

Indore City Bus : A Novel Experiment in Urban Transport

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***Abstract:** Public urban transport in our growing cities remains an issue of contention between planners, public, political class and existing operators. No city has been able to hit on one model system and “Metro” like system is viable only for large cities and that too with lot of land development rights for commercial usage. In tier-II cities, providing an efficient and affordable public transport without placing burden on financially weak urban local bodies and at the same time preventing inefficiencies of a government controlled system has been a herculean task. Indore City Bus and associated projects (City Van and Metro Taxi) present us with a model where judicious allocation of risk and rewards between private and public players has made the model a roaring success and similar models are being replicated across country with varying degree of success. This paper attempts to examine the factors that led to the creation of this model, and how it achieves its objective of affordable and fast public transport with regulatory oversight without depending on government grants or creating a monopoly and what are the possible weak or strong points of the model.*

Key words : Urban transport, Indore City Bus, Public transport

LITERATURE REVIEW

In March 2008, Vivek Agrawal, district collector of Indore and the brain behind “City Bus Indore” and its many clone models across India was thinking over all the travails he had to go through while implementing this system. Well, he got his share of recognition and rewards.. He was particularly delighted with the positive comments by noted strategic thinker Gurcharan Das (“India Unbound” fame) who appreciated company philosophy and more importantly its strategy for growth and idea behind it in his column in Times of India. ICTSL was conceived with the idea of catering to the ever increasing demand for an efficient and cost effective transport system in Indore in 2006 by then newly appointed collector Vivek Agrawal. It aimed to respond to the increasing traffic intensity, congestion, delays and road accidents prevalent in any tier II city of India coupled with inadequate public finance and unregulated private enterprise.

Recently the news media featured a series of articles on ‘accidents with involvement of Delhi’s Blueline buses’. An article in The Times of India quoted [1]:

To be able to kill 113 persons in less than 12 months in broad daylight is something of an accomplishment. The distinction belongs to Delhi’s Blueline buses. Desperate citizens tend to blame drivers, police, politicians, or transport officials. They are all guilty, of course. The real problem, however, lies elsewhere. A few months ago a prominent public figure even blamed ‘privatisation’. A staggering comment, I thought, considering that major cities in the world (including in France and England) have excellent, privately run bus services.

Amidst these concerns, a recent survey conducted showed following result [2]:

In a recent survey carried out by the Times of India, the Indore model got 92 per cent votes as the best model of public transport which can be followed in Delhi. The survey was done after a spate of accidents caused by the Blue line service of Delhi.

What can Delhi learn from Indore? The question was raised time and again, driving the strategists and the analysts to look into the replicability of the Indore model. Buoyed by the proven success of three successive years, Vivek had drawn up certain plans that would be useful for developing a successful replica of the Indore model for other cities and in fact many

cities across the state and country were in one or other stage of implementing the model. However, there were many fingers pertinently raised on the argument itself that can a mammoth city like Delhi, really has to learn something from its miniscule counterpart?

Vivek was aware of the fact and critics' arguments and was under considerable pressure from all sides -- city authorities, central government, state cabinet and local interest groups. There were talks of transferring control of "Indore City Bus" to Indore Municipal Corporation. Recently when services were extended to suburban cities and many such plans were mooted there was murmur in some quarter about backdoor entry of State Road Transport Corporation which was recently closed after bleeding state exchequer for hundreds of crores. Even supporters of the model felt that it had not achieved same degree of success in other cities and most of the success of the model could be due to Vivek Agrawal's personality and him being driving force behind it rather than the intrinsic resilience of the model.

Vivek was not unaware of all these criticisms. He was also not unaware of pressures wrought upon his deputy and CEO of ICSTL Chandramouli Shukla by corporators for routes or stoppages suiting their electoral calculations. On the one hand there were demands by people from unserved areas for inclusion, and on the other hand there were operators unwilling to bid for non-remunerative routes. Was it the case that they had actually picked low hanging fruits and making it city wide was the main challenge?

Thought other two projects mooted by Vivek, "City Metro Taxi" (a 24-hours taxi service available on a phone call throughout city) and replacing of age old "Tempos" with "Maruti Omni" had been successful, many feared that these were priced a bit on the higher side. BRTS had started in Delhi and Pune amid huge controversies and in Indore also they had not been able to finish first corridor in time (In fact the two companies implementing it, viz., Pratibha Industries and Neeraj Construction were blacklisted by IMC and the project is already behind schedule with significant cost overruns).

But Vivek was confident about the continuing success of his model and knew that it would run successfully even when he is not there to oversee it as the fundamentals were strong, and the model had proved itself and most importantly, it was one of those rare PPPs where all the parties -- public as well as private -- were better off than what they were before the deal. So he saw no reason why it should derail now especially when operators who had made significant investments were happy and so was the public with its on time performance and superior quality buses.

METHODOLOGY

An Idea is born

Indore is the largest city and the commercial capital of the central Indian state of Madhya Pradesh. It is situated on the Malwa Plateau, just south of the Satpura Range. Indore is the administrative headquarters of the Indore District and the Indore Division, and formerly served as the capital of the former princely state of Indore and the summer capital of the erstwhile state of Central India.

Long known for its textile industry, today Indore region is also an automobile hub (Pithampur, an industrial township nearby), Soybean processing hub apart from military cantonment of Mhow nearby and regional educational hub attracting by some estimates almost 0.1 million students per year. Indore is the most populous city in Madhya Pradesh with population of about 1,597,441 according to the 2001 census [3]. Indore has an average literacy rate of 72% and 13% of the population is under 6 years of age. The city is undergoing a fast rise in population owing to its growing stature as a commercial city. The average annual growth rate of population is around 3% as per the statistics of census 2001.

Indore's Nemesis: Rickety Transport

Though Indore has an airport since long, and is one of the few cities of India having both meter gauge and broad gauge railway line and is situated on the important Bombay-Agra NH-3, apart from other roads of regional and local importance, public transport is something which always had a room for improvement.

Alok Nath Bansal, a retired World Bank expert on transportation in Indore remarked [4]: There are two reasons for the current state. On one hand, the government-run public transport is incurring very high costs and on the other, the private operators do not seem to follow any rules. In many places, the private sector is confined to tempos, three-wheelers and, mini buses.

Till the 1980's, like many other cities of the region, Indore also had a government-owned and operated city bus system which was plagued by usual problems any public transportation system faces i.e. poor maintenance, inadequate service, widespread corruption, discourteous staff behavior and was in deep red when government decided to pull out of the system as was happening across sectors as diverse as education, health, power, industry etc. in the 1991 wave of liberalization.

The prevalent means of local public transport include mini-buses (called Nagar Sevas by the locals) and the Tempos, which were often overcrowded and uncomfortable [5]. Auto rickshaws are a staple as in all other Indian cities, to get around when other transportation is not available. As per 2004 estimates, the intra-city public transport system was essentially road based with 500 private minibuses, 550 tempos and 10000 auto rickshaws [6]. The tempos and auto-rickshaws are notorious for pollution, but the local government has since tried to replace them with Maruti Omni running on Liquefied Petroleum Gas [7].

With growing population and heavy interstate immigration (Indore registered close to 100% increase in population in 1985-2001), head count for Indore is on a constant rise. The workforce is near 0.33 million which requires regular up and down to their workplaces.

As per Traffic Survey report by Indore Police, the vehicle population was .48 million in 2000. It jumped to 0.73 million in 2006 which implied one vehicle for every two persons in population. That this was not voluntary could be ascertained from the fact that close to 30% people were below poverty line [8] in last census and thus it was more a situation of helplessness which drove people to maintain private vehicles for almost everyone in family.

This created not only congestion on roads and pollution besides large number of accidents; it also meant that private operators-run public transport was not patronized by middle and upper middle class of society and thus they could not charge beyond a limit to their customers who were essentially from last rung of society.

This created a vicious cycle; no one from middle or upper class was willing to use these "Nagar Sewa" and consequently there was no improvement in their service quality and they fought fiercely for whatever little pie was available in market, resulting in rash driving and frequent clashes between operators.

Man and His Vision

Born and brought up amidst similar conditions, Vivek Aggarwal, a 34 year-old IAS officer, became collector of Indore in 2005. Given the new responsibility he committed himself for the cause of Indore citizens.

As part of his efforts to reach his goals - he studied bus services in different cities. He looked for solutions from emerging economies facing similar problems and resource constraints. In particular he was impressed by Curitiba in Brazil and Bogota, Colombia.

Cross country Analysis- I: Curitiba, Brazil

Original system designed in Curitiba, Brazil, aimed to promote development along the BRT corridor. Retrofitting such a system in cities that have a different pattern of development may not be adequate to address the issues in those cities, or in most cases may be an aid for politicians to 'eco-wash' their stay in office. The original system is also part of a three street network that does not impede road width or road accessibility for traditional usage. It does not affect the character of the street, and clearly, that is the success story of Curitiba [9]

Curitiba had a well planned transportation system, which includes devotion of lanes on major streets for a bus rapid transit system [10] The buses are long, split into three sections (bi-articulated), and stop at designated elevated tubes, complete with handicapped access. The system, used by 85% of Curitiba's population, is the source of inspiration for the TransMilenio in Bogotá, Colombia, Metrovia in Guayaquil, Ecuador and many other cities around the world. Curitiba city has second highest number of cars per capita in Brazil but still chose BRT system over a metro subway as it was cost effective.

According to calculations done by Instituto de Pesquisa e Planejamento Urbano de Curitiba (IPPUC), the institution responsible for planning the implementation of Curitiba's master plan, the bus system as it is developed in Curitiba costs 3 million USD/km to construct compared with 8–12 million for a tram system and around 50–100 million USD/km for a Subway. After continuous operation for more than 20 years they have improvised system to such an extent that now there are long buses specially made by Volvo which can carry 270 people at one go and make full use of their first right of preference in traffic and are thus able to attract enough commuters.

Based on the model used in Curitiba, Brazil, TransMilenio consists of numerous elevated stations in the center of a main avenue, or "troncal". Users pay at the station and await the arrival of the bus, whose doors open at the same time as the sliding glass doors of the station. A dedicated lane on each side of the station allows express buses to pass through without stopping while other buses stop to allow passengers in or out. International consulting firm McKinsey & Co. was hired as project manager and leading local investment bank Capitalcorp S.A. was assigned the financial structuring of the project [11]

Cross country Analysis- II: Bogota, Colombia[12]

Bogotá's growth has placed a strain on its roads and highways, but within the past decade significant efforts to upgrade the infrastructure have been undertaken. The TransMilenio rapid transit system, created during Enrique Penalosa's mayoral term, is a form of bus-rapid transit that has been quickly and affordably deployed as an appropriate stopgap measure to compensate for the lack of a metro system.

Despite the city's chronic congestion, many of the ideas enacted during the Penalosa years are regarded worldwide to be cost-effective, efficient and unique solutions. In addition to TransMilenio, the Penalosa administration and voter-approved referenda helped to establish travel restrictions on private cars during peak hours, "Car Free Days" on Sundays, a massive system of bicycle paths and segregated lanes called 'ciclorutas', and the removal of thousands of parking spots in an attempt to make roads more pedestrian-friendly.

Private car ownership, despite being under 25%, forms a major part of the congestion, in addition to taxis, buses and commercial vehicles. However, due to the cicloruta system, bicycles have become an increasingly important form of transportation as well.

Buses remain the main means of mass transit. There are two bus systems: the traditional system and TransMilenio. The traditional system runs a variety of bus types, operated by several companies on normal streets and avenues:

- bus; large buses
- buseta; medium size buses
- colectivo; vans or minivans

The buses are divided into two categories: "ejecutivo", which is supposed to be a deluxe service and is not supposed to carry standing passengers, and "corriente" or normal service. Bus fares range, as of March 2008, from \$1100 to \$1250 (US\$ 0.60-0.70 approx.)

World Bank Recommends

Cities with population of more than one million should have urban bus Transport Corporation that owns 30 percent of its own buses and contracts 70 percent of buses from private contractors and operators. Motivated by this World Bank recommendation (note on 'India's Transport Sector, The Challenges Ahead 2002') and the new learning derived from his cross-country analysis of Curitiba and Bogota, Aggarwal formulated a strategy that will work in Indore amidst the liabilities of small town politics, lack of management expertise and a past record which inspired very little confidence.

ICTSL: A ray of new hope

Indore City Transport Services Limited was incorporated on December 01, 2005 with an objective to operate and manage the public transport system of Indore. Seven key people were identified to serve as the Directors on Board to create a local ownership of project. IMC (Indore Municipal Corporation) and IDA (Indore Development Authority) took 50:50 stake in Joint venture with an authorized capital of Rs 2,500,000. The collector of Indore, Vivek Aggarwal was responsible for the execution of the project to run the bus service. The company is run as a public-private partnership. Chandramouli Shukla, then CEO, ICTSL points out:

The company is an umbrella organization in charge of implementing the new model. It is based on a public-private partnership model. We provide the regulatory framework and the private companies operate the routes.

Initially company identified and took permission for 18 high travel demand routes from Road & Transport Authority of State Government and started operation with 37 ultra-modern low floor buses. These city buses with 2 broad doors allowed passengers to board and alight quickly and easily, save time and fuel, and give better run-times and improved economy to the bus operators. Real time vehicle tracking and fully computerized ticket vending system were some innovations tried first time in the country. O&M and other regulatory measures were being exercised by the company [13]

A key concern was livelihood issue of existing Minibus operators and this was the main point of political contention. This was addressed by stating that no one is being forced out of market and a new competitor is coming just like any other bus operator. Tempos were phased out and tempo owners were given permits for new Maruti Omni Vans which replaced them

A big issue while involving government in any new project is financial liability on taxpayer. This stems from both recurring and fixed costs. As buses are owned and operated by operators there are no fixed or running costs for ICSTL on this count. Even "LED displays" and GPS devices are on books of respective private operators and thus there is no financial liability of government. All new manpower addition is also by private party and there is no problem of getting saddled with employees and their dues even when you are in loss as common with other government corporations and even PSUs.

In short, the key objectives set for ICTSL can be summarized as

- i. Specialized and effective regulatory agency at city level
- ii. Establish and maintain line of passenger coaches
- iii. Support system for improving transport infrastructure
- iv. Equitable Access to Poor and Incentive to upper Middle Class to opt for these buses

At the core of ICTSL experiment, lies the belief that cities should develop their own regulatory and enforcement capabilities. This framework should then promote competition in public transport in the city while ensuring financial viability of the operators. However the key to sustainability of the model lies deep in the fact that every player in the game be it Government, the SPV, local administration, operators or non-players including people should be benefited.

Managing the Idea

The ICTSL management is entrusted to Board of Directors. The board consists of six ex-officio members. The Executive Director is authorized to exercise all powers for effective management of the new transport system under PPP. This position is currently held by the collector of Indore district. In addition, Regional Transport Officer, Indore and Superintendent of Police, Indore (ex-officio) are special invitee members to all meetings of the Board.

All the bus operators are also invited to the meetings of the board so that their valuable inputs are used for smooth and proper functioning of the company and the interest of operators is considered before taking any major decision. The management and control of all operations are with ICTSL.

Board of Directors [14]

The members of Board of Directors hold their office by the virtue of their posts. The following are the members on the board and Subscribers to the Memorandum and Articles of Association. The members on the board of directors are-

Name	Current Profile	Designation
Dr. (Smt) Umashashi Sharma	Mayor of Indore city	Chairperson
Shri Madhu Verma,	Chairman IDA	Vice - Chairperson.
Shri Rakesh Shrivastave	Collector Indore	Executive Director
Shri Neerak Mandaloi	Municipal Commissioner	Board Member
Shri C.B. Singh	CEO, IDA	Board Member
Shri Suneil Dubey	Joint collector Indore	CEO

Ensuring uniformity

There is a centralized office for all operators and company officials. ICTSL has complete charge of the operators. A uniform bus fare system i.e. single pass for all buses and all routes is followed. Pass revenue is shared subjected to strict adherence to routes and timings. Salary structure for all operators is consistent and the staffs wear a common uniform. This ensures that public gets a feeling of using a single system only and does not become victim of manpower poaching among operators. One of the operators says:

It works like a professional office. It is not like a Government office.

Tracking vehicle and passengers

Global Positioning System (GPS) has been installed in all buses with a central control room to manage scheduling and reporting of operational details such as distance traveled and stoppages. All buses have mobile phones with close user group network. This helps providing people with passenger information systems for the convenience of the commuters at all bus stops which shows on a LED monitor the exact time of arrival of the next bus.

Managing Routes and People [Exhibit 1]

The city bus route network system has been scientifically planned and designed. Direction oriented “hub and spoke model” of routing has been adopted. Routes have been planned to ensure that office goers, students, and employees avail the services. It has been ensured that proposed routes cater to personal as well as work-place requirements.

Colour Coding [Exhibit 2]

Colour coding of routes and buses and their numbering has been carried out in such a manner that a commuter may easily identify the bus stop and intersection for convenient commuting.

Bus Terminals

ICTSL in association with Indore Development Authority is developing Inter State Bus Terminals at three strategic locations in the city keeping in view intercity and intra-city transport requirements. Further, ICTSL in association with Indore Municipal Corporation has developed more than 300 bus shelters on different city bus routes.

Managing Financials [Exhibit 3]

The model had to be designed keeping in mind the motto of 'Minimum Investment with Maximum Returns' for all parties involved in the business. The financial model designed in-house by Vivek Agrawal provided maximum profitability for the company as well as the operators. The operational aspect provided impeccable control for both the parties and fully computerized monitoring. [15]

Operators

A pre-bid meeting was hosted on December 20, 2006 to explain the various aspects of business to the prospective bidders. The idea was presented and questions were answered. After clearing all the doubts of the operators, bids were invited on December 23, 2006. The operators actively participated in the bid process and the routes were booked.

Advertisement

Applications were invited January 17, 2006 from companies interested in taking the rights for advertising on the buses. Various advertisers participated and the highest bidder was Rs 25000 per bus per month. This was a sort of record.

Passes Issuance

The monthly pass system had to become the backbone of the financial model. There were various options like Route Pass, Daily Pass, Student Pass, etc. but the company decided to keep it simple and start with a single pass for all priced at Rs.250. This would enable the passenger to travel unlimited for a month on any bus on any route. The bids for issuing passes were called on January 20, 2006 and one company agreed to setup 15 Instant Pass Centers across the city to issue these passes.

A look at revenue projections reveal that operating profit is as high as 80-90% of revenue as practically no cost devolves on ICSTL apart from establishment expenses.

Note: NO INVESTMENT has been made for the past three years and still ICTSL is able to continue with its celebrated growth story

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ANALYSIS AND RESULTS

The Growth Saga begins

City Bus Indore: Celebrating Success

Two years later, Indore has a fleet of 98 modern, low-floor buses with computerized ticket vending. Electronic signboards at bus stops announce when the next bus is due based on satellite data. Investment in the system has risen to Rs 40 crore, all done privately. The city has made a profit since inception; so have its six private partners who run the buses. Soon, it will have 500 buses. Indore is now quoted (with Bogota) as having the best bus service in the world [16]

A Win-Win Situation

Public: Users (Refer to detailed survey response in Exhibits)

After experiencing bad days, traveling in the city is now quite a different experience. From less congestion to time savings, things have taken a volte face. Easy accessibility to different routes at comfortable timings is yet another value addition for Indore citizens.

Public: Non-Users

The system in itself generates positive externalities. Pollution and congestion is reduced which benefit non users also.

Government

- Infrastructure Development
- Better city Transportation management

ICTSL

- High Revenue generation
- Minimal asset holdings
- Transferred most of the risk to private operators

Private: Operators (Refer to detailed survey response in Exhibits)

Apart from no competition on routes they had bid for they also got freedom from any arbitrary policy changes as was common with earlier system as contracts are now 5 year long.

“As the density of population and the number of routes are increasing, we are bringing more and more buses on the road”, says Roshan Aggarwal, director of Dayajeet Nimay Logistics, one of the private bus operators involved in the project.

Roshan Aggarwal also points out that “When we started out, we had a minimum fleet of buses but now we own a fleet of 110 buses. Apart from that we have also come out with a new fleet of radio taxis plying on the Indore road. Income is not just from the fare; we also carry advertisements inside and outside our buses, out of which we were earning Rs. 25,000 per bus per month. That too has gone up.”

Private: Other parties from Eco system

There has been a perceptible improvement in quality of services offered by private minibus operators and even Auto Rickshaw. Clearly invisible hand of Adam Smith is at work. But there are also some accusations of a non level playing field as ICSTL gets all benefits of being a government sponsored company while private mini buses are left to fend for themselves and then expected to deliver superior quality with uncertainty of tenure also.

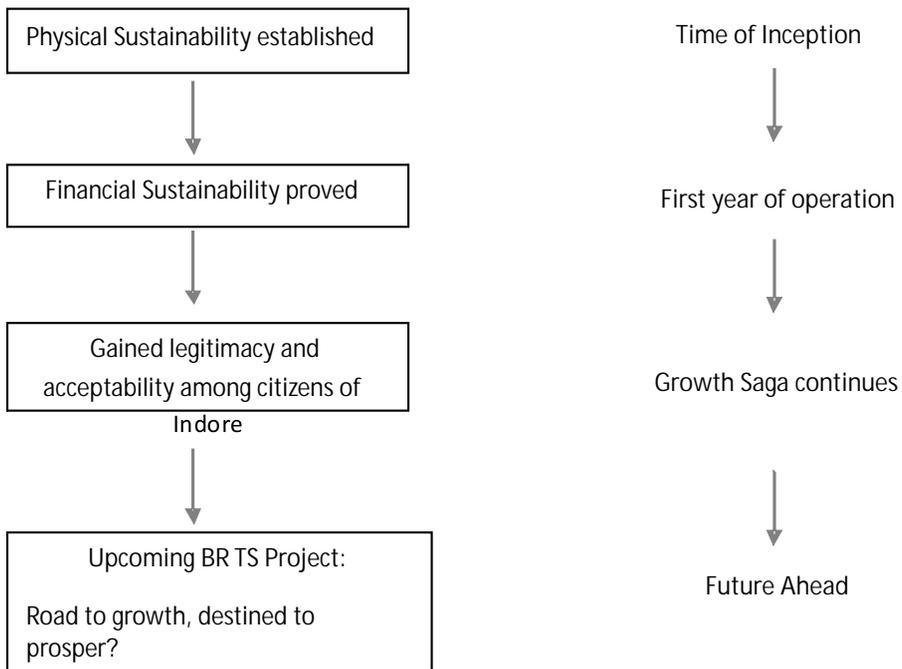
A Template for Urban Transport

In order to tout it as a template for PPP structure, a couple of things that interests all are the twin issues -- sustainability and replicability of the model.

Sustainability of Idea

In terms of physical and financial sustainability, the model proved itself to be successful within one year of its operation. The automatic elimination of Private owned “Nagar Sewa” from the Indore transport ecosystem followed Darwin’s theory of Survival of the fittest.

During the first year of operation itself, all the parties involved in the project made profits. Thus, it clearly displayed revenue generating ability and financial sustainability of the PPP Structure.



Growth Phase

Financial analysis for the last two years successfully captures the growth story. This has catered the passenger demand to a significant extent, but still there is scope for further development. The idea has gained huge popularity among Indore citizens and has been widely acclaimed countrywide.

Also going in favor of the business opportunities in this model are the increasing levels of pollution, heavy traffic jams, scarcity of parking space etc. that plague the bigger Indian cities today. Add to this the galloping cost of fuel and there is likely to be a move towards public transport, away from personal transport.

Dr. S K Singh of IIT Kanpur mentions:

One way of making private players interested in this business model is first to give them enough subsidies and more importantly they should be allowed to ply their buses on more profitable corridors so that they have a fair ROI and the government should keep the less profitable ones

One of the successes of city bus has been that there has been no strike by operators for increasing fare as is common with intercity bus operators [17] Though MPSRTC was closed recently [18] due to huge losses and negative Networth for long years and there are private operators already running buses, City Bus was asked to extend its service to nearby suburban towns like Pithampur (18 Km), Mhow (21 Km), and Dewas (40Km) [19].

Replicability of Idea

Famous author Gurcharan Das mentioned Indore City Bus in his blog and listed some lessons which could be learned by cities such as Delhi whose Blue line buses [20] are infamous as road roaming monsters. [21]

First of all romantic socialist thinking of 'one bus-one owner' must be dispensed with as it breeds inefficiency and makes operations economically unviable. Few operators with large bus fleets can ensure quality and most importantly have the scale and financial wherewithal required for quality improvements and learning best mutual practices.

Secondly, ideally two operators should not be allowed to compete on the same route. This leads to speeding and accidents as drivers scramble to maximize revenue. Bus owners must get exclusive routes and earn revenue based on distance traveled, and this can be easily monitored by an affordable satellite system that tracks bus movement. Indore has a daily and monthly electronic pass, whose revenues are shared between companies.

Lastly there must be a regulatory body which assesses demand, plans routes, fixes fares, gives out tenders, and monitors daily performance. Indore has a five person team which does this continuously, and this is the secret of its success.

Gurcharan Das points out in his blog on December 16,2007:

Some will argue that Indore is too small to be an example for Delhi. These are the same second rate minds who scoffed at Japan's miracle in the Sixties and Korea's in the Seventies, arguing that these countries were too small for India to copy. Just think of Delhi as 'ten Indores'!

Keys of Success

Key reason for success of this model was proper identification of risks and rewards and their allocation to the party which was best able to manage it. So traffic risk devolved entirely on private parties once they had bid a fixed revenue share to get that route and till date not a single bidder has complained of non recovery of his costs (As stated by Vivek Aggarwal in his interaction with case writers).

Though operational risks were transferred to operators, control and coordination by a government owned corporation meant that they were free of undue harassment by police, unsocial elements and passengers. [22]

ICSTL is also a party in a tripartite agreement between Bus manufacturers and operators thus giving a comfort to manufacturers about future orders and also helps in reducing cost of financing buses by operators (each bus costs Rs. 30-40 lakhs) by making lenders comfortable though not directly making any commitment. All buses go to a centralized depot and follow uniform color coding, driver uniforms, signage etc. to create uniformity and passenger comfort.

Another improvement over existing system was behavioral training imparted to drivers and other staff by local management consultants. Thus advantage of being private player was leveraged when required and implicit government guarantee was used while dealing with third parties.

Customer satisfaction and operator satisfaction (Refer to survey results in appendix; the survey was conducted to account for opinion of customers and operators) make this model unique and a win-win situation for all. In fact the model was copied in almost all major cities of Madhya Pradesh (Bhopal, Gwalior, Ujjain, Raipur and Bilaspur) and even outside i.e. Ludhiana, Jalandhar, etc., thereby making ICSTL richer by almost a crore in consulting fee.

Many people argue that initial success of project created a “Reputation Capital” which was leveraged later on many counts. Public was willing to pay fares which were on slightly higher side and Vivek could directly get ear of Chief Minister when officials in Bhopal were not that cooperative. He succeeded in convincing local politicians and already existing private operators about no loss of livelihood and financial mandarins sitting at Bhopal about zero liability of state government in less than two months to rollout the project in January 2006.

Reputation capital was once again in play in late 2007 when operators agreed to invest significant amount in “Metro Taxi” (12 lakh per vehicle) when they get no government support (apart from centralized call centre) and no monopoly on routes as the case with City Bus.

Indore as city is known for pioneering new things. First private telecom service by Airtel was started here way back in 1991 and so was India’s first private FM radio. A city neither too large to make it difficult to manage the complexities of a change nor too small to make any new project financially unviable was ideal launch pad for this unique model in public private partnership.

DISCUSSION OF FINDINGS

Transforming the Idea

Union urban development ministry has incorporated learning of Indore City Bus system in an “urban bus tool kit” to share best practices among various city corporations in the country. [23] Recent developments include shift to CNG from LPG or diesel [24].

Bus Rapid Transit System (BRTS)

The concept: A road less traveled

Bus rapid transit (BRT) is a broad term given to a variety of transportation systems that, through improvements to infrastructure, vehicles and scheduling, attempt to use buses to provide a service that is of a higher quality than an ordinary bus line.

The main feature of a BRT system is having dedicated bus lanes which operate separate from all other traffic modes. This allows buses to operate at a very high level of reliability since only professional motorists are allowed on the bus way.

A side benefit of this are lower construction costs since bus ways can be engineered to tighter standards and still remain safe compared to a roadway open to non-professional drivers.

- Such a right of way may be elevated; on rare occasions, the right of way may be a modified rail right of way,
- A bus street or transit mall can be created in an urban center by dedicating all lanes of a city street to the exclusive use of buses,
- Low-cost infrastructure elements that can increase the speed and reliability of bus service include bus turnouts, bus boarding islands, and curb realignments

But BRTS system is not without its share of deficiencies. Opponents of bus rapid transit initiatives argue that BRT is not an effective replacement for light rail or subway services. They argue that in order for BRT to have greatest effect, it must have its own right-of-way requiring space and often construction costs. A regular bus service would share the road with cars; a BRT service operating in mixed traffic would be subject to the same congestion, delays, and jarring and swaying rides as do ordinary city buses. Furthermore, signal priority systems, which are often the sole factor differentiating BRT from regular limited-stop bus service (most notably in Los Angeles' extensive "Rapid" system), might cause severe disruptions to traffic flow on major cross streets. So in a way this merely redistributes, rather than reduces, the traffic congestion problems that BRT systems are designed to alleviate.

Planning BRTS in Indore [25]

Encouraged by the success of the city transport services, the ICTSL is fast tracking the provision of quicker and more convenient services of international standard using the BRTS. This Rs 1200 crore project envisages construction of speedways dedicated for buses, offering the commuters a safe and rapid mode of conveyance along arterial routes. The peripheral routes will continue to be serviced by the existing ICTSL city buses, thus providing an integrated and economic solution to the transport needs of citizens. Further, the system is expected to provide much required incentive to the private vehicle owners to switch to the more convenient BRTS Buses.

A pilot project on a priority corridor from Niranjapur Square to Rajiv Gandhi Square (AB Road) is under execution.

The city is also developing River Side Bus Rapid Transit Corridor to decongest the city centre. While Indore has many North-South and East-West corridors, there is no Central Corridor which is vital to the transportation needs of the city since there are many trips made to this sector—in fact far exceeding the other corridors. Hence, to address this need, the River Side Corridor shall be developed by channelizing the river and streamlining its flow. This will provide open bank area to be raised and developed as bus lanes, pedestrian paths, and cycle lanes with a huge green buffer. This exclusive BRT and Non- Motorized Vehicle (NMV) route shall greatly decongest the traffic in the core central zone and encourage people to use the mass transportation system. Further, this will reduce the level of pollution in the central zone of the city. A single bus lane on either side of river will carry almost 25,000–30,000 passengers per hour per direction.

The BRTS is an economic and fast mode of public transport system which is also environment friendly and safe. The exceptional feature of the Indore model is that the best operational features of a mass transport system were adapted to a city bus system in an extremely short span of time and successfully implemented city-wide in a few months.

Implementation in Other Cities

Apart from Delhi, Central government had granted approval to BRTS systems in Pune, Indore and Ahmedabad [26]. Cities like Ahmadabad (“Janmarg”) are in advanced state of implementation and integrating it with other modes of transport (rail) in city.[27]

Pune became first city to run BRTS on its roads but it was marred by traffic congestion and mismanagement. [28] P G Patankar, a senior traffic transportation expert, pooh-poohs the whole idea of a BRT for Pune saying:

How can Bus Rapid Transit apply to a congested city like Pune? If it has worked in South America (the most successful examples are from Brazil and Colombia), it is because the density of population is lower compared to our cities, and roads there are as wide as our expressways so you can have dedicated bus lanes without disrupting other traffic. It would be better to increase the efficiency and frequency of the present PMT fleet. That would not require a dedicated lane - a luxury for our congested cities. What we require is point-to-point buses at higher frequencies. The BRT experiment is sure to fail.

Pilot projects in Delhi [29] generated huge controversy and public discomfort and had to be abandoned at last.

LIMITATIONS

Emerging Challenges

The model has not been free of all flaws. Though it has significantly reduced the accidents by public vehicles and curbed labor militancy due to drivers being on payroll of private party, one off incidents can make things go out of control [30]. A driver arrested by police for an accident had to be released by Vivek Agrawal to stop drivers and conductors from going on strike. Congested roads mean that large diameter city bus fight for space with auto rickshaws and private vehicles often giving rise to acrimonious situations

One source of problem while implementing it in other cities has been opposition by Auto rickshaw operators e.g. in Ranchi, high court had to step in, while Raipur also faced similar problems [31]

Despite breaking new grounds in early stages, operators have some complaints. No dynamic pricing or variable frequency of buses is practiced which could maximize their revenue, possibly due to public backlash in first case and due to management difficulty in other. Condition of roads also leaves a lot to be desired and this is something entirely out of control of ICSTL. This has become a crucial handicap on some of the routes. Then private bidders get no first right while bidding for new routes and there are regular demands by various interest groups for new buses or routes without realizing that there were negative revenue sharing bids for some routes by operators in the beginning and even today few routes have zero revenue sharing contract. Taking city bus to every nook and corner of city would not be easy because of congested roads, opposition from private service providers and most importantly bidding revenue by bus operators and advertiser both would be low as was experienced while bidding for suburban routes [32]

Then there is looming leadership issue. Many people argue that model is personality driven. For example operators agree that they got fare hike from Board Members after representations were made but there is no matrix or formula for same and it all depends on mutual understanding. India's urban population is currently around 30% of its total population. Experience across the world has been that as economies grow, rapid urbanization takes this proportion to over 60% before it begins to stabilize. Thus, it is projected that India's urban population would grow to about 473 million in 2021 and 820 million by 2051, as against only 285 million in 2001. Population and demographic shift are going to put further pressure on the transit system.

Increasing congestion on the roads

While increasing congestion on the roads may force government intervention to encourage public transport, left unchecked, it can also cause problems for the bus operator.

Multiple authorities

Transport is a heavily regulated area in the country and most investments into the sector has come from the central as well as the state governments. There are multiple agencies within each government overseeing the sector. One of the frequent complaints from participants in this field is that there is no cohesiveness amongst the various government departments and agencies in areas like road planning and maintenance, traffic control licensing, etc.

Chandramauli Shukla, Joint-collector Indore and past CEO of ICTSL added in an interview: In view of the ever increasing traffic and need for public transport, the challenges are twofold. One would be to improve the condition of transport within the city, considering the increasing traffic and inter-city immigrations. The other one is about the applicability of the model in other cities.

Appendix - I

EXHIBITS

Exhibit 1: Responsibilities of the SPV and City Administration

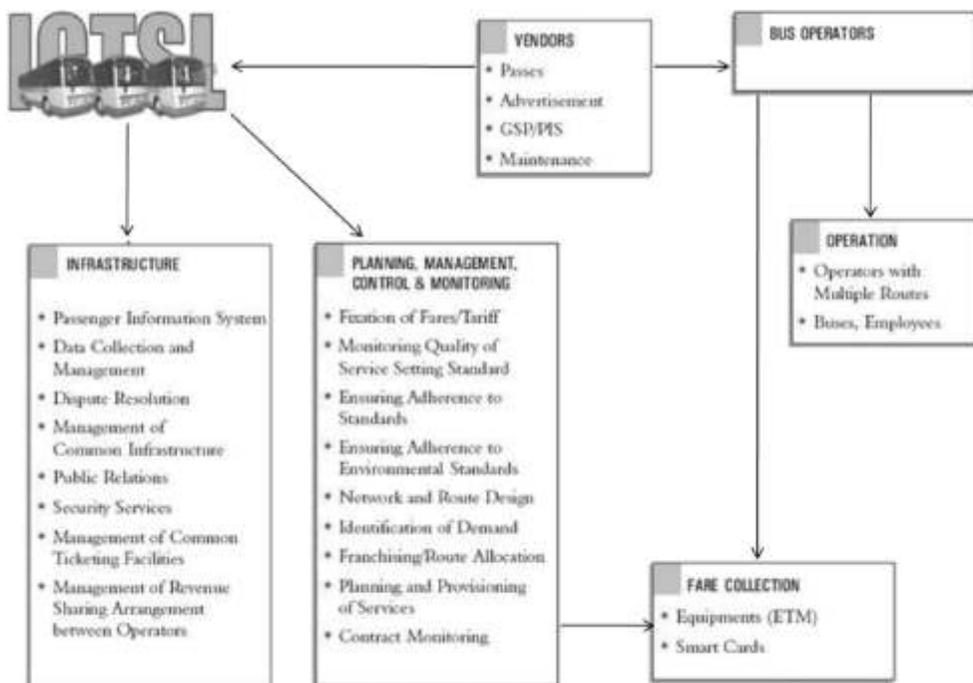


Exhibit 2: Illustration of Color coding Scheme followed by City Bus Indore



All Blue buses move towards Rajwada and will definitely touch MG Road at any moment of time

All Magenta buses move along the AB Road and will definitely touch AB Road at any moment of time

All Orange buses move towards Airport along the Bond Road and will definitely reach Bada Ganpati Square

Exhibit 3: Route and Manpower Planning

Component	Description	Managerial Inference and Logic
Online GPS based-Bus Monitoring System	<ul style="list-style-type: none"> ☐ GPS based online tracking System (OLBTS) ☐ Provides estimated time of arrivals in flash boards at bus stops ☐ Deviation in timing corrected by state of art control room 	<p>Provides log of exact kilometres travelled by bus</p> <p>Control over unauthorized and unscheduled stoppages</p> <p>Better kms. per litre of fuel and better earnings per kilometre</p>
Terminals and Bus stops	<ul style="list-style-type: none"> ☐ Interface between system, users as well as non-users ☐ Conveniently located, sensitively designed and effectively managed ☐ Are within walking distance of the passenger ☐ On an average, bus stops are located at a spacing of 500–600 m. 	<p>Facilitate easy, convenient, and safe access to the service</p> <p>Bus shelters add to the aesthetic quality of the streetscape</p>
	THREE PROGRAMMES	
Training	<p>Tata Motors' Engineers: Feel of buses and train them on small maintenance issues</p>	Building skilled manpower on technical aspects as well
	<p>Traffic Department: Related to traffic rules and driving styles</p>	Ensure safe driving and strict discipline on the roads
	<p>Institute of Management Studies:</p> <ul style="list-style-type: none"> ☐ Training conductors on aspects of behaviour and culture ☐ Program includes activities and role plays on customer handling and ensuring customer delight 	Provide exceptional customer experience and ensure uniformity in service quality and standards
Project Implementation	<ul style="list-style-type: none"> ☐ Major routes providing maximum passenger traffic were identified through surveys ☐ Traffic department was consulted on this 	Eighteen such routes finalized Source of revenue while catering to bulk of travellers
Selection of Bus Model	<ul style="list-style-type: none"> ☐ Proposals invited for this both Technical & Financial ☐ Ultra modern low floor TATA Star Bus chosen to run on Indore streets 	Well designed buses Provides unparallel universal transport system
Bids from Operators	<p>Pre bid meeting with prospective bidders:</p> <ul style="list-style-type: none"> ☐ Ideas presented and questions were answered ☐ Allocation of routes to successful bidders (operators) 	All doubts from operators were cleared First level of trust building exercise freed
	<p>Advertising Invitations:</p> <ul style="list-style-type: none"> ☐ Applications were invited for advertising on buses 	Ensure maximization of revenues Highest bid of Rs 25,000 per bus per month was accepted
	<p>Monthly Pass Systems:</p> <ul style="list-style-type: none"> ☐ No concept of daily pass, route pass, daily pass, and student pass etc. ☐ ICTSL decided to keep it simple- single pass all priced at Rs. 300 per month ☐ Bids for issuing passes invited; fifteen Instant Pass Centres established 	Backbone of financial system Pass allows passengers the benefit of unlimited travel for a month on any bus and on any route Further revenues from pass issuing operators, without the trouble of getting involved in this

Exhibit 4 (a): Financial Analysis: Sources of Revenue

Source of revenue	Description	Managerial Inference and Logic
Daily Collection revenue	Current Fare Structure ☐ Fair Pricing- Competitive fares Rs 5400 per bus per day ☐ 100% of these revenues goes to operators	No need of monitoring daily collections, which otherwise is difficult to do
Bus Fare	☐ Sharing between Operator & ICTSL in ratio 80:20 ☐ Bus Stops built with cooperation from Indore Municipal Corporation	Record of number of passes- easier to maintain and revenues are always track Synergies through alignment of objectives with local government bodies- Indore Municipal Corporation
Ticket Vending System	☐ Electronic ticketing- fully computerized and software owned by ICTSL ☐ Common for all operators ☐ Daily passenger tickets	Risk of passenger being overcharged completely eliminated Effective monitoring and control of conductors and management of ticketing data
Management of Passes	☐ Issue of Min 15,000 passes/ month – At least Rs 40 lakh per month goes with ICTSL & ops. – 12.2% of renewed and 17% of new are the respective revenue shares for ICTSL	Assured Income of Rs. 40 lakh per month Minimum guarantee of 15,000 passes from operator's side Strong network for pass management: fifteen instant pass centres and a links of distributors and retailers
Consulting for similar initiatives	Consultation charges and fees	Sustainable model now tested for replicability Additional source of revenue
Advertisement Revenue	☐ Advertising – On coaches – Bus stops ☐ Cash Inflow track – Rs 25,000 per bus / month – 60% of this inflow goes to operator	Largest component of revenues come from advertisements No investment done either from operators side or from ICTSL's

Exhibit 4 (b): Break-up of Cost Elements

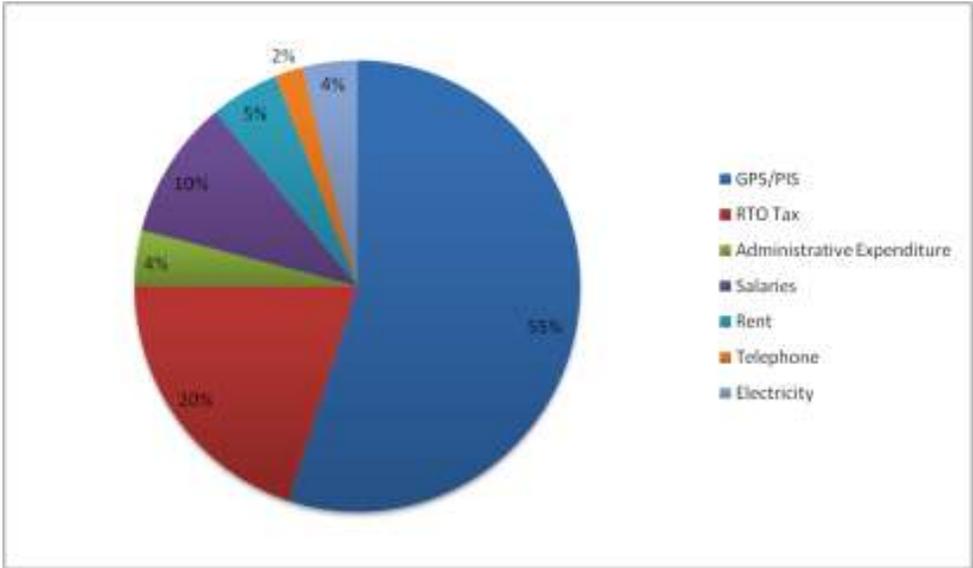


Exhibit 4 (c): Break-up of Revenue Elements

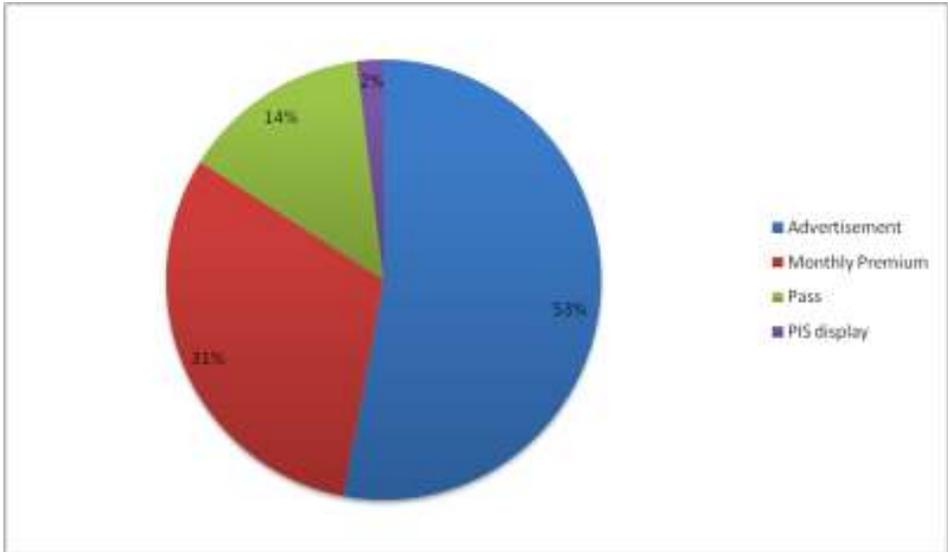
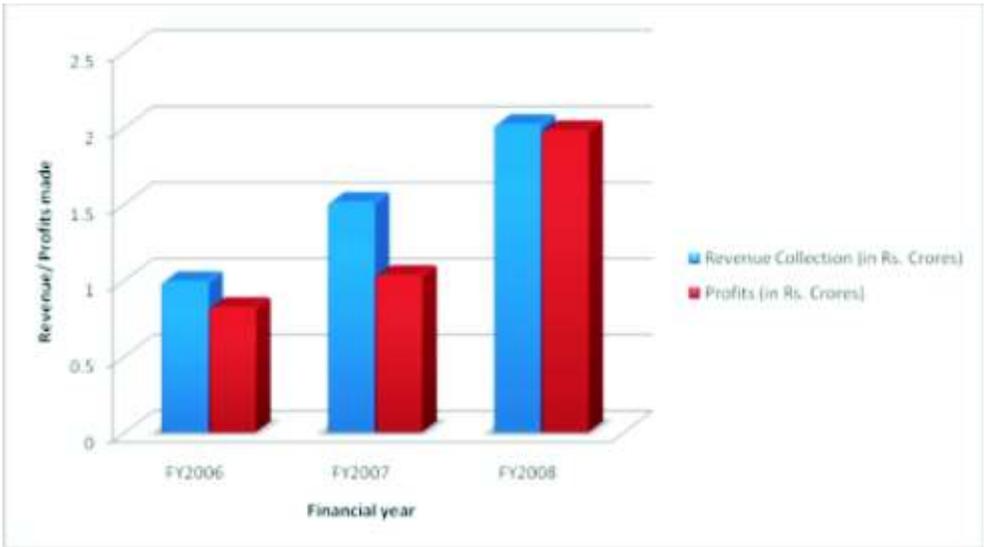
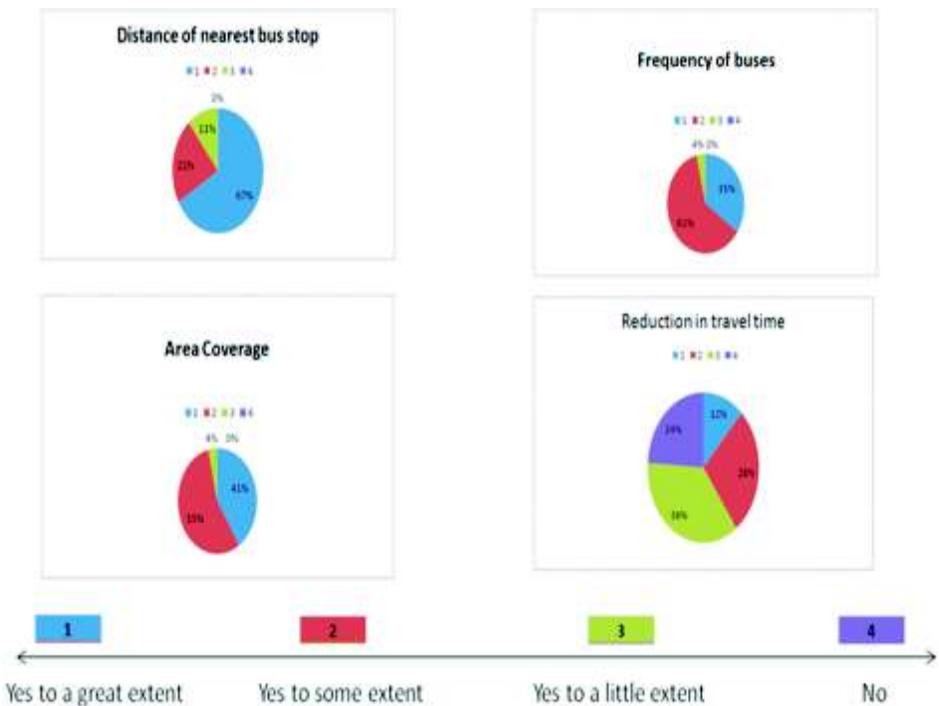


Exhibit 4 (d): Revenue and Profits Comparison (for past three years incl. projection for current fiscal year)



Insight: NO INVESTMENT has been made for the past three years and still ICTSL is able to continue with its celebrated growth story

Exhibit 5 (a): Online Customer Survey Results



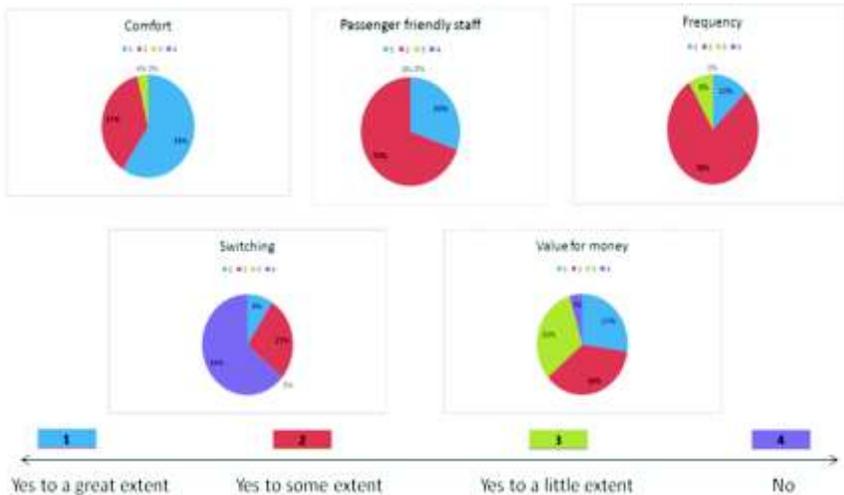


Exhibit 5 (b) Telephonic Discussion with Operators

Interviewee Name	Mr. Roshan Agarwal Dayajeet Nirmay Logistics Pvt. Ltd., Indore
Revenue sufficiency to get breakeven	<ul style="list-style-type: none"> ✓ revenue is sufficient ✓ Break even already achieved ✓ the operator also rolled out "Metro Taxi" few months back with running cost Rs. 15/km and achieved break even in 7-8 months
Initial structure of contract clauses	<ul style="list-style-type: none"> ✓ All important transporters from city were consulted in project envisaging phase ✓ most of suggestions from operator were taking into account ✓ Strict clause about bus ambience, aesthetics etc. , in fact, help operator to keep buses in good shape and attract more passengers
Fare revision	<ul style="list-style-type: none"> ✓ very rapid process (revised within 12-13 days after recent diesel price hike) ✓ High participation from operators, officers are reasonable to operators concerns as well as public relief ✓ process is transparent (reason also attributed to rapid decision making)
day to day operation related issues	<ul style="list-style-type: none"> ✓ no major problems ✓ authorities are careful in ensuring bus condition (cleanness, seats breakage etc.), aesthetics etc. ✓ but do not harass operators in any way ✓ no political interference ✓ rapid approval to run busses after rectification of problem found
BRTS	<ul style="list-style-type: none"> ✓ it will turn around Indore transport situation ("<i>Yahan ke transportation ka naksha badal jayega</i>") ✓ it is great concept ✓ will provide great time savings and comfort ✓ operators will be able to save fuel (very important cost to operator), so more profit
Suggestions	<ul style="list-style-type: none"> ✓ improvement road condition required , but taking place ✓ operators already factored road conditions in their calculation
Conclusion	<ul style="list-style-type: none"> ✓ operator is highly satisfied with ICTSCL functioning ✓ "Yeh bahut professional tareeke se chalne wala office hain, yeh sarkari daftar ki tarah nahin hain"

Interviewee Name	Mr. Arshi Khan M/S Rama Jyoti Travels, Indore
Revenue sufficiency to get breakeven	<ul style="list-style-type: none"> ✓ revenue is sufficient ✓ Break even already achieved ✓ recent interest rate rise and bus price rise will delay break even for new busses , but fare revision will take some of burden off
Initial structure of contract clauses	<ul style="list-style-type: none"> ✓ it was predetermined, operators did not have say ✓ but clauses were/are not unreasonable to operator or anyone ✓ required good initial capital to implement contracts, but good response from passengers made it worth
Fare revision	<ul style="list-style-type: none"> ✓ satisfied with decision (till now , only once it has been revised in july,08 due to diesel price hike) ✓ High participation from operators, they are consulted regularly before taking any decision ✓ process is very transparent , officers are very accessible
Day to day operation related issues	<ul style="list-style-type: none"> ✓ no major problems ✓ no political interference ✓ number of busses are being increased with time ✓ new routes are being added
BRTS	<ul style="list-style-type: none"> ✓ very beneficial for all ✓ time savings and comfort for passengers ✓ operator will not charge any extra charge in BRTS, also perhaps may reduce fare depending on situation ✓ operators will be able to save on fuel , bus maintenance, so less cost ✓ operators will be able to take more trips per day, so more revenue
Suggestions	<ul style="list-style-type: none"> ✓ improvement road condition required ✓ breakeven must be ensured (though till now no problem faced by operator)
Conclusion	<ul style="list-style-type: none"> ✓ operator is satisfied with ICTSCL functioning

Exhibit 5 (c): ICTSL: Expanding boundaries

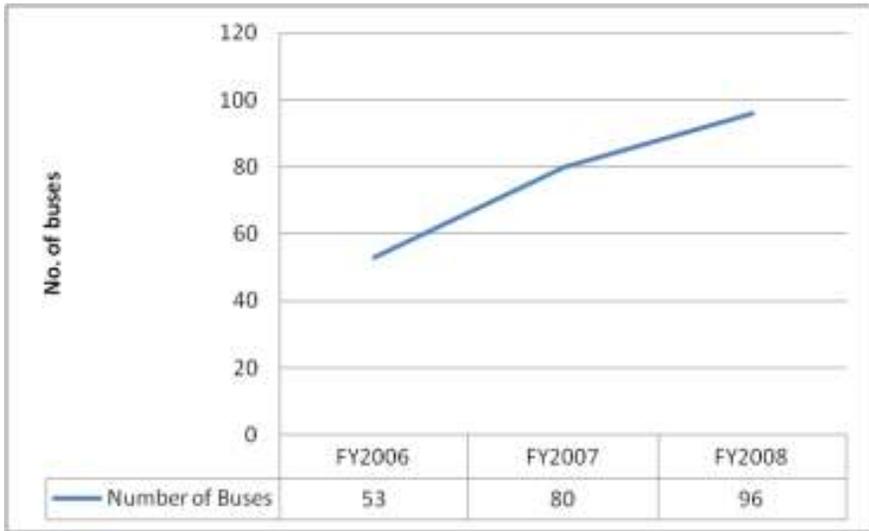
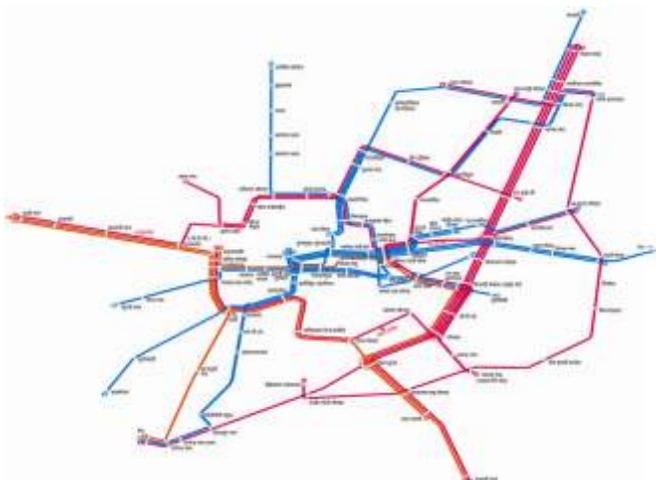


Exhibit 5 (D): ICTSL Expanding boundaries, Concept of BRTS (Sectional view of future roadways in city)



Exhibit 6: Indore City Route Map: Urban Transportation



TICKET SYSTEM

Ticket Vending System

Fully computerized Electronic Ticketing Machines are used for issuing daily passenger tickets. Ticketing system has been finalized by company to ensure the common ticketing system for all operators. The software used in these machines are owned by ICTSL. This eliminates the risk of passengers being ever charged more than the specified fares by the operators. The computerized ticketing system also helps in effective monitoring and control of conductors and management of ticketing data.



With the hi-tech Electronic Ticket Issuing Machines, it is easy for the conductor to issue tickets generated through the machine and to collect the money from passengers.

The stages on the route and respective fares are fed to the machine". For example, if a passenger boards the bus at stop number four and intends to get down at 10, the driver will press the buttons 4 and 10. A ticket will come out and the corresponding fare will be displayed on the machine and the ticket, for which the money will be collected by the conductor. The main features of ETM are Specifications for hand held ticket vending machines

1. 32 key keyboard and printer
2. 350 Gms weight
3. Palm held
4. Dimension 75mm x 240mm x 33mm
5. Simple operation, punch number and print ticket
6. Route configuration (upto 500 routes)
7. Each route can have upto 250 stages
8. Status monitoring facility
9. High efficiency battery having capability to print 3500 tickets in one charging
10. RF card reading capability
11. GSM and RM radar compatible
12. Bar coding capability
13. RS232 and I/R port
14. 8000 ticket memory
15. One second ticket printing time

More confusion on chaos corridor

Move to shift bus lanes to side in phase 2

By Staff Writer
New Delhi, August 26

THE DRT has given its final decision. Now, it is "politically correct" decision, the Delhi government has planned to take the bus Rapid Transit (DRT) corridor to left of central road. When the Phase 2 of the Bus Rapid Transit (DRT) work, the bus lane will be on the left side of the road. This move will create huge problems for cars and other traffic. This move will create huge problems for cars and other traffic. This move will create huge problems for cars and other traffic.

From 1.5 km, it starts from Dehli Gate and ends near Defence Colony. The government is already planning to have the bus lane on the left side of the road for the entire 1.5 km stretch. After the first phase work, the lane will be on the left side of the road. This move will create huge problems for cars and other traffic. This move will create huge problems for cars and other traffic.



With the change of lanes, there's going to be more more chaos on DRT

Disadvantages of bus lanes on the side

- Other vehicles - For vehicles, heavy wheelers, cars and light commercial vehicles, having left to residential colonies, commercial centers, markets, and petrol pumps - will obstruct movement of buses.
- Heavy, vehicular traffic coming out of markets and residential colonies will have to wait before merging with traffic, especially with the increase in the number of buses in next couple of years.
- With painted dividers, instead of vertical dividers, to demarcate bus lane, it will be difficult to ensure lane discipline.

Advantages

- There will be no confusion among last commuters as far as location of bus lane is concerned.
- People, especially school students and elderly people, will not have to cross the road every time to reach the bus stand.

Major problem area

- The new change of lane model will mean that it is going to be a major can



- Buses come for residents.
- All buses will move from center to left and from left to center. (See above)
- Likewise, cars will move from left to center and center to left.
- DRT officials say specialized signaling would be required to prevent conflicts of buses and other vehicles.

Bus stops from Defence Colony to Dehli Gate

- This 1.5 km stretch will have stops at CGO Complex, Laxmi Nagar Junction, Subramanian Bharti Marg, Shripath Road, Business Market Interchange, Anand Gita Junction, Bhagpur Doria Road, Tish Bridge, PDL Dehli Gate.



Appendix - II

Methodology Adopted for Case Development

Primary Research

Interviews

- Shri Vivek Aggarwal, IAS
- Shri Sunil Dubey, SAS and current CEO of ICTSL
- Shri S.C. Garg, Chief Consultant to ICTSL
- Chandramouli Shukla, past CEO of ICTSL
- Ashok Baranwal, IAS Personal Secretary to Commerce Minister

Personal Discussions

- Dayajeet Nimay Logistics Pvt. Ltd.
- M/s Rama Jyoti Travels
- M/s Anam Travels
- M/s Priyadarshani Transport Service
- R-Square Systems & Solutions

Online Survey

- For Operators
- For Customers

Secondary Research

- Concessionaire Agreement
- ICTSL Financials
- Publicly available reports
- Case studies for cross country analysis
- Traffic Survey report for city of Indore

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- [4] <http://www.dare.co.in/opportunities/services/betting-big-on-public-transport.htm>
- [5] <http://www.indianexpress.com/sunday/story/12869.html> - "Indore's transport system was in complete chaos in June 2005 when I took over as collector. There were no bus stops, no fixed bus routes, Nagar Sewa buses just stopped anywhere they felt like. Having spent some time in Europe I was fascinated by their bus system. We identified 350 bus stops in the city before surveying all routes."
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