugram and Ambala on bottom.

Keywords: Depot,Fleet Size, Performance,Transport, State Undertakings

Devinder S Hooda teaches Economics at Indira Gandhi University Meerpur- Rewari (Haryana)-IndiaEmail: dshooda.igu@gmail.com

NitishaSehrawat is PhD Research Scholar in Department of Economics at Indira Gandhi University, Meerpur- Rewari (Haryana)-India; Email: nitishakhardwal352@gmail.com

Introduction

The transport sector is the base of the development for the entire economy, economic growth of a nation depends on its transport capacity (Stopford, 1997). Public Road Transport is associated with various aspects of economic development; it affects almost every sector of the country. Transport has become a base for bringing specialization in production and consumption at divergent regions. Many economists are of the view that to increase economic growth, it is necessary to have a good physical connectivity in urban and rural areas.

In India from the side of transport sector, it has been expected that India's infrastructure will become the fastest growing if CAGR of transport sector grows at a speed of 5.9% (India Investment Grid). A good transport infrastructure includes developing roads and highways, enhancing the railway network and also developing aviation and port infrastructure. India's transport sector is ranked at 4th in the rail network and third in the global aviation market (Ministry of Railway, 2018).In 2019 budget, it was expected that due to the introduction of new electronic vehicles and multiple energy storage devices, India's transport sector will become the leading transport sector all over the world(GOI Budget 2019). According to the report of the Ministry of Road Transport and Highway, in the year 2016-17, the transport sector had a 4.8percentshare in the country's GVA (Gross Value Addition) for which only road transport accounting 3.12percent, the railway addition was 0.77percentand the air transport accounted 0.12 percent

Haryana is one of progressive state of India. Earlier Punjab and Haryana were single state at that time they had a joint transport unit. In November 1966 Haryana was separated from Punjab and there arose a need of individual transport unit. After bifurcation with Punjab the state transport unit has connected with every corner of the state. In order to provide well-coordinated, economically safer and efficient transport services to the public, the authority lies with the state office of the director general of state transport. Government of Haryana has made a huge investment in transport sector to provide the public transport services in state. There are new initiatives provided by Haryana Roadways to its customers for better services like new Volvo AC bus services and Saarthi has been introduced on certain routes. Some routes are also in touch with Indira Gandhi International Airport and Domestic Airport of Delhi. The main objective of this paper tries to deal with the selection and classification of performance indicators of state transport undertakings in Haryana.

Literature Review

Ever since, it has become an area of interest for researchers to examine the status and issues of state transport undertakings. The growing number of literature on public transportation has been theoretically and empirically researched by researchers, some important of which are mentioned here.

Khumbhakar et. al 1996 and Agarwal 2010had used the techniques of both of Data Envelopment analysis. The use of non-parametric model such as Data Envelopment Analysis Model to assess productive efficiency is now increasing. Both papers and many similar studies employed the Data Envelopment Analysis to evaluate the technical efficiency(Bhagvath 2000; Bishnoi and Sujata 2010; Balzentis 2011; Allnoahmmodllou 2017).The share of public transport has been declined in last few decades and the growth rate of private vehicles has been increased and Public transport was not able to fulfill the transport demand of people because the well-regulated transport system is available in few cities (Kumar 2017). The situation of transport in large cites is deteriorating due to pollution, wastage of energy, road congestion and high accident rate also. Padam and Singh 2001 focused on increasing urban population and its demand for transport.Some measures are suggested by Agarwal 2016 that can help an improvement in current public transport like increase the speed and capacity, introduce multiple mode of public transport at reasonable prices.

There is no doubt that even before this, research has been done by researchers on Public Road Transport in Haryana and various type of evidence have also been seen in those research. When the performance of STUs is seen in other states then the performance of Haryana Roadways has been found to be better than them. But in today's changing economic scenario it is now a necessity to do research internally on Haryana Roadways to further improve Haryana Roadways. Keeping all these things in mind, this study is an attempt to research depot level in Haryana.

Research methodology and data source

To meet the need of public transport in every state of India, separates transport undertakings has been established. The present study attempts to focus on Haryana's public transport system and the need of public transport is being fulfilled by the Haryana Roadways State Transport. It plays crucial role in providing transport services to both the Haryana state as well as neighboring states. Haryana Roadways runs on an average 13 lacs km every day. Presently in Haryana there are 24 depots and 13 sub depots. This paper considers only 20 depots because the paper needs to cover the data from 2001 to 2016 to assess the overall performance and efficiency. There were 4 depots which had been established after 2001 and they were included in their parental depots.

A panel data of twenty depots over the period of 2001-02 to 2016-17 forms the secondary based for this study. The annual data of these depots collected from the statistical abstract of Haryana issued by the Directorate of Economic and Statistics.

Selection and classification of performance indicators

On the basis of previous national and international literature works there are various types of indicators which can be used for measuring the performance of public transport such as average fleet size, number of bus route in a day, average daily passenger km trips, road density, number of stations per km, taxes, cost, depreciation, number of accidents and number of breakdowns etc. But as per availability of limited data in this present study suitable indicators have been used for the analysis the performance of Haryana Roadways. Broadly, performance indicators are divided into four categories. These are as under.

Capacity Indicators

Fleet Size: Fleet size describes the total number of buses of Haryana Roadways on road in a depot. Fleet size shows the capacity of Haryana Transport department. As per previous studies (Agarwal 2010) explains that the fleet size of public transport can be used as capacity. The service provided by Haryana Roadways depends upon its number of buses on road.

Fleet size= Total number of buses operated on road

Daily passenger carried: The service utility of Haryana Roadways can be measures with the help of total number of daily passengers carried by each bus in a day. Daily passenger carried regarded as the sum of movement by every single passenger.

$$\text{DPC} = \sum_{i=0}^{n} passenger\,load\,between\,discrete\,stop$$

Total number of staff- Both indicators which are explained above are very important for measurement of service ability of Haryana Roadways but they are useless without adequate or efficient staff.

Total staff= administrative worker + transport worker + workshop worker

Productivity indicators

Productivity simply implies the ratio of output to input. Productivity indicators are those indicators which are tells about the productivity of Haryana Roadways.

Bus utilization- Bus utilization denotes the total effective bus kilometer done by a Haryana Roadways on road in a day. It can be calculated as

$$\text{Bus utilization} = \frac{total\,effective\,kilometers\,done\,on\,a\,day}{total\,number\,of\,buses}$$

Fuel consumption- Fuel consumption means total fuel consumed by a bus in a day.

$$\text{Fuel Consumption} = \frac{total\,effective\,kilometer\,done}{total\,fuel\,consumed}$$

Financial Indicators

Financial indicators are used to check the viability of unit. With the help of financial indicators, it is easy to calculate the possible practicable condition of decision making units. Here two major financial indicators have been used for measured the trends and performance analysis of Haryana roadways.

1. Total Receipts: Total Receipts refers to the total cash received by each depot in a year.

Total Receipts:

$$total\,transport\,income + other\,income + resturant\,income$$

2. Total Expenditures: It includes total expenditure which related to investment, price and cost.

Safety Indicator

For safety parameter, accident by each depot in a year has been taken. Negative growth or positive growth rate of total number of accidents means that rate of total number of accident in 16 years has been decline or increase, as a safety indicator this is very important in reduction of total number of accidents by Haryana roadways for their best utilization.

CAGR of Performance Indicators

To measure the growth rate of all performance indicators which have been used for performance analysis, percentage method and compound annual growth rate method have been used.

Compound Annual Growth Rate (%)= [logest (Ya1+Ya2+Ya3+……………….Yan)-1]*100

Here, Y= variables which used for analysis

A= Time (1, 2, 3,………………………….n) for each period

Results and Discussion

Table 5.1 presents the growth rate of Performance Indicators of Haryana Roadways over the period from 2001-02 to 2016-17. This table reveals that performance varies greatly among the depots. Here some indicators are positively related with the performance of Haryana Roadways and some are negatively related. Fleet Size, Total Staff, Daily Passenger Carried, Bus Utilization and Total revenue these indicators are positively related, and FC, TE and Accidents are negatively related. The positive or increasing CAGR of FS, TS, DPC, BU and TR and negative or declining growth rate of FC, TE and Accidents revealed that Haryana Roadways performed very well.

Table 1:Growth Rate of Performance Indicators

Depots	FC	FS	DPC	AC	TR	TE	BU
Gurugram	-1.32	5.11	-0.90	1.51	10.51	10.93	1.96
Ambala	0.50	-0.22	-1.01	-1.50	7.00	12.67	-0.43
Chandigarh	-0.50	0.61	5.93	-7.54	8.39	9.97	0.19
Rohtak	-0.29	2.00	3.19	-3.08	9.11	11.05	1.80
Karnal	0.34	0.12	-2.65	-3.61	8.24	9.49	0.44
Hisar	0.31	0.11	-6.15	-3.68	7.95	10.16	0.44
Rewari	0.13	0.33	2.70	-6.05	8.05	8.96	0.60
Jind	0.25	-0.06	0.07	-0.83	7.03	10.40	-0.39
Kaithal	0.67	-0.01	-3.52	-5.70	7.39	9.63	-0.19
Bhiwani	0.72	4.68	2.84	-1.30	12.90	6.90	4.18
Sirsa	0.30	0.61	-2.64	-1.66	8.89	9.63	0.94
Yamuna Nagar	0.17	-0.19	3.64	-4.52	7.08	8.82	-0.37
Sonipat	0.13	0.68	1.45	-4.68	7.53	10.12	0.44
Faridabad	0.10	5.68	1.27	-4.79	8.45	4.34	2.00
Delhi	0.08	1.72	-6.93	-1.56	8.64	11.32	2.02
Fatehabad	0.38	-0.23	1.97	-4.32	7.43	9.82	0.06
Kurukshetra	0.47	0.70	-0.20	-2.89	8.98	10.36	0.93
Panipat	0.39	1.72	5.43	-0.76	7.98	10.57	1.37
Narnaul	0.35	1.77	-4.19	-8.92	8.99	10.31	-1.60
Jhajjar	0.10	1.62	-2.59	-10.98	7.02	10.42	0.65

Source:Author' s calculation

From above table it is clearly observed that Haryana roadways perform in a good way but some areas there requires a change. One notable point is arrived that there is reduction in total staff this simply implies that the Haryana Transport not much provided employment opportunity. The sixteenyears' performance analysis of overall Haryana showing declined in employment. Due to shortage of staff other factors are also influenced that is why DPC is not significantly changed with in these years. In term of safety Haryana Roadways improving in these years the rate of accident declined from 2001 to 2016. Faridabad and Chandigarh depots are more capable for providing services then others, Chandigarh have the highest growth rate of TS corresponding to Faridabad depot which has highest growth rate in terms of FS.

Table 2: CAGR Performance of Best and Worse Depots

| Indicators	Better performing Depots	Worse Performing Depots
FS	Faridabad(5.68)	Fatehabad(-0.23)
DPC	Chandigarh(5.93)	Delhi(-6.93)
TS	Faridabad(1.99)	Yamuna Nagar(-1.70)
BU	Bhiwani(4.18)	Narnaul(-1.60)
FC	Gurugram(-1.32)	Kaithal(0.67)
TR	Bhiwani(12.90)	Ambala(7)
TE	Bhiwani(6.9)	Ambala(12.67)
Accident	Jhajjar(-10.98)	Gurugram(1.51)

Source: Author's calculation

With the help of above table 2 an attempt has been made to show that there are some worse performing depots whose performance has been seen to decline during the study periodand work needs to be done on these depots to fill this gap. Among twenty depots Faridabad and Chandigarh performed better than others in term of capacity indicators and Fatehabad, Delhi and Yamuna Nagar performed worsen. Corresponding for productivity indicators Bhiwani and Gurugram both on top and Narnaul and Kaithal both poorly performed than others. In term of financial indicators and safety indicators Bhiwani and Jhajjar is on top and Gurugram and Ambala on bottom.

Table 3: Overall Performance of Haryana

Indicators	CAGR
FS	1.55
TS	-0.40
DPC	0.73
BU	0.52
FC	0.12
TR	8.44
TE	10.08
AC	-3.28

Source: Author's calculation

Table 4: Graphical representation of Overall Performance of Haryana Roadways

	FS	TS	DPC	BU	FC	TR	TE	ACCIDENT
■CAGR	1.55	-0.40	0.73	0.52	0.12	8.44	10.08	-3.28
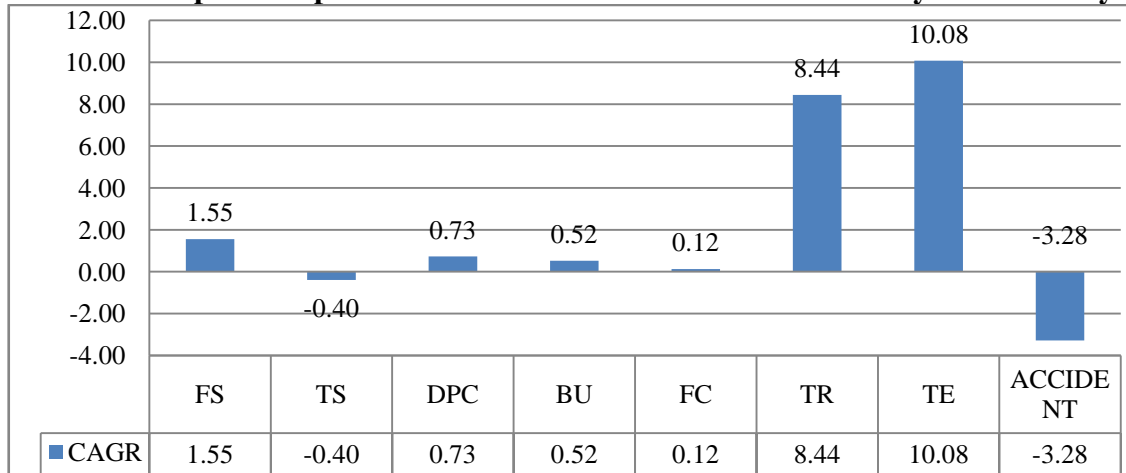
Source: Author's own calculation

From above table it is clearly observed that Haryana roadways performance in a good way but some areas there requires a change. One notable point is arrived thatthere is reduction in total staff this simply implies that the Haryana Transport not much provided employment opportunity. The sixteenyears' performance analysis of overall Haryana showing declined in employment. Due to shortage of staff other factors are also influenced that is why DPC is not significantly changed with in these sixteen years. In term of safety Haryana Roadways improving during the period and the rate of accident declined from 2001 to 2016. On the basis of Financial Indicators used in the study, out of the 20 depots Bhiwani depot performed best, the CAGR of total receipts have shown highest growth rate and the total expenditure is lowest for this depot, on the contrary to Ambala depot whose performance is worst. The growth rate of accident was -3.28 in Haryana which indicates that due to development of roads, trained staff, newly buses on road and proper maintenance of old buses the number of accident has been reduced. In Haryana the consumption of fuel has been growing only by 0.12% rate. This is also a very good sign for the performance. No significant fluctuations in consumption of fuel have been spotted among Haryana Roadways buses.For all depots the compound annual growth rate of TS obtained was -0.40 which implies that the employment opportunity given by Haryana Roadways has been declined in these years in 2001, there were 19134 employer employed and in 2016 only16698 workers employed.

Conclusion

The present study is an attempt to trace the performance of depots of Haryana Roadways from 2001 to 2016. In Haryana the public mode of transport is Haryana Roadways which play a significant role for transport needs. Haryana Roadways has made a remarkable development in its growth in recent years and achieved a well growing transport in India. The results of the study revealed that the growth rate of various performance indicators captures positive growth rate. In term of safety, Haryana Roadways performed well during the study period. This study has taken some important indicators to measure the performance of depot, through these indictors it has been found that which area need more work. Over the years the total number of employees have been declineinstead of increased. Out of the 20 depots Bhiwani depot performed better. The growth rate of total receipts is highest and the total expenditure found lowest for this depot. On thecontrary, Ambala depot performance was not satisfactory. Faridabad and Chandigarh are at the top

in term of capacity of providing services. Bhiwani and Grurugram depots are best for their productivity resources which are fully utilized in these depots.   In term of financial indicators and safety indicators Bhiwani and Jhajjar are on top and Gurugram and Ambala on bottom.

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