Tamil Nadu Intermediate Public Transport (IPT) Policy

Submitted to
Transport Commissioner,
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Introduction

Objective

The objective of this document is to present an Intermediate Public Transport (IPT) policy for the city of Chennai, which can be applied to other cities in Tamil Nadu, based on applicability of local service conditions.

What is Intermediate Public Transport (IPT)?

Intermediate Public Transport (IPT) refers to modes that fill the gap between public and private modes of transport. Depending on the unique characteristics of each city, IPT modes may fall under two broad service-type categories, as discussed below:

- Contract carriage (or taxi-like) services: These services are defined as services that are flexible and demand-based, serving the unique destination demands of passengers; and
- Shared (informal public transport) services: These services are characterized by shared and fixed route services with intermediate stops for boarding and alighting. These services are termed informal because of the lack of formal regulations such as route-based licensing of operations.

In addition to service types, IPT modes can be further categorized based on the type of vehicle. For example, within contract carriage services, there are different types of services based on the type of vehicle used – for example, cycle rickshaws (non-motorized three-wheeler taxi services) and auto-rickshaws (motorized three-wheeler taxi services). Similarly, in informal public transport, share-autos are three-wheeler informal public transport, while share cabs are four-wheeled informal public transport services.

Figure 1 in the Annexure presents a characterization of IPT services in Indian cities, based on the types of services and vehicles.

What are the IPT modes operating in Chennai?

The IPT modes currently operating in the city of Chennai include the following:

- Contract carriage (taxi-like) services:
  1. Auto-rickshaws: Auto-rickshaws operate in all parts of the city as motorized three-wheeler taxi service
  2. Call Taxis: Fast Track, Bharathi, NTL, which operate call-taxi services
- Shared services:
  1. Share-auto and share-taxi: Shared services provided by motorized three-wheelers like Vikram, and four-wheelers like Piaggio, Tata Magic, and Dost in different parts of the city
Need for IPT Policy

IPT policy is needed for cities in order to create a framework for government regulation of IPT services. Some important factors that point to the need for government regulation of IPT services are briefly highlighted below:

- **Market imperfections**: Though free market proponents argue for complete deregulation of the IPT sector, market imperfections in this sector calls for regulation to be in place. For example, in the absence of permit regulations, there can be monopolization of the market by large companies, which can take advantages of economies of scale and scope.

- **Geographic considerations**: Regulation can ensure that service is available in an entire geographic area, wherein service in high demand areas can cross-subsidize service in low demand areas in a city.

- **Fare regulation**: Government regulation of fares serves to create transparency and standardization of fares for the sector. In the absence of government regulated fares, chances are that customers requiring services at low demand locations would be charged unrealistically high fares.

- **Pollution controls**: There is a need for government regulation to keep a check on air pollution from vehicles providing IPT services.

Components of IPT Policy

The following important components are covered in this IPT policy:

- Permits
- Fare estimation
- Pollution control
- Infrastructure
- Security
- Advertising
- Enforcement and regulation

These components are discussed in the following sections.

Permits

*Auto-rickshaw Permits*

- Auto-rickshaw permits are to be given by the regional transport office (RTOs) in Chennai.
- A one-owner one-permit policy is to be adopted, according to which, an individual cannot own more than one permit. The rationale for this policy is to avoid hoarding of large number of permits by individuals
- Only individuals who are able to operate an auto-rickshaw for atleast one shift should be allowed to own a permit, in order to encourage employment opportunities for auto-rickshaw drivers, and discourage ownership of permits by individuals having other means of employment. This can be achieved by ensuring that only those individuals with a valid driver’s license and public service badge are eligible for application of auto-rickshaw permit.
• The cost of a permit should be nominal, along with a nominal fee for annual renewal.
• Regulatory controls on the issue of new permits often create under-supply of auto-rickshaw services and also lead to escalation of permit costs, which can have a negative impact on quality of service for passengers and driver economics. Hence, there should not be any regulatory cap on permits, and new permits should be available from the government based on market demand. This creates a system of permit regulation, but at the same time does not constrain issue of new permits. Most cities in Gujarat have adopted this model, and have been able to achieve a transparent permit regulation system.
• The permit policy should allow the setting up of auto-rickshaw cooperatives and/or organized fleet auto-rickshaw services in the city, to promote organizational reforms in the auto-rickshaw sector.
• An up to date database of all permit holders should be maintained by the RTO, and should be available to the public, if such information is solicited. This would serve to address the following issues: i) maintain an accurate estimate of total number of auto-rickshaws operating in the city, ii) assess historical trends in the supply and usage of auto-rickshaws in the city, and iii) create a system of enforcement to prevent malpractices and crime.

**Taxi Permits**

• Permits for fleet taxis
  o Fast Track and other company taxis operate as a fleet taxi service, unlike auto-rickshaws, which are individual owned-operated. Since fleet taxis such as Fast Track provide a value-added service to the city, such as call-taxi service, a separate system of permits is used, which allows ownership of multiple permits by a company.
  o New permits should be available for Fast Track operator from RTO to expand the fleet, if required by market conditions. Since Fast Track provides value added service such as call-taxi, the permits for fleet expansion should be given only if operator meets certain service qualifications, such as type of vehicle and use of technology.
  o The policy for fleet taxi service in Chennai should create an enabling environment to allow the entry of other fleet operators to promote competition in the provision of fleet taxi service in Chennai, and avoid monopolization in this sector.

**Permits for Shared-services (share-autos and Tata Magic)**

• Currently, share-auto services are operating in Chennai, due to the inability of public transport to meet the overall demand. Therefore, these services are directly competing with public transport (bus service) in Chennai.
• As a policy, these services should be integrated as a feeder service (first/last mile connectivity) to public transport, instead of directly competing with public transport. It should be left to each of the public transport agencies (buses, metro, monorail, MRTS) to make their services more efficient, convenient and competitive which would then automatically shift ridership to these modes of public transport.
As a first step, all the routes where these services currently operate should be studied by the RTO to identify the following. This exercise should be undertaken in collaboration with the public bus operator in the city, to enable integrated planning of public transport:

1. Routes where public transport service can be further improved in the city, so that shared-services can be reorganized, and
2. Routes where public transport operations are either non-existent or too low that they should be discontinued and shared-services can be promoted along these routes as part of an integrated public transport system.

As a next step, the following approach is to be adopted to promote shared-services to complement the public transport system in Chennai:

1. Permits: The existing shared-service operators shall be formalized by the RTO by issuing stage carrier permits, after necessary background checks of operators. Further, new permits shall be available from the RTO for new operators aiming to enter the shared-service market in the city.
2. Existing operators shall be encouraged to form cooperatives to provide shared-services based on the following considerations:
   - Enable cluster based route licensing, since individual route licensing will be challenging given that some routes will be more profitable than others. As and when new routes are identified, these licenses can be extended to the new routes.

**Fare Estimation**

Fare regulation for IPT services shall be applicable for auto-rickshaw services in the city. Call Taxi services operate on a market regulated fare, and this system can be continued, with overall government oversight. The following sections discuss the fare estimation process for auto-rickshaw services in the city.

**Auto-rickshaws**

Fares for auto-rickshaws should be government regulated instead of market regulated fares, because auto-rickshaw services, unlike fleet services, are provided by individual owner-operators. Thus, government regulated fares can bring standardization, uniformity, and transparency in the auto-rickshaw fare system.

- **Fare advisory committee:** The RTO should set up a fare advisory committee comprising of researchers, civil society, union members, and consumer groups, to create a collaborative process for fare regulation for auto-rickshaws and shared services. For example, the Government of Maharashtra has set up the Hakim Committee for auto-rickshaw and taxi fare regulation, which recently developed a fare fixation formula, which was implemented for auto-rickshaw and taxi fare revisions in 2012.

There are three components of fares for auto-rickshaw services which need to be regulated by the government. These include the following:
- **Minimum fare**: This is the minimum fare which customers pay for availing the service. There is a maximum distance which is determined up to which the minimum fare is applicable.

- **Running fare**: This is the fare which becomes applicable when the trip distance exceeds the maximum distance.

- **Idling fare**: This fare is applicable when the vehicle is being used but is stationary (either in traffic or waiting)

Annexure provides a detailed description of the methodology used for the consideration of various cost factors, and estimation of unit costs, which are then used for estimating the fares.

The following methodology is used to translate the cost estimates as described in the methodology to auto-rickshaw fares:

- **Minimum fare**:
  o The first step in estimating minimum fare is to arrive at the maximum distance up to which the minimum fare will be applicable. One standard approach for arriving at maximum distance is to consider the maximum distance as the distance that passengers would be willing to walk instead of taking an auto-rickshaw. This can be estimated from a random sample survey of passengers. A standard thumb rule is to consider the maximum distance as 2 kms.
  o In order to incentivize auto-rickshaws to do shorter trips (trips less than the maximum distance), the minimum fare is calculated using the following formula:
    - \[ \text{Minimum fare} = (\text{total cost per revenue km} \times \text{maximum distance}) + X, \]
    - where \(X\) represents cost of living per revenue km.
    - The components considered for cost of living include average monthly costs for rent, food, and medical expenses. Therefore, \(X\) is determined as:
      \[ X = \frac{\text{average monthly costs}}{\text{average monthly revenue kms}}. \]

- **Running fare**:
  o The following formula is used for estimating running fare:
    - \[ \text{Running fare (per km)} = \text{Variable cost per revenue km} \]

- **Idling fare**:
  o The key cost factor to be considered for idling fare estimation is the value of time of auto-rickshaw driver.
  o Value of time (in terms of rupees per hour) for auto-rickshaw drivers is estimated using the following formula:
    - \[ \text{Average value of time (Rs per hour)} = \text{Average number of trips per hour (under no congestion conditions)} \times \text{average fare per trip} \]
    - The above data on average number of trips per hour (under no congestion conditions) and average fare per trip are determined from driver surveys
  o Idling fare is estimated as follows:
    - \[ \text{Idling fare (Rs per hour)} = \text{Average value of time of driver (Rs per hour)} \text{as estimated above} \]
Idling fares are typically built into the fare meter as a fare estimate per unit time spent in idling. Typically, the minimum time considered for this is 10 seconds. This fare kicks in when the vehicle is stationary for this minimum time. Thus, the value of time estimate above (in Rs per hour) is apportioned to the minimum unit idling time (for example, 10 seconds), which becomes the idle fare that needs to be built into the fare meter.

- Frequency of fare revisions:
  - Since input costs may change every year due to inflation and other factors and operating characteristics of auto-rickshaws may also change from year to year, the minimum fare, running fare and idling fare for auto-rickshaw services should be considered for revision every year, based on an assessment of input costs and operating characteristics. This effort can be undertaken by the fare advisory committee every year.
  - One day every year should be fixed for auto-rickshaw fare revisions, for example, May 1st.

**Fleet Taxis**

The Call Taxi services operate on a market regulated fare, instead of government fare regulation. This system functions without a problem because of the organized nature of this service, and the applicability of a standardized and transparent fare for all Call Taxi services. As a policy, though the fares are market determined, it is important that the following issues are considered by the RTO:

- There is general regulatory oversight and approval of fleet taxi fares by the government, and
- It is ensured that any revisions in fares are communicated to the government as well as the customers on a timely basis

**Shared-services**

The approach discussed above for auto-rickshaw fare estimation can be applied to estimate fares for shared-services, after accounting for the following considerations:

- The fixed and variable costs for shared autos (instead of auto-rickshaws) should be considered.
- Unlike auto-rickshaw service, there are no empty kilometres in the case of shared-services. Therefore, unit fixed and variable costs in this case will be costs per km.
- The only fare applicable in this case would be running fare (minimum fare and idling fare will not be applicable)
- Running fare per km is calculated as: fixed cost per km + variable cost per km + X, where X is cost of living per km, as estimated in the case of auto-rickshaw fares.
- The running fare shall be apportioned per passenger, based on the capacity of the vehicle. Therefore, running fare per km per passenger = running fare per km / passenger capacity of Tata Magic.
Pollution Control

Some important considerations for pollution control from the IPT sector in Chennai include the following:

- **Engine type**: Most relevant for auto-rickshaw services, where many two-stroke engines are prevalent.
- **Fuel type**: Again most relevant as a policy focus for the auto-rickshaw sector, where fuel choice has a major impact on the emissions performance of auto-rickshaws.
- **Operating efficiency**: Most relevant for auto-rickshaw services, where empty kilometres travelled by auto-rickshaws contribute to unnecessary emissions.
- **Vehicle inspection and maintenance**: This is relevant to all the three types of IPT services (auto-rickshaws, fleet taxis, and shared-services).

The above aspects are discussed below.

**Engine Type**

- Auto-rickshaws run on both two-stroke and four-stroke engines. From an emissions perspective, four-stroke engines are considered cleaner compared to two-stroke engines, because of better fuel efficiency and the absence of scavenging losses, which lead to release of unburned fuel+lubricant mixture in the case of two-stroke engines.
- However, there are factors that lead to driver preference towards two-stroke engines, such as more engine power, lower upfront capital cost, and ability to self-repair a two-stroke engine compared to a four-stroke engine (which is more complex, and needs to be taken to a servicing centre).
- Promoting four-stroke engines compared to two-stroke engines should be an important policy focus from a pollution control perspective from auto-rickshaws. Some policy areas to enable this shift include the following:
  - Driver awareness: Four-stroke engines over a life-cycle are more cost-effective compared to two-stroke engines, and generate more earnings for drivers. Therefore, there is a need to build driver awareness on the life-cycle economic benefits of four-stroke engines compared to two-stroke engines.
  - Servicing infrastructure: One of the main reasons for the preference towards two-stroke engines is the lack of servicing facilities for four-stroke engines. Creating a network of servicing centres for four-stroke engines, in partnership with manufacturers, can help increase the preference of drivers towards four-stroke vehicles.

**Fuel Type**

- The choice of fuel for auto-rickshaws has a notable impact on the emissions performance. In Chennai, there are many auto-rickshaws running on LPG.
- There are many concerns with LPG fuel use in auto-rickshaws, as noted below:
  - The emissions reduction potential of LPG is still unknown, as there is limited research in this area.
Supply of LPG fuel is limited in Chennai, which creates significant loss of productive time and earnings for auto-rickshaw drivers.

Unlike Compressed Natural Gas (CNG), LPG may have safety issues, which is another area which is currently being studied.

It is recommended that before large-scale promotion of LPG fuel, a comprehensive research exercise be undertaken, by the RTO, in consultation with the drivers and the unions, to assess any safety implications of using LPG fuel on auto-rickshaws.

In the meantime, as a policy focus, it is recommended to promote four-stroke petrol auto-rickshaws, compared to LPG fuel, as four-stroke petrol auto-rickshaws have been noted to be clean, and fuel supply is not a constraint for petrol.

**Operating efficiency**

- Empty trips contribute significantly to unwanted emissions from auto-rickshaws, in addition to increasing overall operating costs for drivers. In some cities such as Rajkot, empty trips can be as high as 25 to 30%.
- Thus, improving operating efficiencies by reducing empty trips is an important aspect in pollution control from auto-rickshaws.
- The primary approach to reducing empty trips is through driver awareness. Additionally, lack of adequate infrastructure (such as auto-rickshaw stands) has been found to contribute to increased empty trips. Therefore, RTO should engage in more driver awareness as well as ensure adequate parking for auto-rickshaws, to avoid unnecessary empty trips.

**Vehicle Inspection and Maintenance**

- In addition to engine and fuel type, promoting regular vehicle inspection and maintenance is one of the most important aspects for pollution control from the IPT sector in Chennai. Regular inspection and maintenance also promotes fuel efficiency of vehicles, which has a notable impact on reducing operating costs for drivers.
- As a policy focus, there is a need to promote driver awareness on the economic benefits of regular vehicle inspection and maintenance, for auto-rickshaws, and shared-vehicles.
- The current system of roadside pollution under control (PUC) centres has many limitations, such as lack of calibrated equipment, lack of trained PUC staff, and malpractices in issuing of PUC certificates. This system needs to be changed to ensure on-road compliance with emission standards, and identification of vehicles that need to be sent for inspection and maintenance. Here, the RTO should take the assistance of vehicle manufacturers, servicing centres, and research institutes such as the Automotive Research Association of India (ARAI) to implement reforms in PUC practices which can enable pollution control from on-road IPT vehicles.

**Infrastructure**

Providing adequate infrastructure for IPT services in Chennai is an important part of promoting IPT services in the city. The following infrastructure components should be considered by the RTO for IPT services:
Auto-rickshaws

- Adequate parking facilities for auto-rickshaws in the form of auto-rickshaw stands should be provided in different parts of the city, particularly in those locations where there is high demand for these services.
- If there are space constraints for the provision of auto-rickshaw stands, taking space away from private motor vehicles and prioritizing this space for auto-rickshaws should be considered.
- Adequate infrastructure inside the Chennai airport premises should be provided to allow auto-rickshaws to drop-off passengers. To allow these auto-rickshaws to pick-up arriving passengers, a pre-paid facility for auto-rickshaws shall be considered, in coordination with the Airport Authority of India (AAI).

Fleet Taxis

- There are two types of services provided in Chennai – i) Pre-paid taxi service at the airport, and ii) call-taxi service.
- Current infrastructure provision for pre-paid taxis at the airport and railway stations shall be continued, and any additional space provision shall be considered on an annual basis, in consultation with the AAI / SR and service operator.
- No specific infrastructure provision is recommended for call-taxi services.

Shared-services

- Such services provide an essential form of feeder service to public transport services.
- In order to better integrate these services, dedicated stands for shared services shall be provided at all locations where they formally operate, along with adequate signage and fare information to inform passengers about these services.

Security

- Security for passengers is an important aspect that needs to be ensured through adequate regulatory provision. The following aspects shall be considered by the RTO, to enhance the security of passengers using IPT services:
  - **Database of drivers/permit owners:** As noted earlier, an up-to-date database of auto-rickshaw, fleet taxi and shared-service permit owners/drivers shall be maintained by the RTO, with information on driver profile and contact information.
  - **Driver identification cards:** Government approved driver identification cards shall be required to be displayed in all auto-rickshaws, fleet taxis and shared-services, to assure the passenger about the authenticity of drivers.
  - **Technology:** Vehicle tracking through GPS technology is the most effective tool to ensure security of passengers. The RTO should develop a plan to assess the feasibility of deployment of this technology on various vehicles, and the sources of funding that can be mobilized for the technology implementation. In this regard, dedicated transport fund from which funding can be allocated for various IPT service improvements, along with other transport services, shall be considered. Further,
under the recently announced GEF5 program of the Ministry of Urban Development (MoUD), Government of India, dedicated funding is available for cities to implement auto-rickshaw sector reforms, wherein, technology related projects will be eligible for funding.

Advertising

- IPT vehicles present a great opportunity to attract advertising.
- Therefore, the RTO shall develop a plan to promote advertising on auto-rickshaws, fleet taxis and shared-service vehicles. This plan should also have provisions for revenue sharing with operators, so that they can get additional earnings from advertising on their vehicles.

Regulation and Enforcement

- The RTO shall be responsible for regulation of IPT services in the following areas:
  - Permits: Issuing and renewal of permits, maintenance of permit holders database
  - Driver licensing and background checks
  - Fares: Developing fare policy and fare revisions, in consultation with fare advisory committee
  - Promoting engine and fuel type use for IPT vehicles
  - Vehicle inspection and maintenance program: Creating driver awareness, and functioning of the PUC and fitness certification program.
  - Infrastructure: Identification of locations for auto-rickshaw and share-auto stands
  - Advertising: Developing an advertising policy on IPT vehicles and issuing of advertising rights
  - Security (in collaboration with the police): Ensuring maintenance of driver database, display of driver identification cards, and deployment of technology (GPS) on vehicles

- The Traffic Police shall be responsible for the following enforcement activities related to IPT services:
  - On-road checks: Checking of permits, licenses and other certificates (such as PUC and fitness certificates) of on-road IPT vehicles
  - Enforcement of on-road driver behaviour and driving practices
  - Infrastructure: Notification of auto-rickshaw and share-auto stands

- The Municipal Corporation shall be responsible for the following:
  - Infrastructure: Allocation of space for auto-rickshaw and shared-vehicle stands

Funding

Some areas where the IPT sector may need support from the government include technology implementation (such as GPS devices), infrastructure, and facilities such as for vehicle inspection and maintenance (which can be implemented on a public-private partnership basis). There are a couple of funding sources, which can be considered to channelize funding towards these areas. These are discussed below:
• GEF5 program: The Ministry of Urban Development (MoUD), Government of India, through the United Nations Development Program (UNDP) has, for the first time, made funding available for cities to promote green projects, which include i) public bike-sharing schemes, and ii) transforming auto-rickshaws into “Green Autos”. The state government can work in partnership with cities to apply for this grant program to introduce reforms in the IPT sector. More information about this program, and its auto-rickshaw reform component, can be found in this presentation.

• Dedicated urban transport fund: As part of the state urban transport fund, dedicated funding for auto-rickshaw and other IPT service improvements in cities should be allotted, in addition to other urban transport components (such as improvements in bus services, walking and cycling projects).

Driver Training and Licensing

Driver training and licensing is one of the most important areas for government role in the IPT sector, to ensure proper driver behaviour, safe driving practices on roads, knowledge about traffic rules, and to build driver awareness about issues such as vehicle inspection and maintenance to reduce air pollution. The government can either on its own or through partnerships with private sector or industry organizations such as the Society of Indian Automobile Manufacturers (SIAM) create driver training programs for the IPT sector (as well as public transport such as bus services). The issuing of driving licenses for public carriage, including IPT services, should be linked to this training program.
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Annexure

Characterization of IPT services in cities

Figure 1 IPT Characterization
Fare Estimation

Auto-rickshaw fares

The following methodology is used to estimate unit costs, which are then used to estimate fares for auto-rickshaw services.

The two key input factors that are used to determine fares include i) costs and ii) operating characteristics. These are briefly discussed below:

- Costs:
  - Fixed costs: Fixed cost components include the following:
    - Interest on loan: This is estimated using a survey of a statistically significant sample of drivers (at least 2% of driver population in the city).
    - Vehicle depreciation: This is estimated using driver surveys as noted above.
    - Statutory charges (vehicle registration, permit renewal, insurance and taxes): This data is available with the RTO.
  - Variable costs: Variable cost components include the following:
    - Average daily fuel cost: This is obtained from driver surveys.
    - Average monthly maintenance cost: This is obtained from driver surveys.

- Operating characteristics: Operating characteristics used for fare estimation include the following:
  - Average daily total kilometres travelled and average daily empty kilometres travelled by each auto-rickshaw: These data are obtained from driver surveys.

Using the above input factors, the first step in the fare estimation process involves unitizing the cost elements mentioned above in terms of costs per km, using fixed and variable cost data, as well as operating characteristics. For fare estimation, it should be kept in mind that unitizing of the costs to kilometres (cost per km) should be based on average daily revenue kilometres (kilometres travelled with passengers, which is estimated as average daily kilometres – average daily empty kilometres) and not average daily total kilometres.

1.) Fixed costs per revenue km:
   a. Interest cost per revenue km:
      i. Estimate monthly interest payments on loan from driver surveys.
      ii. Estimate daily revenue kilometres using average daily total kilometres and average daily empty kilometres data obtained from driver surveys.
      iii. Estimate monthly revenue kilometres using total operating days per month data obtained from driver surveys.
      iv. Estimate interest cost per revenue km as: monthly interest payment/monthly revenue kilometres.
   b. Depreciation per revenue km:
      i. Estimate monthly vehicle depreciation using data on cost of vehicle and average life (years) obtained from driver surveys.
ii. Estimate depreciation per revenue km as: monthly depreciation/monthly revenue kilometres

c. Statutory charges per revenue km:
   i. Estimate annual statutory charges to be paid by the auto-rickshaw driver from RTO data
   ii. Estimate annual revenue kilometres = 12 * monthly revenue kilometres
   iii. Estimate statutory charges per revenue km as: annual statutory charges/annual revenue kms

Using the above estimates, fixed cost per revenue km is estimated as follows:

Fixed cost per revenue km = Interest cost per revenue km + depreciation per revenue km + statutory charges per revenue km

2.) Variable costs per revenue km:
   a. Fuel cost per revenue km:
      i. Estimate average daily fuel cost from driver surveys
      ii. Estimate average fuel cost per revenue km as: average daily fuel cost/average daily revenue kms
   b. Maintenance cost per revenue km:
      i. Estimate average monthly maintenance cost from driver surveys
      ii. Estimate maintenance cost per revenue km as: average monthly maintenance cost/average monthly revenue kms

Using the above estimates, variable cost per revenue km is estimated as follows:

Variable cost per revenue km = Fuel cost per revenue km + maintenance cost per revenue km

Using the above estimates, total cost per revenue km is estimated as follows:

Total cost per revenue km = Fixed cost per revenue km + variable cost per revenue km