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Policy Model for Regulation and Ensuring Service Delivery for UPSRTC

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Preface

Rakshak Foundation was founded in 2006 by a group of concerned citizens from India's elite educational institutions working in USA. It was in the manner of giving back in a small way to United States and India, countries that had provided them so much in terms of opportunities. The Foundation seeks to create an informed society, aware of its rights and duties, and attempts to address barriers to an equitable and just society. Rakshak Foundation has been submitting well researched opinions on various bills being considered for presentation to the Indian Parliament. Rakshak Foundation has been invited by the Parliamentary Committees of the Rajya Sabha three times in the past two years to depose before them and present their views on proposed Bills which would affect the whole nation once they are enacted by the Parliament.

The Intern has finished her second year of undergraduate economics from Shri Ram College of Commerce, University of Delhi. She has a keen interest in research and thus saw Rakshak Foundation Internship Program as a golden opportunity to pursue her goal, which is being a civil servant and playing a substantial role in public policy making. The intern is highly grateful to Rakshak Foundation for providing a platform to young, concerned citizens to be guided by distinguished luminaries and have a say in issues that matter.

The project that has been assigned to the intern is: **Policy Model for Regulation and Ensuring Service Delivery for Uttar Pradesh State Road Transport Corporation**. A good transportation system is a prerequisite for a country to grow economically. Also, since India does not naturally possess reserves of petroleum to meet its growing energy demand and has to rely on imports, it is essential to formulate a policy that discourages use of private transport. But to encourage use of public transport, it is essential to develop an efficient, reliable and comfortable system of public transport. Furthermore, since public transport is a social good and users of public transport generally are people from lower income households, the government must ensure that public transport is generally affordable.

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Next, I would like to express gratitude towards my mentor Shri Mukesh Kumar Meshram, who has provided me with the opportunity to work for UPSRTC. I am equally grateful to Shri Pallav Bose, who has been a guiding force through the course of this project. Sir has been really supportive, he was both, resourceful and provider of wonderful moral support. Also I would like to acknowledge the kind co-operation of UPSRTC officers and staff from Ghaziabad and Meerut region, who answered all my questions satisfactorily and helped me obtain valuable information during field visits. I would specially like to mention Mr TK Singh Visen, Assisitant Regional Manager, Kaushambi, Ghaziabad, who gave really valuable inputs for the project. I would also like to thank Ashish Jaiswal, co-intern who worked on the same project and provided constant support and valuable input and accompanied me to field visits.

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Executive Summary

Public transport offers people mobility, access to opportunities of employment far away from their dwelling places, community resources, medical care, and recreational activities. It benefits those who prefer to ride, as well as those who have no other choice: about 235 million or 95.3 % of Indian households do not own a four wheeled motorised vehicle. Public transport in India is offered by various means, namely airways, railways and roadways. Among the modes of transport mentioned, road transport has emerged as the dominant segment in India's transportation sector with a share of 4.7 per cent in India's GDP in 2009–10 which is higher than railways that has a 1 per cent share. Public road transport mostly encompasses passenger bus service offered by the State owned road transport undertakings and the private operators plying their vehicles under stage carriage permits. Uttar Pradesh State Road Transport Corporation (UPSRTC) is a State Transport Undertaking that mainly caters to inter-city, rural and interstate travel. UPSRTC is implementing the **Intelligent Transportation Management System** (ITMS) under the '**Central assistance for Strengthening Public Transport System in the Country**' scheme by Ministry of Road Transport and Highways (MoRTH). Intelligent Transport Management System (ITMS) is the addition of information technology to transportation infrastructure and vehicles. It aims at improving operational efficiency by better management of fleet, manpower, routes and passengers. One of the main objectives of the project is to assess the impact of ITMS for UPSRTC and suggest a model for ensuring service delivery to passengers by UPSRTC. For the research, literature review, field visits and surveys were undertaken, gaps in implementation of ITMS and information on other general problems faced by various stakeholders in UPSRTC was collected.

Key Findings:

From a review of the physical and financial performance of UPSRTC it was found that the corporation needs immediate attention for viability gap funding and needs to address several management, logistic, passenger and crew issues. Also since UPSRTC largely caters to rural masses with low incomes, it needs to ensure affordability of fares while maintaining financial viability. Uttar Pradesh had a

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population of 199,581,477 as on 1st March 2011 and the fleet size of UPSRTC was 8,893 as on 31st March 2013, i.e. UP has just 45 buses per 10 lakh population which is much lower as compared to other major states such as Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Maharashtra. Also UPSRTC has been running huge losses for the past two years. But public transport needs to be affordable and the entire burden of losses cannot be transferred to the customer as the end users are generally people from lower income deciles who cannot afford private transport. Thus in order to maintain financial viability, cost reduction needs to be emphasised vis-à-vis revenue increment. Also increasing revenue beyond a certain limit might also rob the corporation off its passengers as they will find alternatives such as private operators. But private operators do not offer any kind of amenities and are not accountable for the safety of the passengers. Therefore the onus of providing comfortable and safe public transport and sustaining the corporation falls primarily on UPSRTC itself and the UP State government as transport is a state subject.

ITMS can be a major factor in reducing costs as it reduces manual work and prevents pilferage by crew. It will also help save money lost in accidents and will help increase fuel efficiency. But is UPSRTC making full use of its potential? The major finding from the field visits was that there has been considerable delay in implementation of ITMS even in the pilot region of Ghaziabad due to mismatch in requirements and available resources, both physical and human. Though the IT systems have immense potential but they have not been put to adequate use. Recommendations relating to the same have been made in the report to UP State Government and UPSRTC in matters relating to fare setting mechanism and efficient implementation and handling of ITMS so that projected benefits are realised. One of the main recommendations was creation of a **Public Transport Fund** by the UP State Government to develop transport infrastructure, provide viability gap funding for increasing rural connectivity and fund concessions for BPL and other needy travellers. Another recommendation was to nationalise more routes, i.e. increase the percentage of nationalised routes from a meagre 9.65% to at least 50% and then after priority allotment of routes to UPSRTC, auction routes to private operators to prevent illegal plying. The proceeds obtained from auctioning could be used to fund

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the PTF corpus. Also the UP State Transport Authority needs to delegate powers to the Regional Transport Authorities to strengthen enforcement of the Motor Vehicle Laws to stop illegal plying by private operators from using contract permits for stage carriage, there needs to be delegation of higher powers to the Corporation so that it can stop private players without permits in accordance with the Motor Vehicle Act from affecting the business of the Corporation.

One major recommendation for UPSRTC is to carry out a passenger survey on the SERVQUAL model, a quality management framework developed to assess customer perceptions. A similar survey was undertaken by Rajasthan State Road Transport Corporation (RSRTC) through Central Institute of Road Transport (CIRT) to know the gaps between service delivery and expectations. A model questionnaire has been devised for the same. Another major recommendation is to create a Central Planning Division in UPSRTC that will use GPRS based Electronic Ticketing outcomes for efficient route planning and also prevent misuse of power by political class to start services in non-viable areas.

Another recommendation is to start renting out bus roofs and boots to carry cargo so as to increase out of fare box revenue. Also it needs to increase the types of services to cater a large and diverse population. The number of buses per 10,000 people is quite low as compared to other major states. Fleet augmentation through contracting private buses should be a major focus till funds for fleet renewal are made available. Instead of competing with private operators there is a need to synergise the two enterprises by way of benefit sharing process. Also UPSRTC could leverage the use of workshops by turning them from cost generating to profit generating centres by vending out repair and maintenance services to private operators.

As a suggestion for future work, it is recommended to UPSRTC to employ a third party and form a Project Evaluation Agency in order to assess the impact of introduction of IT in services. This should be done after ITMS has been fully implemented and it has operated for a few months. The impact evaluation done would be helpful for strategizing in the right direction. It would also help other SRTUs to adapt the system, based on the experience of UPSRTC. Since the impact

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evaluation and subsequent steps taken to enhance or improve upon the services will help improve public transport services, the third party could preferably be Central Institute of Road Transport, Pune. Employing CIRT could be highly beneficial for UPSRTC and other SRTUs as they will get technical assistance and professional feedback on ITMS and it precise usage.

In contrast to the operational expansion, the financial performance, of UPSRTC, however had been less spectacular, with the corporation accumulating losses in its balance sheet for consecutive years. Turning around UPSRTC into a profitable and self-sustaining organization requires comprehensive efforts of all the stakeholders both from within and outside the firm boundaries. Such an initiative is more challenging in the context of state owned enterprises, given their conflicting objectives arising out of divergent utility perception of key stakeholders. To cite an example, UPSRTC charges very low fares to maintain affordability and is battling with rising fuel and staff costs as well.

ITMS is a very useful technology to control costs and increase revenue. MORTH should take initiatives to bring in ITMS in all major SRTUs so that a common mobility vision is realised. Integrating the databases of SRTUs and providing a common mobility card to passengers can greatly ease travel for passengers and managerial operations for the government.

To conclude, I would like to applaud the efforts of UPSRTC to bring technology to transport with an integrated approach. Also, UPSRTC has succeeded in obtaining 149 as their Interactive Voice Response System (IVRS) number which they plan to make pan India by integrating the database of all State Road Transport Undertakings (SRTUs) so that real-time information about all state run bus services could be made available at a single window. Technology has immense potential if used properly. UPSRTC has brought in technology but it needs to gear up to use it to its full potential and for that it needs to provide extensive training to its staff and ensure smooth functioning of the system by avoiding petty logistical issues. Once these small issues have been sorted out, ITMS can help UPSRTC rescue its dwindling finances in the near future.

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Proposed Action Points

Recommendations for UPSRTC

On fare review mechanism: Fare formula should be adjusted to make

Fare adjustment= Cost increase- some component of productivity gain. In case the price adjustment is smaller than menu costs associated with price change i.e. is too small to change for practical reasons or is too large for social reasons, then it should not be forfeited, instead a roll-over mechanism should be put in place.

On Management Issues:

- Delegation of duties: division of labour to be done properly, ARM to be supplied with adequate manpower to fulfil responsibilities.
- Instead of allotting the power to run new services to the RM, create a Planning Division at head quarter level which should conduct passenger mapping surveys and decide new routes only on the basis of viability.
- Creation of a marketing division at Head Quarter level should be undertaken that will create schemes to promote UPSRTC as a brand and attract more clientele.

On Logistical Issues:

- Set up control room at Ghaziabad region as soon as possible for round the clock monitoring and reporting breaches\emergencies during the night.
- Educate drivers and trainers regarding VTS to prevent tampering.
- Apart from multi-purpose smart card, introduce a transferable open ended card based on similar principles as DELHI METRO CARD. The simplified issue process will encourage more passengers to use it as hassles involving KYC would be done away with.

On Increasing out of fare box revenue:

- Start renting out bus roofs and boots to carry cargo so as to increase out of fare box revenue. This service can be provided to individuals as well as it can tie up with courier companies. It can also tie up with other SRTUs to cater to cross-border movement of cargo.
- Also it needs to increase the types of services to cater a large and diverse population. The number of buses per 10,000 people is quite low as compared

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to other major states. Fleet augmentation through contracting private buses should be a major focus till funds for fleet renewal are made available. Instead of competing with private operators there is a need to synergise the two enterprises by way of benefit sharing process.

- Also UPSRTC could leverage the use of workshops by turning them from cost generating to profit generating centres by vending out repair and maintenance services to private operators.

Recommendations for UP State Government

The state government should realise that provision of affordable public transport and at the same time ensuring that providers of public transport are financially sound are its responsibilities. It should also fund UPSRTC to ensure rural connectivity and viability gap funding. These concessions could be funded by creation of a **PUBLIC TRANSPORT FUND** which could be funded through various channels such as:

- State and Central Government funds
- Cross subsidies: i.e. those who can pay fund those who cannot.
- CSR Initiatives: Big corporations could be pitched in to provide funds under the mandatory CSR spending.
- Penalties imposed on contractors for lapses in service delivery could be used to fund the corpus.
- Donations from organisations, individuals.
- Creation of a cess for UPSRTC in existing fuel charges or VAT rebate to UPSRTC buses.

Recommendations for UP State Road Transport Authority

Nationalise more routes, i.e. increase the percentage of nationalised routes from a meagre 9.65% to at least 50% and then after priority allotment of routes to UPSRTC, auction routes to private operators to prevent illegal plying. The proceeds obtained from auctioning could be used to fund the PTF corpus.

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1. Introduction

1.1 The Importance of Public Transport

Public transport offers people mobility, access to opportunities of employment far away from their dwelling places, community resources, medical care, and recreational activities. It benefits those who prefer to ride, as well as those who have no other choice: about 235 million or 95.3 % of Indian households do not own a four wheeled motorised vehicle [1]. The integration of public transport modes and reflections into economic and land use planning can also help a people increase business opportunities, reduce emissions from private vehicles, ease traffic congestion[2], reduce energy and oil consumption[3] and create a sense of community through transit-oriented growth. For these reasons, areas with good public transport systems are economically flourishing and offer location advantages to businesses and persons choosing to work or live in them. And in times of emergency like wars or natural calamities, public transport is important for quick, safe and well-organized evacuation, providing resiliency in such situations. Thus public transport should be readily available, accessible and affordable because it is socially, economically and ecologically desirable to private transport. Socially, it offers equity in society, economically it enjoys economies of scale and ecologically it produces less emissions than private transport[4].

1.2 Public Transport in India

Public transport in India is offered by various means, namely airways by government owned airlines Air India and various private entities, railways which is solely owned and managed by the government, and roadways by state owned road transport undertakings as well as private operators plying their vehicles under stage carriage permits.

[1] Census of India, 2011. About 21% of households own a motorised two-wheeler.
[2] A bus carrying 50 people occupies just 2.5 times more road space than an average sized car carrying 1-5 persons.
[3] An average bus consumes just three times more fuel than a car that runs around 15Km per litre of diesel, and carries ten times more the number of persons.
[4] Todd Litman , “Evaluating Public Transit Benefits and Costs”, Best Practices Guidebook, 4 June 2014, , Victoria Transport Policy Institute

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1.2.1 Railways: The Indian Railways network is the third largest in the world, is managed wholly by the government, and has 7500 stations, 9549 locomotives, 55,339 passenger coaches, 239,321 freight cars and 64,600 route Kilometre. It transports 2.8 million tonnes of freight and 25 million passengers daily[5]. The Ministry of Railways prepares the union budget each year for overseeing the operations and financial viability of the railways. There is no parallel private operation in railways. The Ministry of Railways set up Centre for Railway Information System, CRIS as a Society in July 1986. Headquartered in New Delhi, with Regional offices in Delhi, Kolkata, Mumbai, Chennai, and Secunderabad, CRIS develops and manages the Information Technology applications of the Indian Railways. CRIS also provides IT applications for non-Railway Government and Public Sector organizations. The Ministry of Railways set up the Indian Railway Catering and Tourism Corporation (IRCTC) as a subsidiary of the Indian Railways that handles the catering, tourism and online ticketing operations of the railways. The IRCTC website, established in 2002, is one of the largest e-commerce firms in India.

1.2.2 Civil Aviation: India is the world's ninth largest civil aviation market. Passenger throughput at Indian airports was 162 million during 2011-2012, 75% of which was domestic. Total freight traffic handled by the Indian airports increase at the CAGR of 9.2 % for the last 11 years to reach 2.28 million metric tonnes by 2012[6]. Through the Air Corporations Act, 1953, airlines were nationalized. Indian Airlines Corporation (IAC) was set up for serving the domestic passengers while Air India International (AI) was set up to provide for the international passengers. In 1990, open-sky policy was adopted by the government whereby air taxi- operators were allowed to operate their flights from any of the airports, decide their fares for cargo and passenger services and the flight schedules. In 1994, the monopoly enjoyed by AI and IA were stopped by the Government and private operators started providing air transport facilities and services. The **Directorate General of Civil Aviation**

[5] India Transport Report, Moving India to 2032, Volume I, Executive Summary, National Transport Development Policy Committee, 2014, Pg. 5
[6] Ibid.

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(DGCA) [7] is responsible for implementing, controlling, and supervising airworthiness standards, safety operations, crew training in India. The **Airports Authority of India** (**AAI**)[8], set up in 1995 under the Ministry of Civil Aviation is responsible for generating, upgrading, upholding and supervising civil aviation infrastructure in India. It provides Air Traffic Management (ATM) services over Indian airspace and adjoining oceanic areas. It manages a total of 125 Airports, including 11 International Airports, 8 Customs Airports, 81 Domestic Airports and 25 civil enclaves at Military Airfields. The **Airports Economic Regulatory Authority (AERA)** [9] was established under the Airports Economic Regulatory Authority of India Act 2008, to regulate tariff and other charges for the aeronautical services rendered at airports and to monitor performance standards of airports and also to establish Appellate Tribunal to adjudicate disputes and dispose of appeals.

1.2.3 Ports and Shipping: About 95 % of India's trade volume is moved by sea. India has 12 major ports and 200 notified non-major ports. The major ports are administered by the Union Government under the Major Port Trusts Act of 1963, while non-major ports are administered by maritime states and union territories. The ports were opened to private sector participation in 1997. To regulate cargo and vessel related tariffs, **Tariffs Authority for Major Ports (TAMP)** was created in 1997. During 2011-2012 the total cargo handled by major and non-major ports was 914 million tonnes, with 61 % of it being handled by major ports. [10]

1.2.4 Road Transport: Among the modes of transport mentioned, road transport has emerged as the dominant segment in India's transportation sector with a share of 4.7 per cent in India's GDP in 2009–10 which is higher than Railways that has a 1 per cent share[11]. Road transport has gained significance over the years despite substantial barriers to interstate goods and passenger movement compared to inland waterways, railways and air which do not face laborious en route checks and

[7] http://www.dgca.nic.in/#
[8] http://www.aai.aero/public_notices/aaisite_test/orign.jsp
[9] http://aera.gov.in/aboutus.php
[10] India Transport Report, Moving India to 2032, Volume I, Executive Summary, National Transport Development Policy Committee, 2014, Pg. 6
[11] 12th Five Year Plan (2012-2017), Volume II, Economic Sectors, Chapter 15, Transport Pg. 224

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barriers such as octroi and toll barriers because development of road transport offers area development, promotion of economic activity in, creating a co-ordinated network with other larger transport modes (such as rail-road coordination), last mile connectivity, adaptability to individual needs, flexibility of schedules and cost effectiveness.

Public road transport mostly encompasses passenger bus service offered by the State owned road transport undertakings and the private operators plying their vehicles under stage carriage permits. Public sector participation in provision of road transport started with the enactment of the Road Transport Corporations Act, 1950, which mandates states to create state road transport undertakings, corporations, companies or departmental undertakings. Currently, there are 54 State Road Transport Undertakings consisting of 24 State Road Transport Corporations (SRTCs), 12 Companies, 8 Government Departmental Undertakings and 10 Municipal Undertakings, owning 1,47,000 buses, as on March 2011 including 10,000 buses hired from private sector, of which about 81% are involved in rural and inter-city operations. The SRTUs carry more than 7 crore passengers per day performing about 501 billion passenger kilometres annually[12].

Association of State Road Transport Undertakings (ASRTU)[13] was formed on 13th August, 1965 as an umbrella organisation to club the resources and knowhow of various SRTUs for dealing with various difficulties faced by them and help them to improve their performance. ASRTU has 62 members inclusive of 7 associate members, who constitute the backbone of mobility for the urban and rural population, across the country.

Central Institute of Road Transport (CIRT, Pune)[14], the technical organ of ASRTU, looks after the testing of spare parts and components at the stage of pre-qualification of rate contract vendors and also for the samples sent by STU's. The Institute credited by NABL and recognized by the Govt. of India for vehicle certification, has well-equipped laboratory and testing facilities. The Institute also

[12] Report of the Sub-Group on State Road Transport Undertakings formed under the Working Group on Road Transport Constituted by Planning Commission for the Twelfth Plan.
[13] http://www.asrtu.org/
[14] http://www.cirtindia.com/

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conducts training programmes for STU's and undertakes research/consultancy studies on road transport.

1.3 Uttar Pradesh State Road Transport Corporation[15]

The UP Government Roadways was renamed as Uttar Pradesh State Road Transport Corporation (UPSRTC) in June 1972 under the provisions of the Road Transport Act, 1950 with the following objectives:

- For the development of the road transport sector correlated to which would be the overall development of trade & industry.
- For coordination of the road transport services with other modes of transport.
- For providing or causing the provision of an adequate, economical & efficiently coordinated road transport service to the residents of the state.

The corporation has sole monopoly over 9.65% of the total route length in Uttar Pradesh, i.e. 9.65% routes are nationalised and no private stage carriers are permitted to ply their vehicles on these routes. The nationalisation of routes is decided on the basis of their strategic importance for the state.

1.3.1 Infrastructure: The corporate office of the corporation is situated at Lucknow, the capital of Uttar Pradesh. Till March 2013, the corporation held a fleet of 8,893 buses, with fleet utilisation of 97%[16].

The corporation has been divided into 20 regions of which 1 region operates urban & sub-urban services. Each region has a regional workshop where major repair and maintenance work as well as assembly and reconditioning work is performed.

Each region has been divided into smaller operational units called depots. The total number of depots in the corporation is 108. Each depot has a depot workshop attached to it to provide minor maintenance amenities.

For heavy maintenance and repair of vehicles, reconditioning of major assemblies, renovation of buses and construction of bodies on new chassis, two Central workshops have been established in Kanpur: Central Workshop, Rawatpur and Dr.

[15] http://www.upsrtc.com/default.aspx?history

[16] Review of Performance of SRTUs, April 2012-March 2013, Ministry of Road Transport and Highways, Transport Research Wing, January 2014

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Ram Manohar Lohia Workshop, Allen Forest. Eight tyre re-treading plants are established at Agra, Lucknow, Gorakhpur, Ghaziabad, Bareilly, Kanpur, Saharanpur, Allahabad, Moradabad and Etawah to provide in-house tyre re-treading facilities.
A training school is established in Kanpur with the requisite infrastructure to train drivers and technical staff.

1.3.3 ITMS Project – UPSRTC: Uttar Pradesh State Road Transport Corporation (UPSRTC) is implementing the Intelligent Transportation Management System (ITMS) under the '**Central assistance for Strengthening Public Transport System in the Country**' scheme by Ministry of Road Transport and Highways. ITMS Intelligent Transport Management System (ITMS) is the addition of information technology to transportation infrastructure and vehicles. It aims at improving operational efficiency by better management of fleet, manpower, routes and passengers. ITMS can be defined as a bouquet of Bus Transport Management Enabling applications supported by the required hardware, software and manpower. One of the key aspects of the project is to study the impact of implementation of this system and recommend improvements, if any in the system for ensuring better service delivery by UPSRTC. The project will be explained in detail in the section on current government efforts.

1.4 Problems Faced in Road Transport and Their Impact on Society

1.4.1 Under- Developed Public Road Transport and Increasing congestion: The share of buses in overall number of registered vehicles has declined from 11.1% in 1951 to 1.1% today even though they account for about 50% of all journeys performed by road[17], whereas there has been an exponential growth of private mode of transport during this period especially during the last two decades. The spread of the personalized mode of transport has led to problems of traffic congestion, pollution and an increasing number of road accidents. According to a World Bank newsletter: One analysis estimates that the economic losses incurred

[17] Report of the Sub-Group on State Road Transport Undertakings formed under the Working Group on Road Transport Constituted by Planning Commission for the Twelfth Plan.

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on account of congestion and poor roads alone run as high as $6 billion a year[18]. The reasons for the growth of the private mode of transport is the continuous deterioration in quality of service provided by the public transport system and rising level of anticipation of passengers. Also there is hardly any regulation in cities for parking of vehicles and owner of private vehicles generally misuse pubic space for parking at little or no cost at all and cause traffic havocs. Availability of virtually free parking space is a form of subsidy to car owners and is a major factor behind increasing congestion in cities. Under development of public transport services, especially in rural areas affects the masses the most. They have to rely on sub-standard and dangerous modes such as over-crowded trucks and tempos for their movement. Uncertainty in travel times is another major issue that plagues such substandard transport.

1.4.2 India's Rising Import Bill: The growing use of private transport has led to a huge jump in demand of fuel. Since India meets most of its fuel demand through imports, and recently there has been an upward mobility in oil prices, India's import bill has been increasing. Increasing import bills further worsen trade balance which has serious repercussions on the economy's health. According to data obtained from the export import data bank, enlisted on the website of Ministry of Commerce and Industry, import of petroleum and related products constituted about 34% of total imports in 2013-2014, and in terms of value it witnessed a growth of around 11% from 2012-13 to 2013-14[19]. Since India is a developing economy, its energy needs are bound to increase in future. The decline in use of private transport by switching to public transport, which is far more economical in terms of fuel usage is one of the way to divert the use of petroleum to drive growth in other important sectors like industry and freight transport which are essential for development of the economy.

1.4.3 Rising and Ill Targeted Fuel Subsidy: According to data obtained from the Planning Commission website [20] subsidy on petroleum amounted to Rs. 85, 480

[18] World Bank. 2009. *The World Bank in India newsletter vol. 7 (no. 5)*. Washington, DC, Pg. 7 http://documents.worldbank.org/curated/en/2009/03/12069526/world-bank-india-newsletter-vol-7-no-5

[19] http://commerce.nic.in/eidb/Icom.asp

[20] http://www.planningcommission.nic.in/data/datatable/0306/table%2038.pdf

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crores, or 33.45% of total subsidy in 2013-14, next only to food subsidy. As a % of GDP, petroleum subsidy was 0.86%. Rising fuel subsidies have led to fiscal pressures in India. While petrol prices were decontrolled in June 2010, the government will decontrol diesel prices in a phased manner and the quota for subsidies LPG is 9 subsidized cylinders per household. In January 2013, the government announced that all bulk diesel sales, i.e. sale of diesel quantity greater than 200 litres, would take place at unsubsidized prices and that Oil Marketing Companies have the discretion to periodically increase diesel prices by small amounts. It is important to note that the consumers of both types of fuel i.e. diesel and LPG are generally higher income households as poor households seldom have access to motorised private transport or gas stoves. People from lower income household are generally dependent on public transport for travel. Ironically, SRTUs qualify as bulk purchasers and have to purchase diesel at unsubsidized prices. Thus households that own cars enjoy subsidies while household which use buses, don't. This dual pricing has also led to SRTUs defying government orders and purchasing diesel from retail outlets. The reason for this is explained in the next heading.

1.4.4 The Deteriorating Financial Condition of SRTUs[21]: A detailed study of the Review of the Performance of State Road Transport Undertakings (SRTUs) (Passenger Services for April, 2012 – March, 2013), reveals that State Transport Undertaking are under severe financial crunch. The reporting SRTUs (38 of 54) earned a total revenue of Rs. 42,089.37 crores and incurred a total cost of Rs. 49,381.32 crore which resulted in a net loss of Rs. 7,269.67 crores during the year ending 31st March 2013. The major constituents of cost of operation of SRTUs are staff costs (39.4%) and fuel and lubricants costs (30.6%). Over the years as fuel costs rise, costs of SRTUs are bound to increase. With fuel costs constituting a substantial drain on the resources of SRTUs, they resort to illegal measures such as purchasing diesel from retail outlets when they ought to do it directly from Oil Marketing Companies. The absence of a fare review mechanism to increase fares in accordance with rise in cost makes the financial viability of SRTUs difficult. The

[21] Review of Performance of SRTUs, April 2012-March 2013, Ministry of Road Transport and Highways, Transport Research Wing, January 2014

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revision of fares is done at the discretion of the state government which is hardly ever in favour of upward revision due to political reasons. Thus the Indian public road transport essentially faces a grave paradox: on one hand it needs to maintain viability of SRTUs and on the other hand, since users of public transport generally belong to lower income deciles, it needs to ensure affordability in general. For UPSRTC, the absence of state financing only makes matters worse.

1.4.5 Multiplicity of Taxes and User Charges[22]**:** India's transport intensity- the share of transport services in total production costs- is the highest among a group of eleven developed and developing countries. It is 11 per cent higher than in South Africa, 14 per cent higher than in China, and 38 per cent higher than in Brazil. These differences suggest that the Indian economy is far less efficient in its use of transport services than its BRICS counterparts. India's multifaceted tax regime and its current transport appraising systems are a culmination of overlapping, multiple taxes and user charges established over time and varying between the Centre and states and across transport modes. This complexity is an analyst's nightmare, and adds substantially to the public and private sector's cost of doing business by magnifying the inefficiency of the transport sector. A complex and inefficient tax regime in transport in turn adversely impacts the efficient allocation of productive resources because of the strong backward and forward linkages between the transport sector and the rest of the economy. The current transport pricing system is a result of multiple taxes and user charges established at different points of time at varying levels of governance. In addition, fuel tax is an integral part of transport pricing. The taxation structure is quite different across modes and states. This is partly due to constitutional mandate. The central government levies indirect taxes in the form of union excise, import duty, and service tax whereas the state governments levy sales tax / VAT, motor vehicle tax (MVT), and passenger and goods tax (P&GT). Taxes are imposed on inputs as well as outputs of transport services thus affecting the cost and price structure in these sectors. Within the road sector, about two-thirds of total tax revenue is collected by the state governments. The tax differentiation in this

[22] Fiscal Issues and Allocative Efficiency, National Transport Development Policy Committee, a study by National Council of Applied Economic Research (NCAER), July 2012

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sector is determined by a number of parameters that vary across states, uses and types. Tax burden, measured as sectoral tax to sectoral value added, is 16 per cent in aviation and road sectors and 14 per cent in water transport sector. Overall, the aggregate tax burden including petroleum is about 30 per cent.

1.5 Goals and Objectives

The main objective of the study is to suggest a policy model for regulation and ensuring service delivery for UPSRTC and suggest measures for maintaining its sustainability. One major step taken by UPSRTC towards better service delivery and efficient management is modernisation of its operations by undertaking the installation of Intelligent Transportation Management Systems. One of the key objectives is to analyse the impact of this step and suggest improvements, if any. Major goals which would be tried to achieve would be to suggest feasible solutions to aforementioned problems faced in road transport in India and to suggest measures for viability gap funding for increasing intra-state connectivity and promote economic activity in rural areas of Uttar Pradesh. Another goal is to equip UPSRTC with a tool to assess customer perceptions and build upon the assessment to increase its business and fill any gaps between service delivery and expectations.

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2. Current Government Efforts

As mentioned in the previous section, there are enough economic and environmental factors which predict that the demand for better transit system (passenger bus service) would increase if a certain minimum standard of service is maintained and the quality of public transport and service delivery is such that it can be marketed and sold as a branded product to the public. The financial position of the State Governments and State Transport Undertakings is well known. It has been observed for quite some time past that they are not able to provide sufficient financial funding required for upgrading the deteriorating public transport system in their respective states. The overall situation presents need to address the problems faced by the public transport institutions so as to put in place a mechanism for public bus transport that offers world class services to the end users and also ensures financial viability of the SRTUs.

To address issues in public transport, the Ministry of Road Transport and Highways initiated the scheme called **'Central assistance for strengthening Public Transport System in the Country'**. It came into effect from 15 March 2010. The main objectives of the scheme are[23]:

a. To provide financial aid for use of latest technologies such as GPS / GSM based vehicle tracking system, online reservation system, automatic fare collection system, electronic ticketing machines, inter-modal fare integration, passenger information system etc. for services covering inter-city and rural areas.
b. To provide financial aid for preparation of total mobility plan for the entire State.

2.1 How is the scheme benefitting UPSRTC?

Uttar Pradesh State Road Transport Corporation (UPSRTC) is implementing the Intelligent Transportation Management System (ITMS) under the '**Central assistance for Strengthening Public Transport System in the Country**' scheme by Ministry of Road Transport and Highways.
The sanctioned project has a capital cost of Rs. 38.25 crores of which 50% (Rs. 19.125 crores) is being funded by the Govt. of India as grant. Balance capital cost of

[23] Scheme for Strengthening Public Transport System, Ministry of Road Transport and Highways

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Rs. 19.125 crores shall be met by the Systems Integrator on Build-Own-Operate-Transfer basis on behalf of UPSRTC. Further, the operating cost of the project (including equipment maintenance, manpower training & outsourcing, site preparation, rentals of GSM Sim cards, etc.) for a 5 year span shall amount to around Rs. 70 crores. This shall also be met by the Systems Integrator on BOOT basis on behalf of UPSRTC.

With this view UPSRTC had made a proposal in its sanctioned Detailed Project Report that it shall get the project implemented on a BOO / BOOT basis with the Systems Integrator (SI) organizing & implementing the various components on its own investment and charging UPSRTC on a per ticket basis. The SI shall be monitored against a rigorous Service Level Agreement (SLA) and shall be subject to graded penalty system for delays.

As per the guidelines of the ministry the SI (M/s Trimax IT Infrastructure, Mumbai) has been selected through an All India Open Bidding System. An agreement has been entered into between UPSRTC & SI on 4 April 2013. As per agreement the SI shall be paid the amount received by UPSRTC from the GoI grant under ACA against specific timelines of implementation phase. Subsequently the Corporation shall pay to the SI @ Rs. 0.44 per ticket for capital cost invested on behalf of UPSRTC, operations and maintenance under the 5 year contract.

The GoI has the following schedule for release of grant:-

Approved Capital Cost of the project **38.250**

Approved Grant under ACA **19.125**

1st instalment 50% Advance	9.5625	Received in Mar.2013
2nd instalment 30% on utilization of advance and field inspection by MoRTH	5.7375	Inspection by Morth completed and 2nd instalment released in Mar.2014
3rd instalment 20% on completion of project and field inspection by MoRTH	3.8250	Scheduled completion in June.2014
	19.125	

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2.1.1 Key Achievements of the Project till date:

Online Reservation System (ORS)

- Implemented since February 2013 with a payment gateway to ensure that ticket revenue goes to UPSRTC bank account directly.
- Available for Volvo & High End services and 200 Goldline & prestigious ordinary services.
- Sub contracts for ticketing by leading 3rd party website - makemytrip, redbus, hermes, travelyaari & busindia.
- Mobile based apps for ticketing implemented.

Counter Ticketing

- 150 counters have been set up and are operational for current ticket issue - all infrastructure, software and manpower provided by SI. Daily cash receipts are deposited at UPSRTC depots.
- Further, 84 counters out of 100 required have been setup for Smart Card registration and issue. Three types of cards would made available:
    - **Monthly Seasonal Ticket (MST):** A non-transferable card with user photo that is valid for a designated route for one month. It allows a 60 trips journey (2 trips per day) on a 36 trip price, for routes up to 100km for general users and 35 km for students.
    - **Open Ended Travel Card (E-Wallet):** Personalised non – transferable Smart cards with user photo issued for use on any bus, any time. Cards are denomination based and the discount is topped up on issue as in prepaid mobile SIM cards.
    - Both the above cards also have magnetic strip for being for being used as simple prepaid cards at any merchant establishments for shopping, in collaboration with ICICI bank. Applicant can deposit any amount from Rs 100 to Rs 1000 in this General Purpose Wallet and can use it as required. This can be done at any designated counter and does not require the applicant to have an account with ICICI.
    - **Concession Cards:** Smart cards shall be issued to concession travellers with the information of the paying department pre-loaded in the card so

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that the authorisation process for conductors becomes easier and journey details are captured directly by Electronic Ticketing Machine shall be used for reconciliation and billing.

- The Smart Cards have to be obtained by filling an application form made available against a one-time payment of Rs 50 as the KYC norms of banks require the filling of the form.

Electronic Ticketing Machines (ETMs)

- Old existing ETMs replaced with 11153 new GPRS ETMs with simcards in all Regions and implemented in all depots.

Vehicle Tracking System

- GPS has been installed in over 5780 buses. Installation is targeted to get completed in all buses by May 2014. The application software is functional and some small customization & stabilization processes are underway to make it more useful and user friendly. The information forms a feed for Passenger information system & Control rooms.

Central and Regional Control Centers:

- Control rooms set up at 3 Regions and shall be completed in all other regions along with completion of installation of VTS.

Passenger Information System ('PIS')

- 100 LCD screens (40") and automated passenger announcement system set up at bus stations of 8 Regions. Installation to be completed by May, 2014.

Data Centre and Disaster Recovery Centre

- Data Center at Mumbai & Disaster Recovery center at Bangalore with requisite infrastructure set up and is functional.

24x7 call center service

- For help / grievance redressal of users of ticketing setup at HQ by SI. IVRS and web application for the same is being customized and shall be implemented soon.

2.1.2 Projected Benefits of ITMS Project - As Per Detailed Project Report

2.1.2.1 Benefits of Electronic Ticketing Machine

- **Tangible Benefits**

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- Cost of ETM printed ticket per passenger is less than manual pre-printed ticket.
- Scope of incremental revenue - advertisements on the back side of ticket roll.
- Previous experiences with other STUs indicate an increase in traffic revenue by 4% – 33% on account of the introduction of ETMs since pilferage in traffic revenue by the conductors is curbed.
- Operations of conductor are greatly eased.

- **Intangible Benefits**
  - Use of auto digitized data for planning.
  - Accounting system strengthened and more accurate.
  - Better MIS reports.
  - Reliability of services and increased patronage.

2.1.2.2 Project Impact Analysis

- **The implementation of the ITS Project has several social benefits as described below:**
  - Safety improvements
  - Delay reduction
  - Effective capacity improvements
  - Greater commuter satisfaction
  - Energy and Environment-Positive Impacts
  - Reducing Travel Uncertainty
  - Reliability and Punctuality

2.1.2.3 Expected measurable outcomes of the project

Service Outcomes- Socio economic benefits

With the introduction of Intelligent Transport System in Uttar Pradesh State, the following clear factors would get established:

- **Increase in productivity**

With automated display units and announcement systems at bus-stations / stands providing information on bus schedules and estimated time of arrival, passengers

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enhance their productive time without having to waste their time at bus stops / stands not knowing when the next bus would be arriving.

- **Reduction in travel time**

With well-established communication lines between the vehicle, central command control center and the bus stations, the Control Center will be able to redirect the vehicles in the event of any emergencies saving the property of UPSRTC (in such events riots) and help to reach the destination in pre-determined time. When Traffic Management System gets implemented across the state, these vehicles would get to have information on the traffic density and probable courses of action to reach the destination in time.

- **Patronage of Public Transport System**

The introduction of ITS will result in more efficient and cleaner transport management, real-time dissemination of information to passengers regarding bus services at bus stops / bus terminals. This will enhance reliability of public transport services and encourage people using personal transport to use public transport system. This will result in minimizing traffic congestion and pollution levels. A modal shift of up to 5% to public transport is expected.

- **Reduction in Congestion**

With state of the art and real time information dissemination possible through GPRS systems for all stakeholders', immediate corrective steps can be taken to avoid areas of accidents, high density of traffic and help ease congestion. Also, with increased modal shift from other personal modes, the system is expected to ease traffic congestion on roads.

- **Reduction in accidents**

With ITS improving the efficiency and management of transport across state, improved training and two way communication capability between driver and operations staff it is expected to reduce accidents with the use of incident management facility in ITS, it will be possible to ensure quick relief in case of accidents, hold ups, breakdowns etc. This will also minimize fatalities with immediate help coming from the right quarters.

- **Reduction in emission levels**

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While the transport network becomes highly efficient, punctual, passenger friendly it is bound to translate to citizens using own vehicles patronizing public transport. This will result in reduction of emission levels, as less number of vehicles will be using the roads.

- **Increase in tourist satisfaction**

With various systems installed in the vehicle, bus-stations / stands, command and Control Centers, integration and coordination becomes a key factor for providing different experience to the citizens of Uttar Pradesh. This is expected to increase the tourism flow into the state and their patronage.

2.1.2.4 Economic Benefits of the Project

The main economic benefits of the project will be:

- Additional revenue accruals to UPSRTC due to modal shift from the existing population using other modes of transport. These are Additional revenues due to Modal Shift.
- **Revenue Increase from different sources**

In addition to the primary source of income, there are always possibilities to utilize other sources of income in any business model.

- **Advertising on the Bus body**

UPSRTC can earn additional revenue through advertising on the bus body. State buses generate advertising revenue by carrying advertisement banners or hoardings.

- **Advertising inside the buses**

Another source of revenue for UPSRTC is through advertisements by carrying small sized banners behind the seats. Also the display units can be used to scroll advertisements for a pre-determined time period. The audio announcement system can also be used to announce products along a specific route and can be charges accordingly.

- **Revenue from Online Advertising**

Advertising online offers impressive value compared to traditional media, and the possibilities for accurately tracking and measuring the response to a campaign is superb. Advertising Networks are an excellent source of website revenue

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generation, allowing the webmaster display and earn revenue from many different ads.

- **Revenue from Subscriptions**

Subscription-based revenue stream is very vital to any e-commerce. Companies with all business models often seek to add a subscription based element to their offerings since subscriptions can be the most lucrative of all forms of revenue. People will only subscribe to something where they see the value and can find no suitable free alternative. This software typically comes with subscription-style licensing, information sites seek to offer subscription-only content, and Search Engine Optimization companies asking clients to subscribe. Since UPSRTC will be catering to the needs a wide range of end-users, subscription-based income sources can prove to be lucrative.

- **Reduction in Fuel Consumption**

In the earlier section, it has been mentioned that private travel will be reduced as a result of the modal shift due to the introduction of ITMS in Uttar Pradesh State. This will result in savings on fuel imports since there is a reduction in fuel consumption.

2.1.2.5 Non-quantifiable Benefits of ITS

UPSRTC's initiative in setting up ITS covering automatic vehicle location and tracking systems, display systems and a central command station addresses certain core components of ITS. Other components of the ITS such as cashless smart card based ticketing, automatic passenger counting, improved traffic management could be taken up in phases.

2.1.3 Interactive Voice Response System number: 149

Just as we dial 139 for any enquiry related to railways, UPSRTC had filed a similar request with the Telecom Ministry to allot the IVRS number 149 for customer queries. UPSRTC has been allotted with the number and now plans to take it to the next level by making this number functional pan India by combining the database of all State Road Transport Undertakings. This will help a person travelling from say Bangalore to Uttar Pradesh by bus and the information relating to timetable and route will be conveniently made available at a single number: 149.

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3. Methodology

3.1 Literature Search

The initiation of research into the project began with a thorough study of the ITMS Documents provided by the MD, UPSRTC. A study of the Road Transport Corporations Act, 1950 and Motor Vehicles Act, 1988 was done. Apart from those, a study of the documents released by various government agencies namely Ministry of Road Transport and Highways, National Transport Development Policy Committee, a high powered committee formed under the Planning Commission which made projections for transport requirements for India for 2032. A detailed study of the fare review mechanism of Singapore public transport system was done. A study of the current government efforts, namely 'Central Assistance for Strengthening Public Transport System in the Country' was done. Apart from these, various articles from Economic and Political Weekly were read that highlighted problems in road transport in India. A detailed list of the reports and articles read is provided in the references section.

3.2 Right to Information Act,2005

An RTI was filed with the online portal of Ministry of Road Transport and Highways, asking for a hard copy of the report of inspection that was to be conducted by the ministry to check the progress of implementation of ITMS Project by UPSRTC in Lucknow and Ghaziabad, the two pilot regions. A two page response was received, which was a report of the inspection carried out in Lucknow and it largely lauded the efforts of UPSRTC. No inspection was done in Ghaziabad.

3.3 Field Visits

Since Ghaziabad is a pilot region for the ITMS project, it was chosen as the main place for field visits. Four field visits were undertaken to various bus depots in Uttar Pradesh for a first- hand study of the progress of implementation of the ITMS system. These included: Ghaziabad, Kaushambi, and Sahibabad Bus Depots in Ghaziabad region and Meerut Bus Depot in Meerut region. During field visits, substantial interaction was done with regional manager, UPSRTC, Ghaziabad region assistant regional managers of depots, station staff that included technical and clerical staff and conductors, bus drivers and passengers. During these interactions

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various issues came to surface that were being faced by stakeholders in UPSRTC, the details of which are given in the next section. One field visit was undertaken to attend a training workshop at Ghaziabad hosted by Trimax Infrastructure, the systems integrator responsible for installation of ITMS for UPSRTC, for managerial staff of four west zone regions namely Ghaziabad, Agra, Meerut and Noida. The training workshop was an eye opener as various practical problems being faced by managerial staff in use of ITMS surfaced during the discussion section of the workshop. One of the main objectives of this report would be to address those issues and try to suggest feasible solutions for the same.

3.4 Surveys

The main mode of interaction with bus conductors, drivers and passengers was survey. Three questionnaires were drafted, one for each stakeholder. The questionnaires can be found in appendix B. The main problem that surfaced in compiling surveys was: a very small sample size. The main reasons behind this roadblock was lack of time, resources (manpower) and willing respondents. In surveying conductors and drivers, help was provided by the assistant regional managers. Since only four depots could be visited, a sample size of 20 conductors and 15 drivers could be gathered as there wasn't much staff available that was off duty.

Considerable impediments were faced in surveying passengers. UPSRTC caters mainly to rural population who was largely apprehensive/ disinterested in responding. Also the time that was made available for surveys was afternoon, during which there was very little footfall at bus depots due to scorching heat. Due to these hindering factors a sample size of 25 passengers was gathered. Sample size being a limiting factor in surveys, a broad range of views could not be collected. Also generalisation/ extrapolation would not be possible on the basis of the collected sample, thus no statistical inference is being drawn out of the survey results. Nevertheless, some general trends and observations were indeed observed and are worthy of being listed. The same are listed in the findings section.

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3.5 Meetings and Interviews

Date	Name	Designation	Institution	Topic of Discussion
31-5-2014	Mr Pallav Bose	Regional Manager, Ghaziabad	UPSRTC	ITMS
31-5-2014	Mr TK Singh Visen	Assistant Regional Manager, Kaushambi	UPSRTC	ITMS
31-5-2014	Mr FR Francis	Assistant Regional Manager, Finance	UPSRTC	Financial position of UPSRTC
5-6-2014	Mr Atul Shrotriya	Assistant Regional Manager, Ghaziabad	UPSRTC	Implementation roadblocks for ITMS
7-6-2014	Mr Anil Kumar	Assistant Regional Manager, Sahibabad	UPSRTC	Infrastructure at UPSRTC, working conditions
7-6-2014	Mr TK Singh Visen	Assistant Regional Manager, Kaushambi	UPSRTC	Organisation structure of UPSRTC, delegation
9-6-2014	Mr Subhash Chand	Station Superintendent, Meerut	UPSRTC	Depot Operations
9-6-2014	Mr Ranveer Singh	Senior Instructor	UPSRTC	Driver training
2-7-2014	Mr TK Singh Visen	Assistant Regional Manager, Kaushambi	UPSRTC	The menace of private operators
3-7-2014	Mr P Ananda Rao	Executive Director	ASRTU	Use of IT is transport

The details of the meetings can be found in appendix A.

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4. Results and Discussions

4.1 Findings from the Literature

A study of the Transport section in Volume II of the twelfth five year plan reveals that India's transport sector is grossly overstretched. In spite of being the dominant mode of transport, it is plagued with slow technical expansion, low fuel efficiency, pollution and slow movement of freight and passenger traffic. Issues like complicated tax systems across states, lack of immediate help in case of road accidents and wastage of fuel and time in long queues at toll barriers need to be addressed. A study of the review of the performance of State Road Transport Undertakings by Transport Research Wing, Ministry of Road Transport and Highways revealed that that the bus availability in India was much lower as compared to some developed countries like Australia, Japan, UK and USA and other developing countries like Brazil, China, Malaysia, Mexico, South Africa and Thailand. India just has 1 bus per 1000 persons while Thailand has the highest, i.e. 8 buses per 1000 persons. The combined financial performance of all reporting SRTUs (38 out of 54) was rather dismal with the net loss increasing by 8.2% from 2011-12 to 2012-13. Eight SRTUs were making profit before deducting taxes in 2012-13. UPSRTC was one of them. Just two SRTUs were making net profit namely Odisha and Karnataka SRTCs in 2012-13 as compared to four during 2011-12.

Highlights of the physical and financial performance of UPSRTC, a comparison between 2012-13 and 2011-12[24]:

- The **fleet strength** of UPSRTC increased to 8,893 from 8,746 and fleet utilisation to 97.1% from 95.2%.
- The total **strength of staff** deployed decreased to 27,319 from 28,170, staff deployed per bus decreased to 3.07 from 3.22.
- The **staff productivity** increased to 111.73 kms/staff/day as on 31st March 2013 from 105.45 kms/staff/day as on 31st March 2012.
- The **average vehicle productivity** increased to 343.24 kms/bus/day from 339.65 kms/bus/day.

[24] Review of Performance of SRTUs, April 2012-March 2013, Ministry of Road Transport and Highways, Transport Research Wing, January 2014

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- The **number of passengers carried per bus per day** increased to 162.2 from 153.4 while occupancy ratio remained at about 70%.
- The number of **road accidents** reduced to 798 from 935 and number of fatal accidents reduced to 304 from 342.
- The **total revenue** increased to Rs 2,45,815.80 Lakh from Rs 2,32,398.32 Lakh, an increase of 5.8% .
- The **total cost** total cost increased to Rs 2,55,393.69 Lakh from Rs 235,855.47 Lakh, an increase of 8.3%
- The **net loss** increased to Rs9,577.89 Lakh from Rs 3,457.15 Lakh, an increase of 177%.

The following figure (1) shows the cost, revenue and the profit/loss positions of UPRTC over the last six years from the past two years the corporation has been constantly facing losses owing to a multiplicity of factors[25]:

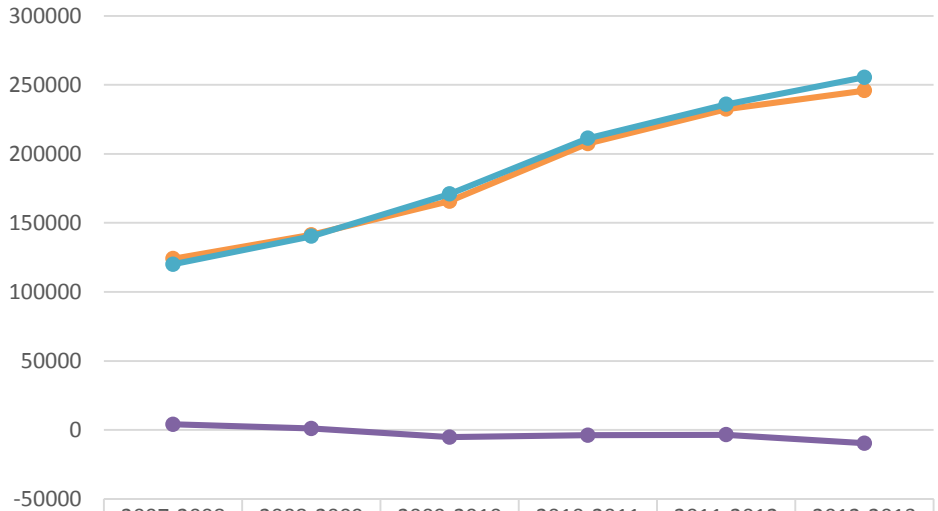
The main components of cost of UPSRTC are fuel and staff costs, with fuel forming a greater part of the total cost. Since the government is on the verge of de-regulating diesel prices, fuel costs are bound to increase in future. Also fuel prices being subject to international movements, form a major deciding factor in costs. The following figure (2) shows the cost composition of UPSRTC for six years[26]:

[25] State Transport Undertakings Profile And Performance 2007-12, Central Institute of Road Transport, Pune

[26] State Transport Undertakings Profile And Performance 2007-12, Central Institute of Road Transport, Pune

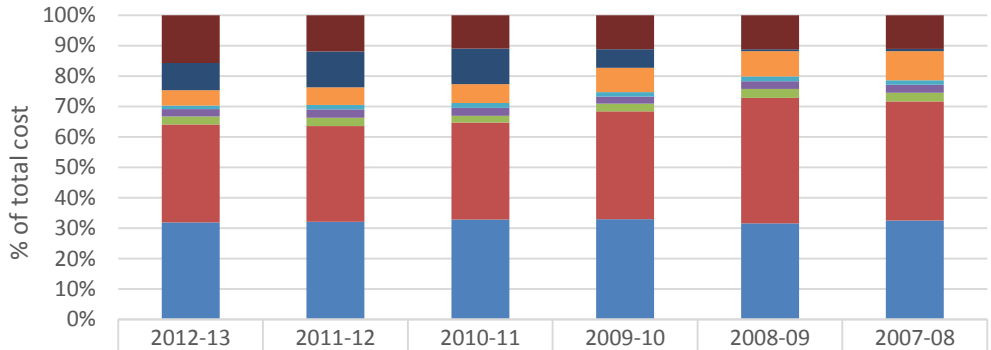
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FIg. 1 Cost, Revenue and Net Profit/Loss for UPSRTC



	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
total revenue (lakh)	124073.93	141385.87	165702.01	2,07,439.73	2,32,398.32	2,45,815.80
total cost (lakh)	120003.02	140318.7	170899.35	2,11,289.04	2,35,855.47	2,55,393.69
net profit/ net loss (lakh)	4054.26	1067.17	-5197.34	-3849.33	-3,457.15	-9,577.89

Fig. 2 Cost Composition of UPSRTC



	2012-13	2011-12	2010-11	2009-10	2008-09	2007-08
Other Costs	15.69	11.92	11.02	11.23	11.20	11.12
Tax	9.02	11.75	11.65	6.1	0.62	0.69
Depriciation	4.96	5.8	6.2	7.94	8.33	9.59
Interest	1.2	1.52	1.53	1.42	1.58	1.48
Spares	2.44	2.67	2.63	2.38	2.54	2.63
Tyres and Tubes	2.62	2.75	2.21	2.55	2.95	2.83
Fuel and Lubricants	32.16	31.49	31.89	35.34	41.17	39.15
Staff	31.91	32.11	32.88	32.94	31.61	32.51

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Performance of UPSRTC vis-à-vis other major SRTUs

The comparison of performance of UPSRTC with the other major SRTUs clearly point out that UPSRTC is most efficient it terms of operating ratio as it has the lowest operating cost to traffic revenue ratio. It is evident that in terms of efficiency parameters like Fleet Utilization, UPSRTC is one of the best. But it is not earning profit vis-à-vis Karnataka SRTC. It is only after including other SRTUs (BMTC, NWKSRTC and NEKSRTC) that Karnataka is in loss. Fuel efficiency is highest for GSRTC. In terms of staff efficiency UPSRTC occupies the top position but it may also be due to shortage of staff. The staff efficiency is likely to increase with the conscious effort to remove the skewness i.e. reduce the clerical staff and bring in more operational staff and bring in multi-roles like driver cum conductors. In terms of tax incidence, UPSRTC has one of the highest percentages of tax to total cost. With a relatively good operating ratio, it is quite possible that UPSRTC turns into a profit making organisation, given its tax burden is lightened by the government. In terms of number of buses, UPSRTC fares quite low. Given the magnitude of its population, the number of buses is dismal. Also, the number of passengers carried per bus per day is strikingly lower than other SRTUs. One possible reason might be long routes of plying. At the aggregate level, in spite of incurring losses, the corporation is showing signs of recovery and transformation, provided the Government, as the sole promoter of the firm, contributes towards that initiative. **Given below is the table highlighting the performance of UPSRTC and other major SRTUs.** All data except columns marked with * pertain to the period 2012-13[27].

Notes for the table:

* Data for 2011-12[28]

^^ Tamil Nadu includes seven SRTUs that are functional in Tamil Nadu

^ Karnataka includes four SRTUs namely Karnataka SRTC, Bangalore Metropolitan Transport Corporation, North Western Karnataka SRTC, North Eastern Karnataka SRTC.

[27] Review of Performance of SRTUs, April 2012-March 2013, Ministry of Road Transport and Highways, Transport Research Wing, January 2014

[28] State Transport Undertakings Profile And Performance 2011-12, Central Institute of Road Transport, Pune

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S. no	Description	Tamil Nadu^^	Karnataka ^	Rajasthan SRTC	Uttar Pradesh	Gujarat SRTC	Maharashtra SRTC	Andhra Pradesh
1	Total Revenue (Paise/KM)	2,560.16	2,806.21	2,466.70	2,206.35	2,395.45	3,058.41	2,564.95
2	Total Cost (Paise/KM)	2,799.12	2,871.33	2,839.65	2,292.32	2,684.14	3,253.17	2,592.05
3	Profit/Loss (Paise/Km)	-238.96	-65.119	-372.95	-85.970	-288.69	-194.76	-27.100
4	Operating Cost in Lakhs (Personnel+Material Cost)*	625666.6	480086.2	123963	162776.5	208369.3	409924.9	511083.6
5	Traffic Revenue (Lakhs)*	549649.94	542973.67	133493	2,29,165.56	1,60,039.15	4,57,450.00	570826.93
6	Operating Ratio (4/5)*100 *	113.83	88.41	92.86	71.03	130.20	89.61	89.53
7	Average number of buses	19,479	22,742	4,480	8,893	7,719	17,497	22,477
8	Average No. of Buses on Road	17291	20772	4075	8634	6,694	16,801	22402
9	% Fleet Utilization	88.76	91.33	91	97.1	86.7	92.7	99.7
10	Population as on March 2011	721,38,958	611,30,704	686,21,012	1995,81,47	603,83,628	1123,72,97	846,65,533
11	Number of buses per 10 Lakh population	270	372	65	45	146	213	265
12	No. of Total Fatal Accidents	1123	616	149	304	129	369	928
13	% Load factor	80.2	69.6	71.6	70	69.2	60.4	68.9
14	Pass/Bus/day	826.36	476.45	191.4	162.2	298.5	409.3	629.9
15	Eff KM/Staff/Day	67.5	58.66	81.61	111.73	70.23	54.51	66.73
16	KM/Bus/Day	418	287.81	361.07	343.24	367.32	312.09	363.03
17	Fuel Performance (KM/Lt)	5.16	4.8	4.93	5.18	5.5	4.87	NA
18	Tax as a % of Total Cost	2.59	5.18	7.41	9.02	12.53	13.99	1.88

Fare Adjustment Mechanism of UPSRTC

In this scenario of rising losses, a fare adjustment mechanism is a must. UPSRTC does have a fare fixation mechanism which was found to be as follows:

•Fare rate is amount chargeable per passenger per km

•It is normally fixed for Ordinary services and fare rates of all other service segments like Express, Semi Deluxe, Deluxe, AC, etc. are linked as a %age to the fare of ordinary services

•Ordinarily a STU sends a proposal for fare revision to concerned State Govt. when it is unable to recover its cost of operations at the available fare rate assuming 67% load factor (capacity utilisation)

•Fare chargeable from passengers is derived on the basis of cost of inputs

•Cost composition of various components (generally historically with some variance from time to time based on prevailing prices) as per standards have been

Component	%age
Fuel	30.0
Spares	2.5
Tyres	2.5
Hired	8.0
Salary	34.0
Depreciation	6.0
Interest	2.0
Miscellaneous	3.0
Tax	12.0
	100.0

•The mechanism for fare revision is - proposal by the Corporation on approval by its BoD, recommendation by the Government & approval by State Transport Authority

•Till Nov.2010 the fare rate for Ordinary buses was 49.52 paise / passenger / km which was revised by the above mechanism in Nov.10 to 60 ps / psg / km

•Further, the Corporation represented that inordinate delay in fare revision owing to the process results in losses as the cost of inputs being market driven have to be borne out of lower fare rates and the increase cannot be retrospectively addressed. The Govt. has considered and allowed adjustment of increase in cost on account of salary or fuel to be adjusted on a 6 monthly basis - 2 times a year.

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•The fare rate was revised to 70 ps / psg / km in Nov. 2012 with the above sanction
•In line with the fare adjustment formula fare rates were revised to 74 ps / psg / km in Feb.13, 78 ps / psg / km in Apr.13 and 79 ps / psg / km in Feb.14.
•A similar adjustment of 2 ps / psg / km in fare has been approved by BoD and sent to Govt. which shall raise the fare rate to 80 ps / psg / km

Such a mechanism is a "cost-plus" mechanism and there is no incentive for UPSRTC to cut back its cost. Also too frequent fare revisions without any productivity gain share to passengers does not provide an incentive to increase productivity and the entire burden of the cost increase is on the passenger who generally belongs to lower income deciles.

A study of the documents describing ITMS in detail painted a very bright picture and was suggestive of the fact that this system will really help improving service delivery for UPSRTC. However, since the project is still in implementation stages, an impact analysis is difficult to carry out. Further, there were some shortcomings in the implementation process, which if not addressed could dampen the impact and full benefits of ITMS might not be realised. These shortcomings are highlighted in the next section.

4.2 Findings from the fields and surveys and Gap Analysis

The major finding from the field visit was that there has been considerable delay in implementation of ITMS even in the pilot region of Ghaziabad. Though the implementation systems have immense potential but they have not been put to their best possible use. One major example being: the Vehicle tracking system is being monitored by the Assistant Regional Manager who has a host of other duties to perform. Contrary to statements in the Detailed Project Report, control rooms with round the clock monitoring for immediate reporting of distress is not being done and thus the whole purpose of installing VTS is being defeated. The VTS is currently generating a host of reports which are further increasing the work of already overburdened ARMs who have to address matters relating to staff, check the workshop, perform inspection of 15 vehicles daily and manage emergencies a well. Given this situation, round the clock monitoring of vehicles is not being done. Also problems like slow internet connectivity and frequent tampering of VTS device

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by crew of bus is causing problems like display of outdated data in the systems. A categorization of problems can be done as follows:

4.2.1 Management Issues (for more details please refer to details of meetings in appendix A)

- Lack of delegation of powers: ARM has a host of responsibilities to deliver and additional burden of monitoring VTS without adequate manpower support.
- Regional Managers have the power to start a new service within the state. This power is often misused by political leaders and RMs are forced to comply and run buses on non-profitable routes, leading to increase in operating costs with insufficient revenue collection.
- Lack of a marketing process which would help in building UPSRTC as a brand. The survey results of passengers reveal that none of them are aware of ITMS being implemented, despite of the fact that they are being touted as one of the main beneficiaries.
- While interaction with the managerial staff, one common complaint that surfaced was lack of state funding. They wanted that state should allocate a budget for UPSRTC as it is unable to uplift dilapidated bus stations and replace worn out fleet due to high costs of operations. This was also one of the reasons for late payment of wages to contractual workers. They said though we have a fare revision mechanism and the fare has been revised lately but public transport should remain affordable. If the entire burden of increasing costs is shifted to the passengers, they may stop using UPSRTC services and travel by private buses. Thus the government needs to provide sufficient viability gap funding to ensure sustenance of UPSRTC and its services.

4.2.2 Logistical Issues:

- No control room at Ghaziabad region for round the clock monitoring and reporting breaches\emergencies during the night.
- Printers often non-functional as cartridge filling centre is in Lucknow.
- Internet connectivity quite slow, managers depend on devices like photons for internet. Due to slow connection\ server overload, time taken for loading of data on VTS portal is quite high.

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- Frequent tampering of VTS device by bus crew due to which updated data is not being made available.
- ETMs having insufficient battery backup and hang quite often causing hassles in issue of tickets.
- Delays in issue of Smart cards and reluctance of buyers to get one due to third party involvement (ICICI Bank) and lengthy process of issuing.
- LCDs installed at bus depots but not functional as Passenger Information System is still being developed. But LCDs not being put to use for advertisements, passenger awareness.
- In case of ETM failure, no defined rules for persons with MST and open ended cards i.e. not defined whether they should buy a ticket.
- Lack of amenities at bus depots and workshops: Kaushambi bus depot with a mud ground, make shift toilets due to lack of funds as it is to be developed through a PPP model, lack of facilities for staff at Sahibabad workshop: dilapidated running room, no water supply.
- No advertisement at the back of ticket roll as proposed. Thus bearing unnecessary stationary cost which can be avoided if the space is used for advertising.
- Just one driver training centre for entire state (Kanpur). One small training centre for basic driver training and regular health check-ups at Meerut Bus Depot.
- No uniform being provided to crew members.
- Poor road conditions. Due to poor road conditions, UPSRTC has been forced to stop services in certain areas which were profitable earlier.

4.2.3 **Passenger Issues** (for more details please refer to survey in appendix B)

- Rude behaviour of bus crew.
- Men often not leaving seats reserved for women.
- Of the passengers surveyed, none rated service and journey quality as very good/ satisfactory.
- Passengers willing to pay more if AC buses cheaper than Volvo provided.

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- Want better bus conditions and more leg room, cleaner bus depots and amenities like free and clean toilet services.
- None of the surveyed passengers were aware of VTS in buses, very few were aware of LCDs at bus depots.
- Most choose to travel in buses because of no other alternative.

4.2.4 Crew Issues (for more details please refer to survey in appendix B)

- Insurance being deducted from their pays, but conductors and drivers not aware of existence of its proof, unaware of how payslips are made.
- Not being given the chance to have a say in matters relating to disciplinary action against them.
- Lack of UPSRTC authorised eating stops and if present on routes, UPSRTC dhabas ill- treat them.
- Lack of amenities at bus depots like proper running rooms and washrooms
- For contract workers: late payment of wages
- Help not provided timely in case of emergency situations.
- Unaware about SOS button in VTS, cases of tampering quite high due to lack of proper training.
- New recruits not aware of incentive schemes.

4.2.5 Public versus Private

On a field visit to Kaushambi, it came to light that there was a brawl between private operators and UPSRTC staff at Kaushambi bus depot. Private bus operators were blocking the out gate of Kaushambi bus depot and when the RTO officer was called, a group of private drivers attacked the depot staff and one of them had to be hospitalized. They even threatened further action if stopped. Private operators often misuse the provisions of Motor Vehicle Act. They pay taxes for contract carriage permit whose tariff is much less than the passenger tax paid by stage carriers and they illegally operate as stage carriers. While tax for contract carriage is just 5000 rupees per month, the passenger tax they paid by stage carriers is to the tune of 35000 rupees per quarter. Ghaziabad Development Authority advised UPSRTC to shut down or move away the out gate of Kaushambi bus depot in order to prevent any such scuffle in the future. Doing so would adversely affect UPSRTC revenue

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because, if the out gate is shut down, it will create a chaotic situation inside the depot and their business will suffer heavily and private operators will gain. Also the passenger tax structure is such that it favours new private buses whereas acts as a deterrent for entry of new UPSRTC buses. For UPSRTC buses, the tax structure is as follows:

For buses aged:

0-2 years: INR 600 per seat per quarter

2-4 years: INR 500 per seat per quarter

4-6 years: INR 400 per seat per quarter

6-10 years: INR 150 per seat per quarter

An average bus contains 52 seats. For private operators, the fare structure is of a reverse nature. While for new buses they pay INR 150 per seat per quarter, for buses aged greater than 6 years they pay INR per seat per quarter. But the services provided by UPSRTC are much more reliable and safe as compared to those provided by private operators. For evidence of the same, below are presented the snippets of a UPSRTC Ghaziabad Bus Depot and a private bus depot. While the UPSRCT Bus Depot had various passenger amenities to offer and also had a tiled roof that helps in water harvesting, the private bus depot was a dilapidated swampy landscape with no enquiry and amenities whatsoever.

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Picture 1: UPSRTC Bus Depot UPSRTC bus Station From top left corner, clockwise: ETM and waybill generating room, waiting shelter, enquiry counter, bus boarding pedestal, eateries, toilets, booking counter, drinking water; centre: medicine shop.



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Pic 2: Private Bus Station: dilapidated road condiitons ans make shift gaages and stalls, no enquiry counter



The absence of safety, amenities and reliability at a privately operated bus depot makes for a strong case against promoting these depots and helping the sustain UPSRTC Depots. The private public rift can be resolved by leveraging the use private buses and augmenting the fleet of UPSRTC. There already is a process in place through which UPSRTC hires private buses and drivers and there is a profit sharing mechanism in place. This should be further leveraged for the advantage of UPSRTC. To augment its fleet, it should hire more private buses.

4.2.6 Disruption of Intra - Organizational Cross Subsidy

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State Transport Undertakings (STUs) like UPSTRC manage and maintain a delicate balance in their route operations. In this operation, proceeds from profits made in one route are used to subsidize operations in non-profitable segments. This is part of the Universal Service Obligations (USO) of STUs which they are required to fulfil as per the Road Transport Corporations Act 1950. However, this delicate balance gets disrupted if competition is introduced in profit making segments to the exclusion of loss making ones. One way to stop losses is to stop operations on the non-profitable routes. Route closure however cannot be done under USO norms. Also, by doing so, rural connectivity will be severely affected. To cut losses UPSRTC may disinvest or even close down, but there is a need to perform a cost benefit analysis keeping the social angle in view.

4.2.7 Financial Disincentives

The Government of UP levies a passenger tax on per seat of the bus from the corporation as it operates as a stage carrier. The private operators, in contrast, pay a yearly tax of a much lesser value per bus as, in theory, they operate as contract operators. In practice however, they operate as stage carriers. Consequently the corporation is exposed to uneven and illegal competition. Another financial disincentive for UPSRTC is the Motor Vehicle (MV) and Toll Tax which the Corporation is paying to the Government. In reality, this is a book adjustment between the books of account of two Government departments which however leaves the accounts of UPSRTC unhealthy. It is evident that, ceteris paribus, UPSRTC under the present taxation policy shall remain a loss making organization at the tax to total cost ratio is one of the highest as compared to other SRTUs. This apart, UPSRTC, under responsibility of a public utility service, cannot charge the customers, a moving or dynamic rate for tickets conditional to demand and supply situations in the market. Therefore the price of the ticket is not entirely calculated on the basis of the cost of service provided by the corporation. Consequently the profit maximization is related to operational efficiency at a stagnating revenue level.

4.2.8 Economic Prosperity of Customers and Availability of Alternative Modes of Transport

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UPSRTC exists for the commuters who are its customers. Therefore, studying the customer behaviour, aspirations and preferences is one of the primary functions of the corporation. UPSRTC has been in the business of rural connectivity and limited urban travel. Rural commuters can be divided into two groups based on the distance travelled (i) Short distance and (ii) Long distance. Based on accessibility and monetary considerations, commuters typically prefer bus for short distance travel and train/aeroplane for long distance travel (more than 200 - 250 KM).

Number of Transactions, Availability and Accessibility are an advantage for bus transport, but Time and Cost of travel are not. Traditionally, the Railways score higher on these two Variables. The traditional travel preferences of the travellers with respect to the mode of transport (road, rail or air) have started seeing a change due to a variety of reasons.

Economic Prosperity of the Passengers: The following issues are likely to affect the revenue of UPSRTC through lower load factor:

- A substantial number of passengers have bought their own two or four wheelers due to easy availability of finance.
- Passengers are short on time of travel
- Passengers are stressing on quality and reliability of services
- Air travel has become more affordable and hence popular due to decoupling of price structure

Therefore the passengers of today have a larger choice set available before him and he/ she is no longer dependent on any particular mode of transport.

Gradual development of alternative transport infrastructure including airports: With the gradual emergence of India as a developed economy, factored by the ready or near emerging accessibility of auxiliary infrastructure, Indians in general and the commuter in particular has multiple choices. The steady removal of difference in the cost of travelling can also be ascribed by this occurrence.

Therefore with respect to competition, new sets of rules have developed. The traditional gains to road transport as a whole are not fully pertinent now. One can park his car or bike virtually freely at the airport or station and choose a quicker mode of transport. Otherwise, due to the focus of the Government on growth of Highway Infrastructure, cars are a better option, given the economic opulence

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involved. Last but not least, the increased cramming of the city roads due to greater traffic volumes and inadequate expansion of principal networks have slackened down the average speed of the bus as a whole. The commuters as well as the likes of the Corporation are the losers. This is likely to adversely affect the revenues of the Road Transport Corporation, if preventive steps are not urgently taken.

The sunnier side of this issue is that the corporation can focus in its operations in the rural areas and in the express trips. By increasing the client focus in these segments and by providing better services, UPSRTC may be able to create a committed client base in the rural sector. This is also in tune with the USO norms. However, the restrictions in this approach lies with the low commuter density at the rural areas that may not justify the frequency. Also regular commutation from rural to urban areas is a function of the presence of rewarding occupation openings in urban areas over the opportunity costs in the rural areas.

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5. Recommendations, Scope and Strategy for Implementation

5.1 Recommendations for UPSRTC

5.1.1. On fare review mechanism: Fuel costs are being decontrolled and are subject to movement in international prices, more weightage should be given to fuel costs. Also the model should be shifted from a cost plus model to a cost minus model i.e. if increase in costs are being passed on the customer, then productivity increase should also be shared with the customer[29]. Fare formula should be adjusted to make **Fare adjustment= Cost increase- some component of productivity gain**. The productivity gain could be measured using increases in vehicle and staff productivity. Also half of productivity gain should be shared with consumers so that the corporation gets to keep half of it and has an incentive to be more productive. Also the fare review should be carried out deterministically after an interval of 6 months or one year, as suited to the needs of the corporation instead of increasing it at any point in time. This will help in better preparedness of passengers and corporation. There should be an upper and a lower cap for price adjustment to make it smooth over time. In case the price adjustment is smaller than menu costs associated with price change i.e. is too small to change for practical reasons or is too large for social reasons, then it should not be forfeited, instead a roll-over mechanism[30] should be put in place. According to this mechanism too small an adjustment or a part of too large an adjustment could be rolled over to the next period in consideration.

5.1.2 On Management Issues:

- Delegation of duties: division of labour to be done properly, ARM to be supplied with adequate manpower to fulfil responsibilities. Set up a control room for round the clock monitoring of VTS so that breaches\ emergencies are reported immediately.
- Instead of allotting the power to run new services to the RM, create a Planning Division at head quarter level which should conduct passenger mapping

[29] Affordable Fares, Sustainable Public Transport The Fare Review Mechanism Committee Report 2013, Singapore
[30] Ibid.

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surveys and decide new routes only on the basis of viability. In order to cover remote areas, instead of using full sized buses, small feeder buses which are less costly could be used. Feeder services could also be used to connect remote areas to railways. It will promote inter-modal connectivity. Revenue allocation to rail and road could be mutually decided by the corporation and railways. These type of services will expand the reach of UPSRTC into rural areas and the social purpose of providing public transport to the masses could be fulfilled. ITMS can be of great help in planning of new routes. ETM outcomes can be used to

- Creation of a marketing division at Head Quarter level should be undertaken that will create schemes to promote UPSRTC as a brand and attract more clientele. Marketing of UPSRTC could also be funded through Corporate Social Responsibility initiatives. Large corporations working in the transport sector could be pitched in to contribute towards image building of UPSRTC. The website of UPSRTC should have an exclusive section for modernisation efforts so as to attract clients.
- Managerial staff should make efforts to pitch in good Samaritans to provide public amenities at bus depots. For example at Meerut bus depot, a water cooler has been installed by a civilian. Similar activities should be encouraged in other depots to reduce the financial burden of the corporation.

5.1.3 On Logistical Issues:

- Set up control room at Ghaziabad region as soon as possible for round the clock monitoring and reporting breaches\emergencies during the night.
- Printer cartridges should be procured and filled locally.
- Request for allocation of separate bandwidth to ensure uninterrupted high speed internet connectivity.
- Educate drivers and trainers regarding VTS to prevent tampering.
- Provide charging sockets for buses plying on long routes.
- Apart from multi-purpose smart card, introduce a transferable open ended card based on similar principles as DELHI METRO CARD. The simplified issue

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process will encourage more passengers to use it as hassles involving KYC would be done away with.

- LCDs should start displaying advertisements to generate a revenue stream for UPSRTC as soon as possible, without waiting for PIS systems to start. LCDs should be used to make passengers aware about initiatives being taken by UPSRTC to ensure better facilities for them. LCDs could be used to display route maps of buses from VTS systems to make passengers aware about the existence of such systems in buses.
- In case of ETM failure, the person carrying a smart card should not have to buy a ticket, instead a mechanism could be devised wherein the conductor notes down the details of the card and deduction is made at a later stage.
- Start advertising at the back of ticket rolls as soon as possible to save stationary costs.
- Copy the Meerut model of training centres and crew health check-ups at other depots to ensure drivers and conductors are aware of latest rules and developments in UPSRTC.
- Instead of providing uniforms, which pose a considerable financial burden, adopt low cost alternatives like badges or photo ID cards so that crew is easily identifiable by passengers and UPSRTC management.

5.1.4 On Passenger Issues:

- Train crew to behave properly. The main reason behind rude staff behaviour, revealed by discussions was that they have no incentive to work properly as majority of it is employed on contract basis. A step should be taken at head Quarter level to devise a mechanism to promote contract workers to regular workers after 3-4 years of service based on the performance of the person instead of recruiting new employees as regular ones. The criteria for such performance judgement could be: frequency of complaints and breaches, the lower the better; performance in terms of revenue generation and conduct with co-workers and station staff. This will motivate crew to behave well and work diligently.

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- Entrust the responsibility of ensuring that men leave seats for women to the conductors. Authorise the conductors to penalise persons who do not comply with instructions.
- Hire low cost private AC buses after doing relevant study in areas where middle class passengers are willing to pay more for such services which are considerably cheaper than Volvos.
- Since passengers are also responsible for maintenance of bus depots, charge penalties from those who litter the stations and use the proceedings towards maintaining cleanliness at stations.
- As stated earlier, make LCDs functional as soon as possible to make passengers aware of the ITMS drive.
- Market UPSRTC as a brand to attract more clientele.

5.1.5 On Crew Issues:

- Keep crew informed about deductions from pay-slip. Generate easy to understand and informed pay-slips.
- Authorise dhabas as stoppages for buses on long routes. This would also help in revenue generation for UPSRTC as it could charge commissions from such dhabas. Instead of giving coupons to drivers, give them food allowances for trips so that they are treated like other passengers at dhabas.
- Mark unauthorised dhabas at GPS map and devise a mechanism to show breach alert when a bus stops at such dhabas for more than a stipulated time.
- Dispensing wages to staff should be of top priority as they are the working cogs of the whole machinery and often belong to low income groups.
- A strong VTS with round the clock monitoring, drivers and conductors being aware of SOS button in VTS by means of proper training, immediate message to nearest police station, garage and health facility: synergy between all these factors is the only way to make time help available.
- Apart from training to use equipment, make new recruits know about their rights, duties, penalty policies and incentive schemes before they join duty.

5.1.6 On increasing out of fare box revenue:

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- Start renting out bus roofs and boots to carry cargo so as to increase out of fare box revenue. UPSRTC currently has no provision to carry cargo, and drivers often illegally carry cargo by charging a small fee. UPSRTC can earn additional revenue by opening up cargo booking and collection centres. This service can be provided to individuals as well as it can tie up with courier companies. It can also tie up with other SRTUs to cater to cross-border movement of cargo.
- Also it needs to increase the types of services to cater a large and diverse population. The number of buses per 10,000 people is quite low as compared to other major states. Fleet augmentation through contracting private buses should be a major focus till funds for fleet renewal are made available. Instead of competing with private operators there is a need to synergise the two enterprises by way of benefit sharing process.
- Also UPSRTC could leverage the use of workshops by turning them from cost generating to profit generating centres by vending out repair and maintenance services to private operators.

5.2 Recommendations for UP State Government

The state government should realise that provision of affordable public transport and at the same time ensuring that providers of public transport are financially sound are its responsibilities.

- The UP state government should create a budget for funding UPSRTC so that it can augment\update its fleet and provide affordable and efficient transport for the masses. Since operating costs of UPSRTC are bound to increase due to fuel costs, the state government should give it autonomy to adjust fares. To ensure affordability it should pay for all concessions being offered by UPSRTC in order to keep the financial burden off UPSRTC. Apart from existing concessions, concessions to BPL families must also be given, to maintain affordability for those groups even in case of fare hikes. These concessions could be funded by creation of a **PUBLIC TRANSPORT FUND** which could be funded through various channels such as:
    1. State and Central Government funds

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2. Cross subsidies: i.e. those who can pay fund those who cannot.
3. CSR Initiatives: Big corporations could be pitched in to provide funds under the mandatory CSR spending.
4. Penalties imposed on contractors for lapses in service delivery could be used to fund the corpus.
5. Donations from organisations, individuals.
6. Creation of a cess for UPSRTC in existing fuel charges or VAT rebate to UPSRTC buses.

- **Reduction of rates of Motor Vehicle tax and passenger tax:** The passenger tax varies from State to State and is one of the highest in UP. In addition to the passenger tax, states also charge MV tax and annual charges of RTO passing etc. The Government has to treat the public transport operation as one of the basic services being provided to the people. The objective of the state regulation in transport sector should be to promote cost effective and comfortable bus services rather than treating these operations as a source of taxation and revenue. The state government must be encouraged to reduce MV tax and passenger tax and make the incidence of tax on the turnover of the SRTUs rather than on per seat basis.
- **Toll tax reduction/reimbursement:** The SRTUs are largely conducting mandatory services by providing buses to non-profitable routes and most of these are related to villages. It is recommended that the toll fees paid by SRTUs may be repaid in full by Central or State Government with the condition that SRTUs will utilize this amount exclusively for replacement/augment of buses in the rural sector.
- **Viability Gap Funding:** The SRTUs mainly operating in the rural areas have to run transport services to provide for passenger requirement as people travel to nearby town, cities for work, education, health and other amenities. Small and marginal farmers are also dependent on the bus service for carrying their produce to cater the need of urban people. Manoeuvres in rural areas are not economical as the fares in these sectors are low so as to make bus travel inexpensive. Moreover, there is unwholesome competition with the auto rickshaw, mini and maxi cabs etc. As such, the SRTUs have to suffer major

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losses for manoeuvres providing transport services to the rural areas. The Government may develop an apparatus by which the financial losses of SRTUs incurred in rural operations are satisfactorily remunerated by way of viability gap funding for obtaining rolling stock.

- **Liberty to UPSRTC for mobilizing funds by way of loan:** UPSRTC should be enabled to mobilize funds for capital expenditure on its own strength/financial capability from banks and financial institutions or in terms of soft loan from tax free bonds, etc. Lack of funds for capital expenditure is one of the principal reasons for lack of upgradation and expansion of fleet. There is a restraint forced on the SRTUs to borrow funds under Section 26 of the RTC Act 1950 which provides for prior sanction of the Government to borrow. If the financial institutions are willing to lend money to SRTUs on the basis of their fiscal assessment, without asserting on government assurance, there should not be any limit on raising funds.

5.3 Recommendations for UP State Road Transport Authority

Nationalise more routes, i.e. increase the percentage of nationalised routes from a meagre 9.65% to at least 50% and then after priority allotment of routes to UPSRTC, auction routes to private operators to prevent illegal plying. The proceeds obtained from auctioning could be used to fund the PTF corpus. Also the UP State Transport Authority needs to delegate powers to the Regional Transport Authorities to strengthen enforcement of the Motor Vehicle Laws to stop illegal plying by private operators from using contract permits for stage carriage, there needs to be delegation of higher powers to the Corporation so that it can stop private players without permits in accordance with the Motor Vehicle Act from affecting the business of the Corporation.

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6. Future work

Given the fact that ITMS is still in infant stages and many services like Passenger Information Systems, Control Rooms, Smart Cards for crew members that will assist in automatic announcements for arriving and departing buses, are yet to be started, the complete impact of ITMS on physical and financial performance of UPSRTC will only be felt at least after one or two years have passed after complete installation of systems. As a suggestion for future work, it is recommended to UPSRTC to employ a third party and form a **Project Evaluation Agency** in order to assess the impact of introduction of IT in services. This should be done after ITMS has been fully implemented and it has operated for a few months. The impact evaluation done would be helpful for strategizing in the right direction. It would also help other SRTUs to adapt the system, based on the experience of UPSRTC. Since the impact evaluation and subsequent steps taken to enhance or improve upon the services will help improve public transport services, the third party could preferably be Central Institute of Road Transport, Pune. Employing CIRT could be highly beneficial for UPSRTC and other SRTUs as they will get technical assistance and professional feedback on ITMS and it precise usage.

Within the scope of this project, it is suggested that UPSRTC adopt the following methodology for ensuring service delivery. Service delivery can only be ensured if the providing agency is well aware of the nature of service that is expected from it. In case of UPSRTC, the passengers are the main stake holders and UPSRTC can ensure service delivery if it knows what its customers want. One method to know about the expected services and manage them well is the SERVQUAL[31] . SERVQUAL is a quality management framework that is used to assess customer perceptions. It was developed by American authors, Parasuraman, Valarie Zeithaml and Len Berry.

The SERVQUAL authors initially recognised ten fundamentals of service quality, but later, these were compiled into five features - reliability, assurance, tangibles, empathy and responsiveness.

[31] SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality; Parasuraman, Valarie Zeithaml and Len Berry; Spring 1988

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Assurance: The information and politeness of workers and their ability to convey faith and sureness.

Tangibles: The appearance of corporal amenities, apparatus, workers and communication materials.

Empathy: The delivery of kind, personalised attention to clients.

Responsiveness: The readiness to help customers and to deliver quick service.

Reliability: The ability to do the promised duty consistently and precisely.

Companies using SERVQUAL to measure and manage service quality use a questionnaire that measures both the client anticipations of service quality in terms of these five factors, and their opinions of the service they receive. When customer anticipations are larger than their perceptions of received provision, service quality is believed to be low. The SERVQUAL authors stated five Gaps that may cause clients to experience lowly service quality.

Gap 1: Between customer anticipation and organisation perception: This gap arises when the management does not properly perceive what the clients want. For example, UPSRTC might perceive the need of counter ticketing, but passengers actually want better crew behaviour.

Gap 2: Between management perception and service quality description: Although the management might correctly perceive what the customer wants, they may not set an appropriate performance standard. For example, UPSRTC might specify that passengers be treated properly, but it might fail to state, what the proper way is.

Gap 3: Between service quality description and service delivery: This gap may arise through staff being poorly trained, incapable or unwilling to meet the set service standard. For example, UPSRTC clearly defined the code of conduct for crew members, but they fail to adapt to it due to lack of training and willingness.

Gap 4: Between service delivery and external communication: Customer expectations are highly prejudiced by announcements made by company representatives and ads. The gap arises when these presumed expectations are not

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satisfied at the time of delivery of the service. For example, UPSRTC might advertise of clean and well equipped bus depots, but in reality might not be able to deliver it.

Gap 5: Between anticipated service and experienced service: This gap arises when the consumer misconstrues the service quality. For example, customers might feel that UPSRTC is installing VTS in buses due to some danger lurking in the routes, while it is being done to efficiently manage services.

The approach of gradually focusing on the quality of service and consumer satisfaction has proved to be very gainful for both the companies and customers all over the globe, particularly for the transport companies and passengers. This is because enhancements in the quality of services provided can attract additional consumers and this alone has the prospective to resolve many problems such as reducing traffic congestion, energy consumption, air and noise pollution reducing the use of private transport.

Central Institute of Road Transport, Pune, did a project for Rajasthan State Road Transport Corporation [32], in which the SERVQUAL model was used to draft a questionnaire and draw statistical inferences based on the same, so as to assess customer perceptions relating to service quality provided by RSRTC. A similar exercise should be undertaken by UPSRTC because to ensure service delivery, it first needs to know what the customer wants. UPSRTC can employ a third party like CIRT or train its own staff to conduct surveys across UP based on the SERQUAL model.

Scope of the Project:

- Study the operations of UPSRTC to evaluate the sample size distribution and identify survey locations across Uttar Pradesh.
- Conduct primary survey in an effort to describe the passenger's opinion on five dimensions of service – reliability, responsiveness, assurance, empathy and tangibility along with their social and economic status.

[32] Service Quality Management for RSRTC Operations, Draft Final Report February 2012, Central Institute of Road Transport, Pune

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- To undertake data analysis through SERVQUAL method to complete the survey through assessing quantitatively nonconcrete dimensions of transportation services.
- Identify the gaps in quality of services offered by UPSRTC and suggest areas of improvement.

Methodology

- Deployment and exploration: This step includes the familiarisation with the project area while establishing logistical and administrative support for the study team, i.e. identifying potential areas for survey and employing an experienced consultancy or training staff to conduct surveys among passengers. For example: Conductors could be trained to get questionnaires filled by the passengers during travelling.

- Review of relevant data: This step involves gathering of secondary data to have a preliminary understanding of the services offered by UPSRTC, physical and financial characteristics of the services and traffic handled.

- Primary surveys: This involves carrying out passenger opinion surveys at identified locations.

- Data analysis: This involves analysis of primary survey data for determining passenger characteristics such as age, gender, education level, type of service used, frequency of usage of UPSRTC services, and their view on various recognised parameters. The problems and suggestions of the passengers have to be collected and discussed too.

- Recommendations and Areas of Focus: This is the most crucial step of the process. It shall entail suggesting recommendations to UPSRTC which can help the corporation in assuaging passenger problems. It also ranks the areas of focus based on the position and satisfaction levels of the commuters.

Survey Questionnaire

The following parameters, as based on the SERVQUAL instrument, must be included in the questionnaire:

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1. Reliability

- Maintaining departure and arrival times
- Operating on frequency as advertised/ mandated
- Capability of crew to handle problems like breakdowns/ medical emergencies during journey

2. Responsiveness

- Cooperation from crew at times of problems during journey
- Response of crew and station staff to problems /needs of children, women, seniors and disabled
- Arrangements of alternatives made when there is excessive demand, for example the Kumbh and Ardhkumbha Melas
- Timely information of changes in services like timings of arrival, departure and cancellation
- Complete Information of UPSRTC's services to staff
- Complaint filing is easy and redressal is quick

3. Tangibles

- Ticket price is in accordance with service offered
- Spacious luggage racks
- Buses are neat and clean
- Bus seats have enough leg space, is comfortable for back rest
- Bus stations/shelters and toilets are hygienic
- Waiting space is adequate
- Display signs and announcements at bus stands and route information on buses are helpful
- First Aid box at bus stations and inside buses is available
- Complaint and general enquiry numbers are provided on stations and inside buses
- Visual appeal of buses
- Employee cooperation at booking, enquiry and complaint counters
- Ease of boarding and alighting, provision of pedestal for boarding

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- Bus stand/station amenities such as canteens, potable water and pharmacy shops
- Toilet and food facilities on the route
- Temperature inside bus (only for ac)
- Website / online services (if used)
- Awareness about VTS in buses and SOS button

4. Assurance

- UPSRTC ensures safe journey, and timely help in case of emergency
- Consistency in providing quality services

5. Empathy

- Bus routes are suit your need
- Bus timings are convenient
- UPSRTC understands the specific needs of passengers, especially women, children and disabled
- Crew are willing to help passengers in distress at any time
- Interest shown by UPSRTC in solving passenger problems

6. Overall service
7. Problems and suggestions

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7. Conclusion

To conclude, I would like to applaud the efforts of UPSRTC to bring technology to transport with an integrated approach. Also, UPSRTC has succeeded in obtaining 149 as their Interactive Voice Response System (IVRS) number which they plan to make pan India by integrating the database of all State Road Transport Undertakings (SRTUs) so that real-time information about all state run bus services could be made available at a single window. Technology has immense potential if used properly. UPSRTC has brought in technology but it needs to gear up to use it to its full potential and for that it needs to provide extensive training to its staff and ensure smooth functioning of the system by avoiding petty logistical issues. Once these small issues have been sorted out, ITMS can help UPSRTC rescue its dwindling finances in the near future.

ITMS is a very useful technology to control costs and increase revenue. Ministry of Road Transport and Highways should take initiatives to bring in ITMS in all major State Road Transport Undertakings so that a common mobility vision is realised. Integrating the databases of SRTUs and providing a common mobility card to passengers can greatly ease travel for passengers and managerial operations for the government. It can also greatly reduce cost of operations and bring in efficiency by better fleet management, route planning, crew management, automatic ticket generation, reduction in fuel consumption, and automatic information systems.

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Appendix A

Meetings and Interviews

1. Mr Pallav Bose, Regional Manager, Ghaziabad

Date: May 31, 2014

Time: 11:40 AM

Duration of Discussion: 50 minutes

Discussion:

1. We talked about why this ITMS program been launched, what is its main objective. So he told that their prime objective behind its implementation was safety of passengers as many accidents occur and proves to be fatal due to the lack of management and infrastructure. So the VTS is mainly to locate the buses facing emergency situation so that help reaches them as fast as possible.
2. The secondary reason was to have efficient and transparent management of the services provided by them.
3. Then we talked about number of buses been covered under this VTS program. And I got to know that almost all buses have been installed with the system. But there has been several cases of tampering of the system by the drivers and conductors which RM Sir was able to see in his system. In fact every regional office has a dash board and by logging into the system they could see all the activities like how many times the SOS button is pressed, how many times the VTS has been tampered with, how many times the vehicle has over-speeded and all. And I was told that regular offenders are called and being counselled by the ARM but there is no penalty system in place.
4. About online reservation system (ORS), till now only around 250 bus services have been covered but it is proposed that all the buses will be covered under it soon.
5. RFID cards for conductors and drivers are to be launched soon.
6. What are the roadblocks or impediments to its implementation? Since the technology is new very few people know to operate it. Workshops are being organized for regular training of the staffs of all level. A workshop will be conducted on 12th June and we are being invited to see the procedure and conduct a survey and ask questionnaires to both SI people and UPSRTC people.
7. Other impeding factor is that the private organizations are slow in delivering solutions. Like ICICI bank is delaying in delivering smart cards, Trimax (SI) is making delays in providing reliable fuel level sensors etc.

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2. Mr TK Singh Visen, ARM, Kaushambi

Date: May 31, 2014

Time: 12:30 to 2:30 PM

Duration of Discussion: 40 minutes, for the rest of the time, he showed us the working of the systems

Discussion:

1. We talked about the implementation of RFID based MST or Smart card. I got to know that this process has just been started. There were only 15 applications till date and their cards were yet to be issued. The main problem theirs was that ICICI Bank which has been assigned to supply the cards was making delays.
2. Then we talked how the use of ETM has benefited them. There I got to know that the management has become more efficient and reliable with the ETM machines. The data is being uploaded after every complete trip of bus. The way-bill is been generated and tallied with the amount of fare collected during the journey. Bus in-out and driver in-out information is still been taken manually. But soon to be recorded by RFID cards.
3. Kaushambi Bus Station was in a dilapidated condition. After been asked about this they told that it was being developed under PPP model so still decision has not been taken that who has to take the responsibility of maintaining it. But still the ARM had taken few steps towards its improvement on behalf of UPSRTC like providing basic amenities: a toilet and a temporary gate.

3. Mr FR Francis, ARM, Finance, Ghaziabad

Date: May 31, 2014

Time: 2:30 to 3:10 PM

Duration of Discussion: 40 Min

Discussion:

1. I asked about cost cutting incentives for UPSRTC and came to know that since the state government gives no financial support to UPSRTC, it is essential for UPSRTC to cut costs. Cost cutting is being done through non-replacement of retiring staff.

2. He talked about lack of co-ordination between Systems Integrator and UPSRTC that was causing delays in starting of the Go-Live phase of the project.

3. He talked about mismanagement in supply chain, how due to faulty supply chain management, depots were often running out of printer cartridges.

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4. Mr Atul Shrotriya, ARM, Ghaziabad

Date: June 5, 2014

Time: 150 Min (12:00 – 2:30PM) and 50 Min (3:40 to 4:30 PM)

Duration of Discussion: 200 Min

Discussion:

1. We talked about the implementation of RFID based MST or Smart card. He gave us documents that delineated the procedure and types of smart cards to be issued. He talked about lack of technical know-how and skilled manpower as the main reason behind the delay in implementation of ITMS. He explained in detail the three phases of ITMS: Phase 1: Installation of VTS and ETM, Phase 2: Counter booking and phase 3 which is yet to be implemented: RFID cards for conductors and drivers. He also talked about loopholes in the ITMS system, especially the frequent disruption in working of printers as the cartridge filling centre in based in Lucknow which causes supply backlogs.

2. He talked about the benefits of ITMS to the management and passengers, but also talked about areas in which more work needs to be done: attendance of conductors, preparation of cash receipts, counting and record keeping of cash are operations that are still being done manually, if these operations are computerized, it will benefit UPSRTC by increasing efficiency, reducing stationery costs and reducing clerical staff.

3. He talked about cost cutting measures undertaken like: no new recruitments of class 4 staff, contracting of some services like cleaning of bus stations to private entities, employing clerical staff from DOEACC to reduce pay roll expenditures.

4. Talking about difficulties faced by UPSRTC, his main concern was that the state government wants UPSRTC to give profits like a private corporation while operating as a government agencies. He said UPSRTC has no option but to ply on non-profitable routes as well, if given state directive, but no funds are allocated to UPSRTC by the state. He also talked about the need to uplift bus stations to attract more clientele.

5. Mr Anil Kumar, ARM, Sahibabad

Date: June 7, 2014

Time: 11:00 AM to 1: PM

Duration of Discussion: 120 Min

Discussion:

1. He talked about the lack of basic infrastructure at UPSRTC depots, as his depot had very poor building infrastructure and there was no water supply. They used water from tankers even for drinking purposes. The running room for staff was in a deplorable state.

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2. He admitted that the workers are being exploited but the management's hands are tied due to financial crunch.

3. He complained about the long-drawn and cumbersome complaint redressal mechanism and the lack of adequate power to ARMs to do complete justice in cases where top level management was involved. He said that some passengers were even misusing this service by blowing incidents out of proportion and giving conflicting statements at different levels of enquiry.

4. He talked about corrective actions being taken to resolve technical issues being faced by bus staff, like installation of chargers in buses that ply on long routes as Electronic Ticketing Machines often run out of battery.

6. Mr TK Singh Visen, ARM, Kaushambi

Date: June 7, 2014

Time: 3:00 to 3:30 PM

Duration of Discussion: 30 Min

Discussion:

1. He said that there was lack of delegation of powers due to which the ARMs were often overworked and this resulted in inefficiencies.

2. He talked about lack of divisions within the corporation for efficient handling of departments. He said that there should be marketing, planning, personnel and financial cells that have well defined roles to play.

3. He said that sometimes, they have to run buses on non-profitable routes if directed by the local political leader. He said that this is because the Regional Manager has the power to sanction new bus routes. He said this task should be performed centrally, at head quarter where a planning division conducts passenger mapping surveys and then only decide whether a service is to be provided at a location.

4. He talked about the necessity of a provision to promote contract workers into regular workers. This he said will help in curbing corruption while recruitments and also give incentives to contract workers to perform well.

7. Mr Subash Chand, Station Superintendent, Meerut

Date: June 9, 2014

Time: 12:30 to 1:30 PM

Duration of Discussion: 60 Min

Discussion:

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1. He delineated his duties which were: fixing timetable, supervising pay-rolls, purchase of diesel, duty allotment, and deposit collected cash in the bank.

2. He talked about the financial crunch faced by UPSRTC due to lack of help from the state government, rising diesel prices and inflexible fares.

3. He talked about the measures taken by TK Singh, former ARM, Meerut, to keep staff motivated. Measures like arranging medical check-ups for staff, putting up a roster for best and worst performers, putting up flexes for the convenience of passengers, setting up an enquiry counter were taken up by him.

4. He showed us the various departments of the depot: pay-roll, record keeping, and supervising.

8. Mr Ranveer Singh, Senior Instructor, Meerut

Date: June 9, 2014

Time: 3:00 to 3:30 PM

Duration of Discussion: 30 Min

Discussion:

1. He is the senior instructor who trains drivers and inspects vehicles for faults. He showed us the training centre which was one of its kind, as Meerut is the only region except Kanpur to have a training centre.

2. He told us that due to orders, or rather lack of them, the centre was not functional for a year but in the meanwhile, he gave field training to drivers.

3. He emphasized on the necessity to have a training centre in each region for better management of vehicles by drivers.

9. Mr TK Singh, ARM, Kaushambi

Date: July 2, 2014

Time: 12:30 to 1:30 PM

Duration of discussion: 60 Min

Discussion:

1. He told us that recently there was an attack on them by private bus operators. Private bus operators were blocking the out gate of Kaushambi bus depot and when the RTO officer was called, a group of private drivers attacked the depot staff and one of them had to be hospitalized. They even threatened further action if stopped.

2. He told us that private operators pay taxes for contract carriage whose tariff is much less than the passenger tax paid by stage carriers and they illegally operate as stage

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carriers. He said while tax for contract carriage is just 5000 rupees per month, the passenger tax they pay is to the tune of 35000 rupees per month.

3. He told us that private operators had formed a cartel and also bribed GDA officials and police to take their side. That is why Ghaziabad Development Authority advised UPSRTC to shut down the out gate of Kaushambi bus depot.

4. He told us that if the out gate is shut down, it will create a chaotic situation inside the depot and their business will suffer heavily and private operators will gain.

5. On implementation of ITMS he said that PIS work is still in progress while they have started sensitizing passengers about smart cards and fares by pasting advertisements inside buses. He said recently a conductor was suspended for overcharging a passenger with the help of these stickers.

6. He said that the ARM now had the additional responsibility of tallying the cash collection as showed by ETMs on the revenue portal and cash actually deposited by the conductors. He stressed the need for delegation of duties and powers for more efficient delivery as one ARM could not handle staff issues, VTS, inspection, account tallying, bus issues, emergencies and many other duties single handedly. He said that ITMS will be truly beneficial only if utilized properly and for that skilled manpower is necessary. Ha said that DOEACC staff who are responsible for technical handling of systems were leaving because of non-payment on wages and things were being stalled.

10. Mr P Ananda Rao, Executive Director, ASRTU

Date: July 3, 2014

Time: 1:00 to 1:30 PM

Duration of discussion: 30 Min

Discussion:

1. I informed him about ITMS in UPSRTC. We discussed about the various new features and components of ITMS that were being used by UPSRTC. The main discussion was on GPRS enabled Electronic Ticketing Machines and its uses.

2. He told that the MD of Himachal Pradesh SRTC had made a proposal of a Common Mobility Card, which could be used country wide by passengers travelling in SRTU buses. Such a card would be only feasible if SRTUs used GPRS based ETMs as only then revenue distribution could be done accordingly within SRTUs. I informed him that UPSRTC is already using GPRS enabled ETMs and had started issuing monthly seasonal ticket and open ended smart cards through tie ups with ICICI Bank.

3. We discussed the pros and cons of transferable v/s non-transferable smart cards. While non-transferable cards involved hassles of filing up applications and giving photos and KYCs, but at the same time are more secure. Transferable cards offered ease of obtainability and could be used by more than one person but this feature

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could also be easily misused if such a card is lost. Therefore, he said that Delhi Metro like smart cards could not be feasible for use in SRTUs as they might be lost and would generally contain large sums of money specially if being used for long distance travel.

4. He introduced us to Mr. Ullas Babu and told us to make any further correspondence to him and collect the data that we require from him.

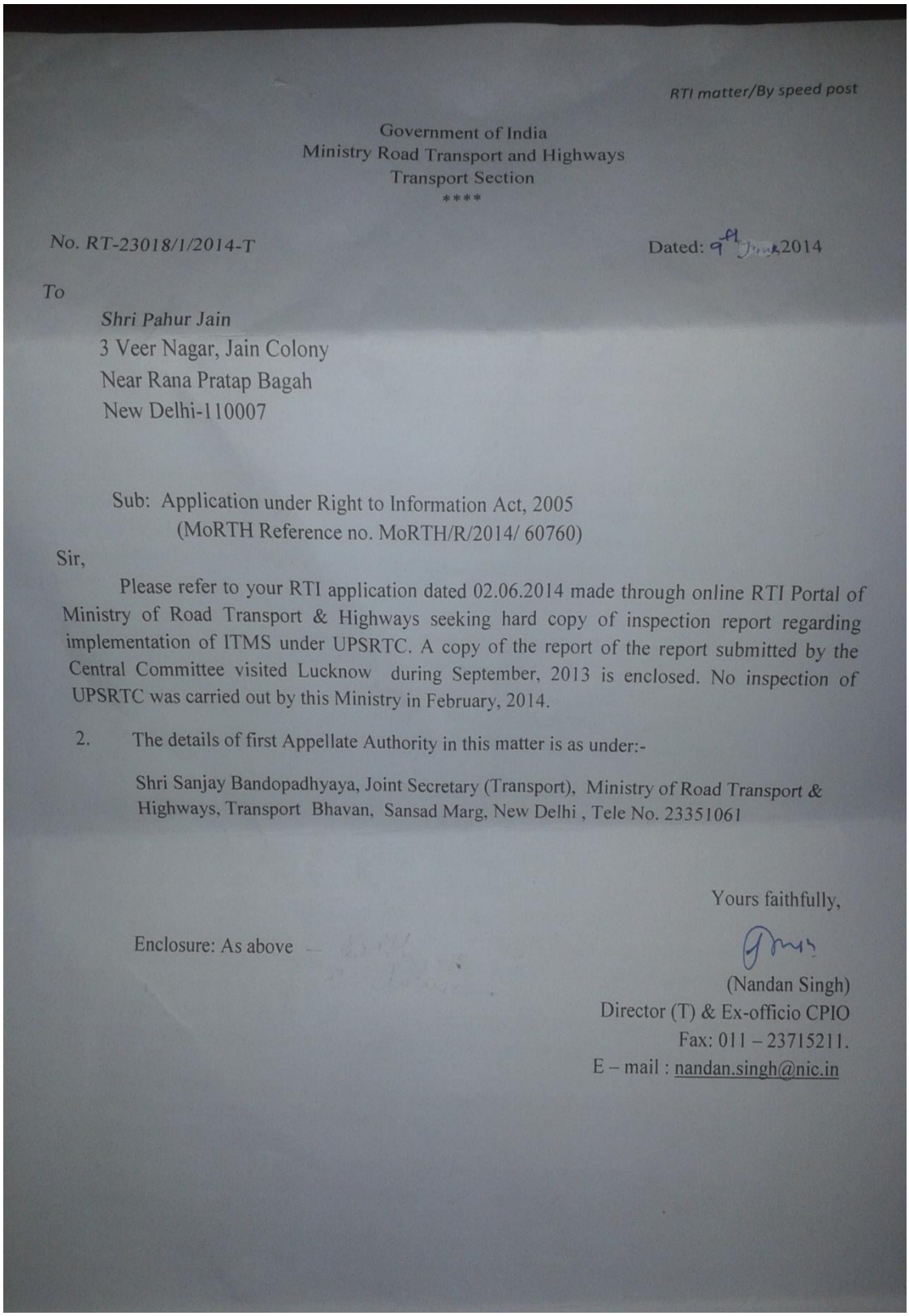
5. He told his subordinates to contact companies who could provide GPRS based ETMs and Smart Card services throughout the country. Trimax Infrastructure, the Systems Integrator for UPSRTC was also being considered for the same. He told us to contact Lumiplan, a company that provides ITMS solutions for furthering our study.

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Appendix B

RTI Reply:

Page 1



RTI matter/By speed post

Government of India
Ministry Road Transport and Highways
Transport Section
****

No. RT-23018/1/2014-T

Dated: 9th June 2014

To

Shri Pahur Jain
3 Veer Nagar, Jain Colony
Near Rana Pratap Bagah
New Delhi-110007

Sub: Application under Right to Information Act, 2005
(MoRTH Reference no. MoRTH/R/2014/ 60760)

Sir,

Please refer to your RTI application dated 02.06.2014 made through online RTI Portal of Ministry of Road Transport & Highways seeking hard copy of inspection report regarding implementation of ITMS under UPSRTC. A copy of the report of the report submitted by the Central Committee visited Lucknow during September, 2013 is enclosed. No inspection of UPSRTC was carried out by this Ministry in February, 2014.

2. The details of first Appellate Authority in this matter is as under:-

Shri Sanjay Bandopadhyaya, Joint Secretary (Transport), Ministry of Road Transport & Highways, Transport Bhavan, Sansad Marg, New Delhi , Tele No. 23351061

Yours faithfully,

Enclosure: As above

(Nandan Singh)
Director (T) & Ex-officio CPIO
Fax: 011 – 23715211.
E – mail : nandan.singh@nic.in

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Subject: On the spot visit of Central Team to oversee the implementation of project namely 'Intelligent Transportation System' being implemented by UP State Road Transport Corporation (UPSRTC).

Under the scheme of Strengthening Public Transport System through introducing information technology in public transport system, MORTH sanctioned a project of UPSRTC costing Rs. 38.25 crores namely 'Intelligent Transportation System' i.e. purchase and up-gradation of Electronic Ticketing Machines (ETMs) and setting up of Counters for Advanced Reservation System in UPSRTC. MORTH had sanctioned Out of Rs.19.125 crore sanctioned as Central assistance, Rs.9.5625 crore was release as advance (1st instal) in March, 2012 to UPSRTC for execution of the project.

2. With a view to oversee the implementation of said ITS project by UPSRTC, a two members Central Team led by Shri D.S.Pathania, Under Secretary(Transport) comprising SO(T) visited Lucknow on 25.09.2013 and discussed the issue in detail with concerned officer of UPSRTC. The brief details of the findings of the visit are as under:-

(i) A meeting held in the chamber of MD, UPSRTC to discuss the progress of the scheme. MD, UPSRTC informed that the implementation of ITS system assisted by MORTH is one of the flagship programmes identified by Chief Minister, U.P. and hence given top priority. The project is being implemented by UPSRTC as per the timeline (f/x) and have achieved identified milestones set up in this regard.

(ii) M/s Trimax IT Infrastructure Ltd. has been short listed as system integrator through all India open tender basis. M/s Ernst & Young is providing consultancy to UPSRTC.

(iii) A stringent service level agreement has been signed between M/s Trimax IT Infrastructure Ltd. and UPSRTC which provide graded penalty system

(iv) The total cost of the revised project with 5 years operating cost is around 115 crores. The project is being implemented on BOO/BOOT basis with the system integrator is organizing various components on its own investment and charging UPSRTC on a per ticket basis.

(v)The data centre at Airoli, Mumbai and Disaster Recovery Centre at ITI, Bangalore is being given final touch and would be ready to launch by December, 2013.

(vi) Online reservation system is working through the URL www.upsrtconline.in in selected premium buses and ticket revenue is transferred to UPSRTC bank account direct through payment gateway.

(vii) An user friendly card system is being considered in consultation with ICICI for frequent users of UPSRTC run bsuses which will also be integrated with major consumer outlets.

(viii) Around 10000 new ETMs procured and replaced to the old lot.

(ix) Vehicle Tracking system (VTS) started in buses of Lucknow, Ghaziabad, Meerut, Saharanpur and Moradabad regions.

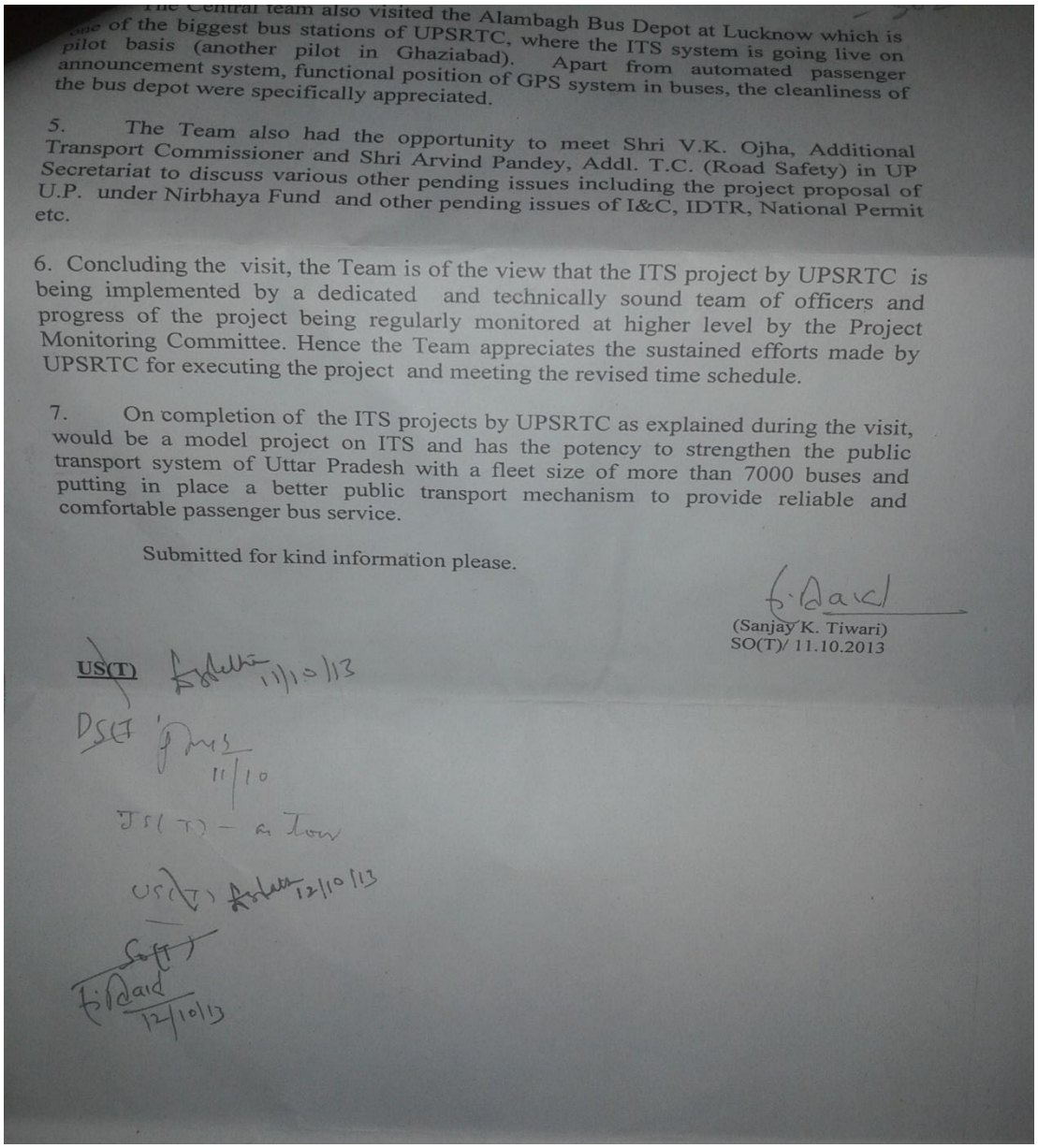
(x)Information received through VTS is being utilized for implementing passenger information system. LCD screens and automated passenger announcement system started at various bus stations in U.P.

3. After the meeting with MD, UPSRTC, a power point presentation was made by the representatives of the System Integrator(SI) before the Project monitoring Committee wherein the representative of MORTH were also present. A lot of queries raised by the central team regarding the technicalities of the project were suitably replied by the SI and the IT Cell of UPSRTC. **MD,UPSRTC assured during the meeting that the project would be completed by May, 2014, as per the timelines and** requested for timely release of Central assistance by MORTH for smooth implementation of the project.

Contd. P/2

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Page 3



The Central team also visited the Alambagh Bus Depot at Lucknow which is one of the biggest bus stations of UPSRTC, where the ITS system is going live on pilot basis (another pilot in Ghaziabad). Apart from automated passenger announcement system, functional position of GPS system in buses, the cleanliness of the bus depot were specifically appreciated.

5. The Team also had the opportunity to meet Shri V.K. Ojha, Additional Transport Commissioner and Shri Arvind Pandey, Addl. T.C. (Road Safety) in UP Secretariat to discuss various other pending issues including the project proposal of U.P. under Nirbhaya Fund and other pending issues of I&C, IDTR, National Permit etc.

6. Concluding the visit, the Team is of the view that the ITS project by UPSRTC is being implemented by a dedicated and technically sound team of officers and progress of the project being regularly monitored at higher level by the Project Monitoring Committee. Hence the Team appreciates the sustained efforts made by UPSRTC for executing the project and meeting the revised time schedule.

7. On completion of the ITS projects by UPSRTC as explained during the visit, would be a model project on ITS and has the potency to strengthen the public transport system of Uttar Pradesh with a fleet size of more than 7000 buses and putting in place a better public transport mechanism to provide reliable and comfortable passenger bus service.

Submitted for kind information please.

(Sanjay K. Tiwari)
SO(T)/ 11.10.2013

US(T) 11/10/13

DS(T) 11/10

JS(T) – as Tour

US(T) 12/10/13

12/10/13

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Surveys and Results

1. Survey for Passengers using UPSRTC Services

1. Name:
2. Age: Gender:
3. Purpose of travel:
   - Work •Vacation
   - Education
   - Other (please specify)
4. Type of service being used: ordinary, Goldline, Volvo
5. Is ORS available for your journey?
   - Yes • No
   - Don't know
6. If the answer to above question is yes, have you ever used ORS?
   - Yes • No
7. If the answer to question 10 is yes, how convenient was using ORS?
   - Very convenient
   - Neither good nor bad
   - Inconvenient
8. How closely does the bus service run to schedule?
   - Generally late
   - Generally early
   - On time
   - No comment
9. Since the last five months have you travelled without a ticket even once?
   - Yes • No
10. If the answer to the above question is yes, were you caught?
    - Yes • No
11. If the answer to question 14 is yes, did you pay a fine?
    - Yes • No
12. How would you rate the helpfulness and attitude of staff (conductor/ driver/ station staff) on board your last bus journey?
    - Very good
    - Fairly good
    - Neither good nor poor
    - Fairly poor
    - Very poor
13. How satisfied were you overall with the last journey you made by UPSRTC bus?
    - Very satisfied
    - Fairly satisfied
    - Neither good nor poor
    - Fairly dissatisfied
    - Very poor
14. What do you think about the fare charged?
    - Very high

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- High
- Neither high nor low
- Low
- Too Low

15. Are you willing to pay more for better services?
    - Up to 10%
    - Up to 5%
    - No
16. Time taken for issuance of tickets has:
    - Reduced
    - Increased
    - No change
17. What mode ticketing do you prefer?
    - Daily ticket
    - Monthly pass/ MST Card
18. Have you applied for MST card?
    - Yes • No
19. How easy is to get a seat during rush season?
    - Very easy
    - Fairly easy
    - Not at all easy
20. Are LCD screens of any help?
    - Yes • No
21. Do you pay attention to advertisements displayed on screens, buses, and tickets?
    - Yes • No
22. How far do you have to travel from your place to take a bus?
    - Up to 2km
    - Between 2-5 km
    - Between 5-10 km
    - More than 10 km
23. Do you know that a vehicle tracking system is installed in the bus?
    - Yes •No
24. Have you ever registered a complaint on the number provided in the bus?
    - Yes •No
25. If the answer to above question is yes, was it addressed satisfactorily?
    - Yes •No
26. Any problems faced and suggestions for improvement of services:

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Survey results:

Survey for passengers: number of respondents: 25

1. Average age of respondent: 29.8 years
2. Gender distribution:
    - Male: 16
    - Female: 9
3. Purpose of travelling:
    - 12: work
    - 8 : education
    - 3: vacation
    - 2: other
4. Service being used:
    - ordinary: 20
    - goldline: 5
5. ORS availability:
    - don't know: 16
    - No: 9 ** no Volvo buses at visited places
6. Schedule:
    - 9: generally late
    - 8 : on time
    - 7 : no comment
7. Travelled without ticket: 5 said yes
8. Caught : out of 5 only 2 were caught
9. Fine: 1 of them paid fine
10. Helpfulness of staff:
    - very good: none
    - fairly good: 2
    - neither good nor poor: 9
    - fairly poor: 6
    - very poor: 7
11. Satisfaction with overall journey:
    - very satisfied: none
    - fairly satisfied: 5
    - indifferent: 16
    - fairly dissatisfied: 3
    - very dissatisfied: 1
12. Fare
    - very high: none
    - high: 2
    - neither high nor low: 20
    - low: 2
    - very low: 1
13. Willingness to pay more for better services:
    - 6: yes, up to 10% more
    - 11: yes up to 5% more

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- 8: no

14. Time taken for issuance of tickets: 10:
    - Reduced: 10
    - no change/ indifferent
15. Mode of ticket:
    - Regular ticket: 21
    - MST: 4
16. Applied for MST: 8 said yes
17. Seat availability
    - Not at all easy: 13
    - Fairly easy: 8
    - Very easy: 4
18. LCD Screen:
    - Didn't know about them: 8
    - Never seen them working: 13
    - No comment: 4
19. Pay heed to advertisements
    - Yes: 10
    - No: 15
20. distance travelled to take a us:
    - up to 2 km: 12
    - 2-5 km: 6
    - 5-10 km: 3
    - more than 10 km: 4
21. About VTS: none knew
22. Complaint registered:
    - Never: 22
    - Once : 1
    - More than once: 2
23. Redressed satisfactorily: 1 said yes
24. Problems and suggestions:
    - Rude staff behaviour
    - No schedule
    - Bus depot not clean
    - More public amenities required
    - Women not getting reserved seats
    - Picking up passengers from roadside
    - Dilapidated buses
    - Require more leg space in buses
    - Willing to pay more if AC buses made available

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2. Survey for conductors:

1. Name :
2. Routes of operation:
3. Number of working hours:
4. Were you provided training for the use of ETM?
   - Yes
   - No
5. What is the average time taken to issue an ETM?
6. Has the introduction of counter booking reduced your burden?
   - Yes
   - No
7. Do you know about VTS?
   - Yes
   - No
8. If yes, why do you think it has been installed?
9. Have you ever tampered with the VTS?
   - Yes
   - No
10. Have you been called to the office for misconduct?
    - Yes
    - No
11. Normally how many people manage to travel without a ticket?
    - 0
    - 1-5
    - 6-10
    - More than 10
12. Have you ever been robbed off cash during the journey before VTS, ETM and counter ticketing were introduced?
    - Yes
    - No
13. After introduction of ETMs and VTS have you lost cash?
    - Yes
    - No
14. Have you ever made use of the SOS button during emergency?
    - Yes
    - No
15. Usually after how much time is help provided in emergency?
16. Problems faced and suggestions for improvement in UPSRTC services?

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Survey Results:

Number of respondents: 20, regular employees: 8; on contract basis: 12

1. Average number of working hours: 12.5 hours
2. Training for using ETM: 20 respondents said yes
3. Average time taken to issue ETM: generally: 10-15 minutes, in case of power failure: 30 min to 1 hour
4. Views on counter booking: 18 respondents opposed counter booking as they were unaware of the fact that the revenue collection from counter ticketing will be added to their way-bills.
5. Awareness about VTS: 17 respondents replied that they were aware about VTS
6. Reasons for installation: all those who were aware of VTS in the buses thought it was installed to know their location.
7. Tampering with VTS: All respondents replied NO
8. Reprimanded for misconduct: 2 out of 20 respondents
9. Number of people managing to travel without ticket: 2 respondents replied, usually 1-5 people, others: nil
10. Looting of cash: just two respondents had been looted, both while their buses were parked. The lost cash was recovered from them.
11. SOS button: All respondents unaware of the SOS button.
12. Time taken for help to reach in emergency/ breakdown: In case of accidents: 2-3 hours, breakdown: huge variation: 4 hours to 4 days.
13. Problems faced:

The following were some general problems that surfaced during conversation with the conductors:

- ETM has insufficient battery backup
- ETM hangs frequently
- Insurance being deducted from their pays, but conductors not aware of existence of its proof
- Not being given the chance to have a say in matters relating to disciplinary action against them
- Lack of UPSRTC authorised eating stops
- Having to pay out of own pocket for food
- UPSRTC eating stops ill-treating them
- Lack of amenities at bus depots
- For contract workers: late payment of wages

3. Survey for Drivers:

3. Survey for Drivers:

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1. Name:
2. Routes they operate:
3. No. of hours they work:
4. Do you know that your buses are being tracked?
   - Yes
   - No
5. Why your buses are being tracked?
   - Help in emergency situations like accident, looting
   - To invigilate them and keep a watch on you
6. If you know then when it has been installed?
7. Have you crossed speed limit after installation of VTS?
   - Yes
   - No
8. Have you got any training for its use?
   - Yes
   - No
9. Reasons for being late
   - Traffic
   - No. of passengers
   - Petrol/ Diesel issue
   - Other reasons
10. Have you ever tried to tamper with the VTS system?
    - Yes
    - No
11. Have you ever been scolded or called by ARM or any official?
    - Due to any misconduct
    - For being late
    - To report their concerns
12. Have they got any benefit from ETM?
    - Less time consumption
    - Better management of passengers
13. Have you used SOS button?
    - Yes
    - No
14. How is bus in/out data being collected?
15. Problems faced and suggestions for UPSRTC:

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Survey Results:

Number of Respondents: 15, Regular employees: 4, contractual: 11

1. Working Hour: varied between 12 to 16 hours
2. Everybody knew that they are been tracked (15/15).
3. Reasons
    - To keep a watch on their location -7
    - To ensure their safety – 5
    - Don't care – 3
4. Average time of installation of VTS: about a year ago
5. Nobody crossed speed limit (15/ 15)
6. Nobody got any sort of training relating to functions and use of VTS/ SOS button.
7. Reasons for being late:
    - Delays in receiving buses from workshop – 5
    - No fix timetable – 4
    - Traffic – 6
8. Nobody ever tried to tamper with the VTS. (15/15).
9. Called for misconduct: none
10. Benefit by VTS
    - Yes – 8
    - No opinion – 7
11. Nobody knew about or used SOS button. (15/15).
12. Bus in/out:
    - Manual
    - Had to do only at some places.
13. Problems:
    - Poor bus condition
    - Route not fixed
    - Contractual drivers paid very less (Quoted it is Exploitation of Youth)
    - Not provided with Insurance slip
    - No immediate help in case of emergency. Help reaches very late
    - They get their wages late
    - Delays in issue of buses from workshop
    - No fixed working hour
    - Ill treatment at UPSRTC authorized dhabas
    - Lack of amenities at bus depots

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"The highest measure of democracy is neither the 'extent of freedom' nor the 'extent of equality' but rather the highest measure of participation."

- A.D. Benoist

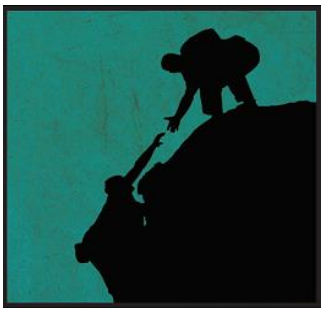
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