

# A REVIVAL MODEL FOR KSRTC



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The Kerala State Road Transport Corporation (KSRTC) is one of the oldest state-run public transport systems in India. Started as the Travancore State Transport division in 1937, it was transformed into an autonomous corporation called KSRTC by the Government of Kerala on 1<sup>st</sup> April, 1965. The KSRTC is currently incurring huge losses due to operational and managerial inefficiencies. This study is aimed at systematizing policy measures for the redemption of KSRTC from losses and inefficiencies in practices that amount to huge debts and poor delivery of output. Thrust will be given on emulating the best practices from the public transport systems in other states of India and the rest of the world that relate to the infrastructural deficiencies of the state, and/or on devising fresh mechanisms with manifold impact.

The financial sickness KSRTC is caught in is a resultant mainly of fat outlays on pensions (though this study will keep pensions out of its purview because of its policy implications and because the study is to primarily identify business models for the redemption of KSRTC), which is about to increase in 2013 with more than 5,600 personnel retiring in the calendar year, and of interest payments on loans taken for working capital requirements. The situation is such that earnings do not suffice salary and pension payments, let alone purchase of technical expertise and machinery. Governments, one after the other, have been writing off its debts and providing grants, setting a bad precedent – and still in vain. Recent studies on KSRTC have pointed out that the fleet size in the buses that ply in the state is not optimised and that the crew statistics are among the worst in the country. Regular break-downs, non-adherence to timings of the service and sorry state of affairs at managerial level add to the woes. This study will also try to find out if a Public-Private Partnership (PPP) model can emancipate KSRTC from financial and technical stagnation, and if it can, on how the synergies be asserted on public and private players.

Given the high traffic density and narrow roads in a state of urban-rural continuum, it is vital for KSRTC to brand itself to tune in with urban middle-class perceptions so that it can detract vehicles of private nature/individual use, thereby reducing traffic and accident tolls and optimising its occupancy. It is significant to note that private passenger carriages run in profits in urban areas where the role of KSRTC is nearly inexistent. An analysis has to be done in this regard among individuals commuting in personal vehicles on what are the minimal facilities that they expect from the KSRTC so that they shift their mode of commuting to public

transportation. A systemic revival plan can also facilitate road safety and infrastructure development in the long-run, and an analysis can help in making projections about the same.

## Concerns

Though the occupancy ratio in KSRTC has increased from 67.14 % in 2009-10 to 76.4 % in 2011-2012 (as high as 100 % in Himachal RTC), it is not an appreciable trend considering higher occupancy in private carriages and the inadequate road infrastructure in Kerala that calls for lesser use of private mode of transport. Though there are only 172 buses per 10 lakh population in Kerala, the fleet utilisation as of March 2012 is only 82.7 % (when the national average is 90.4 %) and more than 12 % of the buses are always under repair; at the same time, 28.8 % of the vehicles were over-aged. Staff per bus ratio in KSRTC is as high as 6.95, leading to high payments in the form of salaries. Other indicators are as follows (for March 2012), with the best figure among all STUs given in brackets:

- Staff productivity (kms/staff/day): 37.64 (131.76, TN STC Salem)
- Vehicle productivity (kms/bus/day): 261.63 (556.78, SETC TN)
- Fuel efficiency (km/litre of HSD): 4.19 (5.52, TN STC Kumbakonam)
- Passengers carried/bus/day (nos.): 598.6 (5,455.4, Himachal RTC)
- Profit per kilometre (Rs.): - 6.3151 (109.93, Bangalore MTC)
- Profit per bus per day (Rs.): - 1,864.76 (237.31, Karnataka SRTC)
- Staff cost as % of total cost: 46.50 (29.26, Karnataka SRTC)
- Fuel & lubricant cost as % of total cost: 33.21 (0.42, Haryana ST)
- Interest cost as % of total cost: 7.40 (0, Kolhapur MTU)
- Tax cost as % of total cost: 4.39 (0, Calcutta STC, North Bengal STC)

The number of breakdowns per lakh kilometres in KSRTC is around 6 while that of neighbouring Karnataka SRTC (KnSRTC) and Bangalore MTC (BMTC) are less than 1. According to a study undertaken by Sanjay Kumar Singh at IIT, Kanpur titled '*Technical Characteristics and Efficiency of the Indian State Road Transport Undertakings*', when the size effect is eliminated, KSRTC features among one of the least three efficient STUs in India. He identifies supply-side problems as the key to KSRTC's inefficiencies. In another paper titled '*Comparing Efficiency across State Transport Undertakings: A Production Frontier Approach*', co-authored by him with Anand Venkatesh, KSRTC again features as one among the least three efficient STUs in India, considering the size distribution and working environment. There are

many STUs whose performances have been note-worthy. The best example is that of the STUs in Tamil Nadu that have high productivity and efficiency indicators as compared to any other STU in India.

The projected asset-turnover ratio for KSRTC for the year ending March 2013 is as low as 0.465 and the projected operating ratio is as high as 0.944, both of which providing a sorry state of affairs at the KSRTC. The aggravated losses of KSRTC at the end of the fiscal year 2013 is estimated to be Rs. 2,408.73 crores which will increase to Rs. 9,055.63 crores by March 2022 under the current conditions (according to a study conducted by KSRTC). While salary and fuel costs are set to rise on a systematic basis, interest charges and pensions will cause a steep rise in total expenditure over revenue. Losses are set to increase from Rs. 446 crores in 2013 to Rs. 1,485 crores in 2022, and loans from Rs. 1,250 crores to Rs. 6,240 crores in the same period. It is estimated that without pensions, KSRTC would have enjoyed profits and that loans be repaid by 2020, interests be paid for by 2021 and amount due to trustees by 2018. The addition of Current Work in Progress (CWIP) worth Rs. 925 crores in March 2015 to fixed assets (especially, commercial bus complexes) is bound to increase the non-operational gains of the Corporation substantially.

*Mathrubhumi* newspaper dated 29 June 2013 has reported that chassis in all the four regional workshops in the state and the central workshop in Pappanamcode have started rusting due to non-availability of materials for bus body building. They stated that manufacturing has been reduced to one-third of the capacity and that the mechanical staff is under-employed currently.

### Central Schemes and loans

There is a limitation imposed on the SRTUs to borrow funds under Section 26 of the RTC Act 1950 which provided for prior approval of the Government to borrow. If the financial institutions are ready to lend money to SRTUs on the basis of their financial appraisal of the balance sheets of the Corporation, without insisting on government guarantee, there should not be any restriction to raise capital. Loans must be taken only for inventory addition and not for working capital requirements. It is seen that KSRTC currently pays at an interest rate of 14.5 to 16.5 % to the Government of Kerala and KTDFC for loans taken on working capital needs while

HUDCO provides loans to the Corporation at 10.5 % for investment needs and fleet augmentation.

One time assistance to the extent of 50% of the project cost was sanctioned to SRTUs for IT related projects by the Central Government. Only very few SRTUs availed the benefits. The central government may consider extending the scheme and continue to provide 50% assistance to the SRTUs during 12th Five Year Plan period. KSRTC must make sure that all central schemes are availed at time. In Chapter IV, Section 23 of the RTC Act 1950, there is a provision for funding of capital from the Central and State Governments to STUs. Lack of funds for capital expenditure is one of the chief causes for lack of modernization and expansion of fleet in KSRTC. It is proposed under the 12<sup>th</sup> Five Year Plan to launch a scheme for one-time central assistance for purchase of buses by state governments/ UTs for operation in rural areas under which Kerala will be granted 1,046 buses with the Centre providing for 80 per cent of the costs. But the Corporation must fulfil the guidelines and conditions and submit a Detailed Project Report (DPR) in order that the state will get the first set of buses as it is provided on first-come first-serve basis. The entire amount will be sanctioned only after the respective state introduces a Public-Private Partnership (PPP) model by contracting operations to a private player. Considering the huge pension liabilities KSRTC is in, a PPP model is deemed as a good idea.

### Taxation and pricing

In financial years, 2005-06, 2006-07 and 2007-08, 18 SRTCs earned a profit (Rs. 164.8 cr, Rs.295.5 cr & Rs. 458 cr respectively, on average) before the payment of Motor Vehicle Tax. After the payment, they reported losses of Rs. 1,167.6 cr, Rs. 1,124.6 cr & Rs. 1,060.7 cr respectively, on average. This means that in India there is scope for road transport corporations to earn profits if MVT was checked. The Motor Vehicle Taxation Inquiry Committee had remarked way back in 1950 that the taxation policies of the Central and State Governments should be framed in such a manner that they encourage the growth of road transport industry as a national enterprise. The tax on passengers should be fixed on the principles of taxation and there has to be parity in the tax rates and bases of neighbouring states. In Kerala, as of 2011-12, the Corporation pays taxes of Rs. 83.56 cr to the Government, a whopping 4.39 % of total costs as against no taxes in STUs in West Bengal. The government must relax excise duties on raw material purchase too.

Average fare increase in last five revisions (till 2011) was 15.18% which is significantly inadequate as compared to the increase in cost per kilometre (22.09%) in the corresponding period. Average minimum fare increase is around 10% only. Proper studies and calibrations need to be done during fare revisions so as also to avoid strikes by private operators. A cess on the ticket fare on progressive slab basis for fast passenger buses and above must also be considered in order to generate additional revenue.

## Best practices

The efficiency-effectiveness debate: Efficiency parameters are internal to an enterprise while effectiveness is in relation to customers and external environment. Monopolies are characterised by efficiency parameters to the point of ignoring effectiveness. While parameters like fleet utilisation ratio, kilometre per litre of diesel, bus-staff ratio etc. are necessary for the survival of an organization, it is effectiveness in the quality of products and services that determine long-term success and goodwill. Punctuality, comfort and dignified travel should be the hallmark of transport services. With monopolistic existence being cut under their feet by both legal and illegal privatisation, the accent in STUs should shift to the passenger and appropriate performance parameters should be evolved to test passenger satisfaction. (*'Who's Afraid of Best Practices? Old and New Lessons for State Transport Undertakings'*, Sudarsanam Padam)

Monitoring quality of service: Even in the early 1970s, STUs used to fit tachographs, primarily in long distance carriages, to record timings and speeds in order to ensure safety and punctuality as also to discipline errant driving. This practice was later abandoned for the ostensible reason that equipment was becoming expensive. With new and sophisticated technology in place, cost considerations become negligible when compared with its advantages.

Traffic density analysis, Route rationalization and Cross-subsidisation: The Nizam State Railway and Road Transport Department which operated in the Pre-Independence period had excellent procedures of recording traffic densities from one traffic point to another for the entire route in order to take decisions on re-routing, cut-trips or augmentation. With modern devices available, there should be a mechanism to automatically count the number of passengers at given lengths so that

services can be adjusted to passenger demand. According to the monthly data of January 2012, 10 schedules each in Kalpetta and Thamarassery depots made an operational loss of more than Rs. 30,000. 26, 12 and 7 schedules Pala, Pappanamcode and TVM City depots did not meet the operational expenses. 38 schedules from Pala earned less than Rs. 20 per kilometre. In Pala and Kaniyapuram depots, Earnings per bus (EPB) in long distance buses are seen to be consistently low. While differential pricing/cross-subsidisation (like in the case of airline operators in India) can be a way out in rural areas where KSRTC has to monopolise the operations due to social targets, in urban areas, steps must immediately be taken to bring the services of the KSRTC to standards deemed. There must be decentralisation of operations with identification of new routes and operating centres like government offices, railway stations etc. Operations must be contracted out to a private party on a contractual basis in one or more of the above-mentioned depots on an experimental basis. KSRTC should employ transport economists or outsource route economics to expert agencies at regular intervals.

Manning control points: The practice of keeping experienced supervisors at traffic junctions both to monitor regularity and to assist passengers was abandoned under the monopolistic mode on the questionable assumption that even if no one guides passengers, they will still bear with either operational inefficiencies or lack of information about available services. Re-storing the practice will also enable maintenance of queue systems, which have been a forgotten virtue of state transport.

Training and stress management: As a part of the Quality Function Deployment Programme, employees must be given proper training in order to increase the man productivity and efficiency of the fleet. In KnSRTC, employees are trained at the Training Institute, Bangalore and officers at the CIRT, Pune & the Industrial Academy, Delhi. A three-day workshop for 16 drivers in Kozhikode done by KSRTC in May 1997 has shown that there was an overall 24.38% improvement in fuel efficiency after the programme.

In the Brihan Mumbai Electric Supply and Transport Undertaking (BEST), bus drivers involved in minor accidents as having bad driving habits are given a three day refresher course at the BEST Training School. The BEST Undertaking with the help of NGOs like Prajapita Brahma Kumari Ishwariya Vishwavidyalaya and Salaam Bombay Foundation conducts special stress management and meditation courses for its crew.

Revolutionising ticketing system: Easily accessible ticketing machines should be installed within the reach of commuters. The advantage is that if fares are collected well in advance there will emerge a pool of captive customers (who will vanish if the quality of service is poor). BMTC has taken the lead and has demonstrated that bus passes sold well in advance can prevent ticket fraud, delays and bickering with conductors. Hand-held ticketing machines with the conductors are not a solution to the issue of pilferage as long as the sales figures are recorded manually at the end of the schedule. Hence, complete electronic transfer of data (real-time or otherwise) from the ticketing machines must be in place; this will also remain a proof of travel in case a passenger files a suit against the Corporation or vice-versa.

The Brihan Mumbai Electric Supply and Transport (BEST) Undertaking has initiated an e-ticketing project in association with a private operator, on a Build-Operate-Transfer (BOT) basis. Replacement of the conventional ticket issuing mechanism with e-tickets through Electronic Ticket Issuing Machine (ETIM) and of the conventional bus passes issuing system with electronic RFID (Radio Frequency Identification) based smart cards system have facilitated computing, eased conductors' burden, reduced delays in information transfer and curtailed pilferage. These ETIMs are capable of validating and renewing the RFID-based smart cards, and help in real time Management Information System (MIS) for taking instant operational decisions. The system can be later upgraded for a common mobility card to be used with metro, mono-rail and local train networks as in the case of the famous Oyster cards in Greater London. With the introduction of metro and monorail systems, the government must introduce integrated daily, weekly and monthly passes or denomination tickets to increase revenue. Tickets/passes on public road transport amenities being considered at equally par with or as a replacement to current lotteries will incentivise more people to use public transportation (especially as buying lotteries otherwise is considered a taboo among the higher middle-class).

KSRTC must also consider adopting some schemes that Andhra Pradesh State Road Transport Corporation (APSRTC) has lately introduced, such as

- TREATS (Travel Regularly and Earn an Additional free Trip Scheme)
- RJT (Return Journey Ticket) facility
- TAYL (Travel As You Like) ticket
- Dial a Bus Scheme



The need for skill and professionalism: Shorter tenures and transfers at the top levels of the organisation chart have been a bane for KSRTC. Employees must discharge 'service with a smile' to the customers. Recruiting competent professionals to headline functions and multi-skilled personnel to handle diverse jobs if need be, and providing attractive VRS schemes to give golden handshake to the unproductive personnel can induce professionalism as well as reduce the staff to bus ratio in KSRTC.

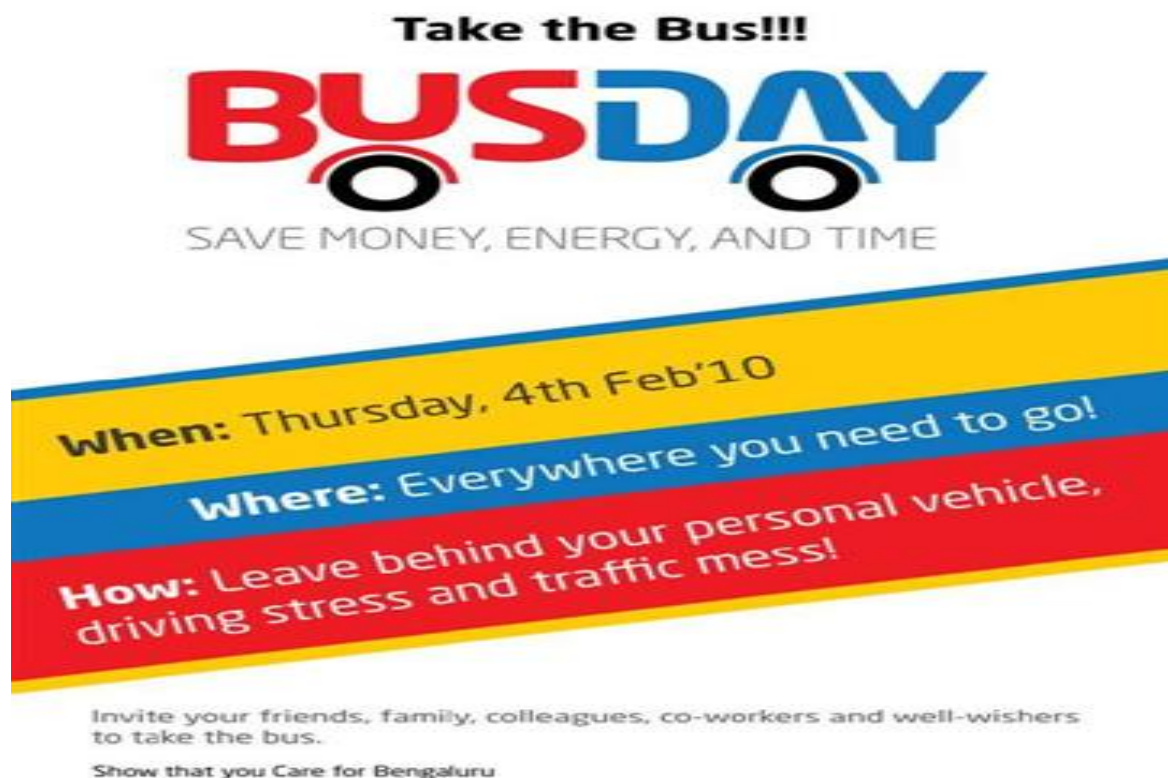
Fuel efficiency: Existing diesel engines can be easily converted to dual fuel mode without any major changes. It has fuel flexibility and can be operated on full diesel mode if natural gas is not available. They have potential benefits like higher power density, better efficiency and lean burn combustion capacity which results in reduced misfire and emissions of NO<sub>x</sub> and CO<sub>2</sub>. Diesel pilot fuel provides lubrication to valves and rings which results in longer maintenance intervals and reduces maintenance costs. As natural gas has high research octane number (120-130), it is highly resistant to knock emits less noise. Use of extremely lean mixtures and rapid combustion allows dual fuel engines to use higher compression ratios and achieve higher break mean effective pressure than could be achieved in SI engines without causing knocking. Use of lean air fuel mixtures also reduces knocking tendencies. Major advantage of dual fuel engine compared to spark ignition engine is its ability to burn very lean air fuel mixtures with high efficiency. (*'Converting Diesel Engines to Dual Fuel, The Pros and Cons of Common Gas Engine Types'*, Jensen Scott; *'Traffic Air Pollution: A Case Study'*, Fareed M A Karim)

Delhi Transport Corporation has already converted its entire fleet to CNG fuel mode and many other SRTUs such as UPSRTC, GSRTC, AMTS, BEST and PMPML have already started inducting CNG fuelled vehicles in their fleet. Similarly, bio-diesel and ethanol are also being used by the SRTUs in the state of Karnataka. Kerala must go forth with its plan of conversion to either CNG or dual fuel engines to attain higher efficiency and to reduce costs from current 33 per cent of the total costs in KSRTC.

IT initiatives: Equipping the buses with GPRS (Global Packet Radio Service) and GPS (Global Positioning System) helps in navigation and accurate tracking as they send real-time updates about the buses in every 15 seconds. KSRTC is planning three major initiatives under its new IT implementation plans – GPS based tracking of buses, real time information on ticket sales (already explained) and Passenger Information System. The GPS based tracking will aid other real time applications

like fleet monitoring and passenger information services at bus stations/stops. Passengers will also be able to access SMS based information about the running of buses on a real time basis. KSRTC must upgrade its SMS-based bus tracking service under the Mobile Governance programme in tune with the proposed GPS plan to give customers automated, better replies. It must also open more online reservation counters across towns and district headquarters in order to redeem itself from operational losses. The Kadamba Road Transport Corporation in Goa started an online ticketing portal named BOSS that helped it redeem from losses after its introduction in April 2011.

Bus Days: Bus Days must encourage the political leadership to use public transport so as to attract civil citizens in shifting their mode of transport. Each Bus Day must pre-fulfil set targets like cleaning up bus stations and taking on road washed/cleaned buses. Bangalore Bus Day programme by the BMTC was met with decreased journey times, overall increase in productivity and improved air quality in the city. There was an increase in daily passes in July 2010 by 8,000, reduction in private vehicles in parking lots by 3-5% and an average 8-10% reduction in pollutants according to Karnataka Pollution Control Board.



A Bus Day poster in Bengaluru

Sustainable model/branding KSRTC: The Government must undertake studies based on a new methodological framework for testing urban transportation policies and projects on the dimension of sustainability through development and use of a sustainable transport model which is conceptualised to encompass economic, environmental and social indicators and is represented in terms of Composite Sustainability Index (CSI). A study conducted by Ms. Mukti Advani and Dr. Kirti Bhandari with the CSIR on users' perceptions towards available public transport modes in Delhi has revealed that as income increases, a large percentage of commuters prefer to travel by the metro rail while the low-income group prefers buses. In Delhi, probability of metro, cars, buses and two wheelers as mode choice of transport (as per a study by Dr. Pawan Kumar) is 38%, 24%, 7% and 31% respectively under current conditions. Considering the high standards of living in Kerala, the idea to consider here for KSRTC is to re-establish itself as a brand, with bringing in fleet that are customer-friendly. This must be done after public deliberations, so that the age-old existing fleet can be gradually taken off the roads. Customer-friendly seats with proper head-rest, TV and coffee vending machines in long journey buses, bodies that reduce tail-pipe emissions etc. must be priorities. Buses should also be designed such that they are easily accessible by the disabled. The Delhi TC with the help of an NGO named Samarthyaa has constructed barrier-free bus shelters for handicapped persons so that the wheel chair can enter without any outside association.



Barrier-free low-floor bus and shelter by DTC

Construction of mobility hubs in cities (like in Vyttila and the one proposed in Thiruvananthapuram) and bus bays (in such a manner that halting buses do not affect the flow of traffic), and conversion of existing bus stands into commercial areas (under PPP model if government funding is not viable) should also be of prime concern.

Non-operational and other income: Tamil Nadu has come up with ‘Amma’ mineral water bottles at Rs. 10 per litre to be bottled and distributed through its STUs. Kerala must adopt similar practices to provide cost-efficient, pure water in eco-friendly and re-usable bottles to its road passengers by utilising its vast water sources, thereby also putting a check on privatisation and rise in price of drinking water. Moreover, such initiatives will increase the operational revenue of KSRTC and create goodwill for the Corporation.

According to *The Hindu* dated 01 June 2013, a revaluation of 414.85 acres of land owned by KSRTC in prime locations close to cities and towns to current market value has been suggested. Assuming an average price of Rs. 5 lakh per cent of land, the appreciation on revaluation could be around Rs. 2,057 crores. Constructing commercial complexes in the land in a time-bound manner will fetch a rental income of Rs. 127 crores.

Zonal-operations: Zones 1, 2 and 3 (Trivandrum, Alappuzha & Ernakulam) have more cancellations in schedules as a total percentage of planned schedules and incur more losses than the rest of Kerala. It is also to be noted that in efficiency indicators (fuel, vehicle, staff), the five regional SRTCs and the SETC in Tamil Nadu have fared much better than all other SRTCs in India. Considering the above two points, there should be more authority given to zones in KSRTC to make organisational and operational decisions with incentives based on productivity and performance. Under this structure, the zonal offices must have complete authority in identifying the routes and the kind of buses to be plied. In STUs in Tamil Nadu, employees are paid productivity-linked incentives above their basic monthly pay. Incentive calculation takes into account total number of man-hours of work, service revenue, fuel consumption etc. of each of the undertaking every day. Monthly incentive of each employee is arrived at by taking into consideration the monthly attendance of each employee. Though this sum seems to be minimal, the incentive structure gives a psychological push for employees to perform. This is one of the main reasons why the STUs in Tamil Nadu have higher efficiency indicators than any other STU in India.

Multi-modal operations: KSRTC must look ahead and strategise its operations by considering that metro, monorail and high-speed rail corridors will start functioning in a few years from now. Multi-modal travel integration in major towns and cities will call for network, fare, information, physical, financial and institutional integration. This is again a reason for construction of mobility hubs as pointed earlier. Perception-induced shift in mode of commuting to metros and monorails in major urban areas will force KSRTC to shift its operations primarily to rural areas and other towns. This means that KSRTC will have to identify operational routes in advance and develop the rural infrastructure in order to institutionally monopolise those routes as there will be an outward pressure of private transport carriages from urban pockets when that happens. Singapore Integrated Multi Modal Public Transport System is an excellent example that includes bus, Mass Rapid Transit (MRT), Light Rail Transit (LRT) and taxi services. Integration of metro with buses has a long gestation period as it requires a colossal capital investment with massive mobilisation of resources. Hence, planning and strategising must be done well in advance, in this regard.

### Public-Private Partnership

A model with private sector providing for manpower on a daily-wage basis and public sector on infrastructure can ensure public finances being devoted to infrastructural development in KSRTC by ruling out pension outlays from the Corporation's shoulders as contributory pensions will take another generation of KSRTC employees to retire, to fructify. As already mentioned, KSRTC should consider, on an experimental basis, a private operator in highly loss-making depots, to see if break-even profits can be reaped. The existence of opposing trade unions and their impeding stature in KSRTC cannot be negated. If political pressure limits a move in this regard, an alternate PPP model with public sector providing for salary and pension payments and private sector for physical capacity building (like construction and maintenance of buses, bus bays, mobility hubs, commercial bus stands etc.) need to be considered. The BOT-based private sector involvement in the maintenance of Vyttila Mobility Hub is considered a reason for its neat ambience.



Vyttila Mobility Hub

### Ideal bus for KSRTC

Size of the bus: The maximum height and width of the bus fixed by the Central Motor Vehicles Rules (CMVR) should be utilised to the maximum; the regulations permit two axle buses to have a maximum length of 12 metres and multi axle buses, 15 metres. Multi axle buses are the future trend in long distance travel due to its advantages like additional seats, additional engine power, steerable rear axle for improved manoeuvrability, space to accommodate desirable amenities and comfort due to reduced vibrations.

Engine: An ideal engine must be located at the rear and must have sufficient power for propulsion and speed. It must meet the latest emission norms, give the highest fuel efficiency, should also be turbo-charged and have a high pressure injection system.

Suspension: A good air suspension not only absorbs all the jerks and shocks but also gives a cushioning effect.

Structural requirements: New buses must be of monocoque design and not be built on truck chassis. Building the structure and panelling with rectangular or square tubes of mild steel or galvanised iron gives greater strength. Anti corrosive treatment to the MS raw material increases the life of the bus; mig welding (CO<sub>2</sub> welding) increases the strength of structural joints. To maintain the accuracy and symmetry of the body, the bus body building must be carried out using jigs and fixtures and raw material must be cut using CNC machines.

Multiplex wiring: Multiplexing technology should be preferred over conventional wiring system in new buses with more electronic features, to transmit multiple sensor signals using fewer wires, so as to decrease the cost of designing the bus and to reduce fire accidents.

Electronic Stability Control (ESC): ESC is a computerised technology widely used in hi-tech buses to detect and minimise skids, thereby improving the vehicle's stability. When ESC detects loss of steering control, it automatically applies the brakes to steer the vehicle where the driver intends to go. Some ESC systems also reduce engine power until control is regained, thereby minimising the loss of control. KSRTC must adopt ESC technology starting with incorporating it in buses that ply in hilly terrains of the states, where there is a higher risk to safety due to hairpin bends and steep roads (for example, in districts of Wayanad and Idukki).

Brakes: Hydraulic retarder enhances normal braking with which a considerable reduction in the wear of the brake lining can be achieved. Anti lock braking system and advanced electronically controlled brake system (EBS) further enhance the safety of the buses.

Driver's ease: Buses must be equipped with forward/rearward and up/down adjustment mechanism and locking type seat belts for drivers' seats, power steering, clear forward vision and wide vision rear view mirrors.

Customer-friendliness: Reserved seats must be appropriately mentioned; there must be uniformity in the location of reserved seats for women, elderly, blind and disabled passengers across buses of different kind so as to make it easy for commuters to avail them. An LED destination board must be illuminated at the front end of the gangway, starting with long distance buses, for the perusal of the passengers.

Air-conditioning: All long distance buses must be air-conditioned. The ACs must be preferably engine-driven so that installation of an ancillary engine for the purpose can be avoided. It must be of a streamlined rooftop design with high capacity blowers and should give maximum cooling, superior air flow, least interior noise and optimal passenger comfort.

Interior designing: In long distance buses, the interior must have serene lighting, high quality speakers, internet facility, mobile phone and laptop charging points and tea/coffee vending machines. Each seat must have individual seat lights and foldable laptop tables; the curtains must be changed and cleaned regularly. There should be a public address system for the captain/driver of the bus to make essential announcements. Chemical toilets must be provided at the rear end of long-distance and night-travel buses for the convenience of women and the elderly. Karnataka State Road Transport Corporation has started plying Volvo 9400PX buses between cities that have inbuilt pantry, toilet, television sets at the back of each seat, coffee maker and a refrigerator.



Volvo 9400PX bus interior (KnSRTC)



Colour scheme and logo: The Corporation must follow a contrasting yet complementing colour scheme for the bus body exteriors, or depict theme paintings that show their commitment to environment, passenger safety and comfort so as to make the buses look aesthetically appealing. KSRTC must also use their logo and name at suitable places to give the buses a unique identity.

## Safety requirements

The buses should be conforming to all the latest requirements of the Central Motor Vehicle Rules, 1989 as amended from time to time. The bus body design must also conform to all the general and technical aspects laid down in the Code of Practice for Bus Body Design and Approval, AIS-052 (Revision-1), also called as the Bus Body Code.

Power-operated, automatic, swinging-in type of doors must replace jack-knife type of doors, and must be of minimum 1650 mm height and 650 mm width. There should be at least two emergency exits with a height of 1250 mm and width of 550 mm in each bus, and the height of the emergency exit from the ground level should not be more than 1800 mm so as to enable the passengers to come out easily and for the outsiders to help them in evacuation. The floor of the bus must be preferably flat with the exception of a slight upward slope in the longitudinal axis towards the rear end due to the engine. The current structure of the low floor buses plying in the state have layers of floor segregated by steps, causing difficulty for passengers and conductors. The maximum height of the first step at the entrance should be 380 mm and that of other steps should be 350 mm. The front wind screen should be of single laminated glass so as to prevent cracking and breaking due to transfer of shocks.

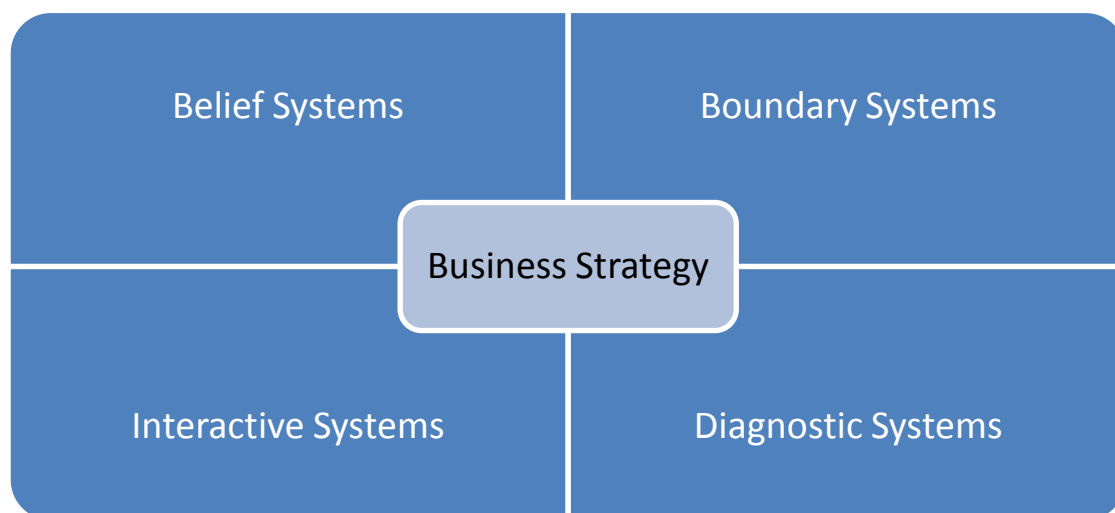
Gangways must be designed in such a manner that there is no hindrance to the free flow of passengers. All seats in the buses should be forward facing. In new buses, the minimum width and depth of the seat cushion should be 200 mm and 400 mm respectively; its thickness should be 130 mm at the front edge and 100 mm at the rear edge. The backrest of the cushion must be of minimum 75 mm thickness. All seats must be reclining type with calf supports and seat belts. The seat layout must be preferably 2x2 types with sufficient leg room. The cabin luggage rack must be designed with a cover so as to avoid luggage from falling.

The material used in the building of bus bodies must conform to flammability requirements as per IS 15061:2002. As per the Bus Body Code, all buses must be equipped with at least two fire extinguishers of 2 kg each. First Aid kits should be kept in the bus with all necessary medical equipments as notified under Rule 138 (\$) (d) of CMVR, 1989. Lighting must be sufficient and not too bright causing irritation. The interior noise must be kept minimal.

## Business practices

In order that KSRTC establishes itself as a business entity providing public services effectively and efficiently, it is important that it adheres to one of the best global practices. Two of them are discussed below.

Simon's Four Levers of Control: According to the Road Transport Corporations Act 1950, the objective of the public road transport corporations is to provide, promote and secure an efficient adequate, economical and properly co-ordinated transport service and while doing so, to abide by 'business principles'. As a business enterprise, KSRTC must follow Robert Simon's Four Levers of Control (Harvard, 1995) to redeem itself from profits and make a goodwill among employees and customers. In doing so, it must take into account all the angles of management in KSRTC.



Belief systems: customer & employee oriented practices

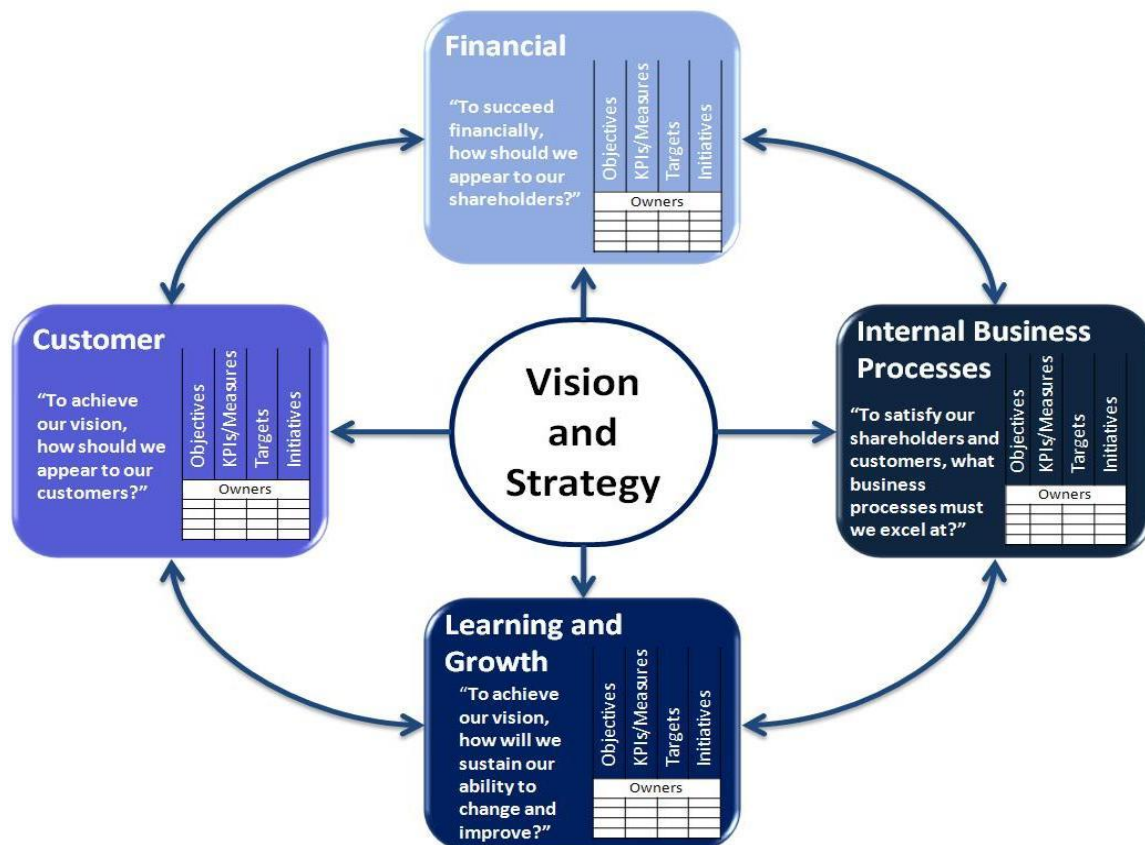
Boundary systems: well documented and circulated rules & regulations

Diagnostic systems: monitoring of employees for incentivised pays

Interactive systems: training of and suggestions from employees

These systems must be levered by incorporating the strategies and policy revisions that have been discussed in this study. In order that customers are satisfied with the services, employees must be educated about their roles and duties. This grass-root level strategising must be done through proper training, incentivising and monitoring. All employees must be given a copy each of the circular (No.572/10) on the duties and responsibilities of KSRTC employees, dated 15/12/2010. This manual must be studied and closely followed by all employees, by law.

The Balanced Scorecard (BSC): The balanced scorecard approach was formulated by Robert S. Kaplan and David P. Norton at the Harvard Business School in the early 1990s to assign vision and strategy to the business activities of the organization, improve internal and external communications and monitor organization performance against strategic goals. Managerial order at the KSRTC must manage such scorecards, and constantly revise them in order to strengthen the linkages between the four areas to make the Corporation adhere to wise business practices. The use of a BSC does not mean just using more measures; it means putting a handful of strategically critical measures together in a single report, in a way that makes cause-and-effect relations transparent and keeps managers from sub-optimising or improving one measure at the expense of others.



## Summary

The following are the major observations and suggestions of the study:

- Vigilance must be given on the nature of loans taken – they should not be taken for working capital requirements and to pay off interest dues.
- There must be a proper mechanism to monitor and avail the Central Government schemes. The Government must put a check on MVT and excise duties on purchase of spare parts.
- Rules and regulations must be circulated among employees; they must be given proper training. There must be appraisal based on monitoring for a productivity-linked incentive mechanism; there must also be an attractive VRS in place.
- Studies must be done with regard to differential pricing, route rationalisation and zone-wise operations.
- Buses and bus stands must suit the perceptions of all classes of people; buses should follow the efficiency and safety standards as propounded in the Central Motor Vehicles Rule and the Bus Body Code.
- Fuel efficiency must be of priority; conversion of engines into CNG or dual fuel modes can be considered. Depots and workshops must be provided with all infrastructural/mechanical facilities to handle break-downs and to optimise fleet size.
- PPP models of construction and maintenance of buses and bus stands should be encouraged; the Corporation must try to reap in non-operational revenue through commercialising and renting out its land.
- The current ticketing system must give way to automated ticketing systems and smart cards; there should be attractive travel plans to attract passengers to public transport systems.
- IT initiatives like GPS and GPRS in buses should be considered for tracking and time management purposes; and online ticket-booking should evolve to global standards and be made easily available to passengers at select locations.
- Planning must be done in advance to strategise operations when metro, mono-rail and high-speed rail corridors start functioning.
- The Corporation must adhere to business strategies practised globally to ensure timely and efficient checks and revisions.

## Sources

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  1. ‘Technical Characteristics and Efficiency of the Indian State Road Transport Undertakings’; Sanjay Kumar Singh; 24/8
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  10. ‘Traffic Air Pollution: A Case Study’; Fareed M A Karim; 36/2

## Disclaimer

State Planning Board for the first time, has introduced a scheme for involving Post Graduate students from reputed Universities / Institutions in the process of data collection and analysis of specific areas/subjects pertinent to the development of the economy and preparation of research notes on those areas. In the first phase of introduction of this programme, five Post Graduate students from Centre for Development Studies, Thiruvananthapuram were selected as interns during their summer break for undertaking specific research studies on selected subjects from 2.5.13 to 15.6.13. A discussion was held on the study reports by the interns and these reports were enriched to a great extent by the points factored in these discussions. The study reports as such are uploaded for an open discussion. ***Any views or opinions presented in these reports are solely those of the interns and do not necessarily represent those of Government /State Planning Board.***