Impact of Shared Mobility on Public Transport
(Research Study of MoHUA)

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Overview

• Defining Shared Mobility – Indian & Global Scenario
• Public transport paradigm in the country
• Data Analysis
• Issues Identified
• Recommendations
Background

- New technologies and modes reshaping the status quo
- Innovations have centred on re-inventing ownership and delivery
- Data and connectivity is used in new ways

(Source: Moving Forward Together, NITI Aayog, 2018)
Shared Mobility

An innovative transportation strategy that enables users to have **short-term access** to a mode of transportation on **need basis**

**Classification of Shared Mobility system**
Public Transport Scenario

• Bus based & Rail based public transport plays an important role and reaches all the corners of Cities, Rural and Hilly Regions of the country.

• Buses still most prominent public transport mode in the country – Metro also catching up with close to 700 km operational network.

• Traditional Public bus transport systems - lead to the increase in attraction to the personalized mode of transport
India’s Trajectory towards an advanced mobility future

Source: India Leaps Ahead: Transformative Mobility Solutions For All, NITI Aayog, 2017

**NEW MOBILITY PARADIGM**

- Shared, Electric, Connected
  - Affordable, clean, safe, accessible, efficient

**SUPPORTIVE ATTRIBUTES OF INDIA’S CURRENT MOBILITY SYSTEM**
- High share of non-motorized transit
- Low private-vehicle ownership
- Prevalence of mobility services
- Confluence of IT and manufacturing skills
- Public and private sector leadership
- Dynamic entrepreneurial culture
- Ability to build right the first time

India has a unique set of conditions that enable it to leapfrog the traditional mobility paradigm.

**TRADITIONAL MOBILITY PARADIGM**

- Single-user, vehicle-centric
  - Expensive, polluting, unsafe, inaccessible, inefficient
Ride-sharing models

Car / Taxi
- Ola
- Uber
- Meru Cabs
- BlaBla Car
- Mega Cabs
- Quick Ride
- Bono
- Zoomcar

Auto Rickshaw
- Ola
- Uber Auto
- Jugnoo

Bike
- Bounce
- VOGO
- Uber Moto

Bus
- Shuttl
- ZipGo
Objective

- To identify factors which adjunct shared mobility and to understand how they complement and/or compete with the public transport

- To comprehend if shared mobility impacts the public transport systems in our cities

- To suggest recommendations for future transport environment.
Existing regulatory frameworks in India

- MoRTH Taxi Policy Guidelines, 2016
- The Motor Vehicles (Amendment) Bill, 2019

No specific Legal frameworks or policy guidelines for regulating Shared Mobility in India at Union Level
Methodology

Task I
- Review of Existing Literature and other Research Works
- Understanding the Indian Scenario & Existing Policy level initiatives

Task II
- Case City Selection
- Assimilating the Existing Public Transport and Shared Mobility Scenarios

Task III
- Data collection – Secondary & Primary
- Stakeholder Consultation, User Opinion & Driver Survey

Task IV
- Data analysis by synthesizing primary and secondary data sets
- Interpreting the existing gaps in service quality parameters of the public transport services w.r.t shared systems

Task V
- Modelling the results using Binary Logit Analysis
- Quantifying the Impact based on identified variables
- Suggest recommendations
Case city selection

- Broadly characterised on the basis of city population as *large cities & medium cities*
- 12 Indian cities were selected as part of the study

City Selection Criteria

- Presence of at least one shared mobility and Public Transport
- A minimum of 5,00,000 inhabitants, with special exception in case of hill cities
- Should reflect all the varied demographics and socioeconomic profile of the country

*Selected study areas*
Data Collected

**PRIMARY DATA**

- * User Opinion Survey
- * Stakeholder Consultation

**SECONDARY DATA**

- Socioeconomic Parameters
- User Attributes
- Factors Impacting User Choices
- Expenditure and Trip Purpose for Daily Trips
- Willingness to Shift
- Factors accentuating shared mobility systems

City Characteristics
- Existing Mode Share
- Socioeconomic Characters
- Traffic & Transport Characteristics
- Policy Guidelines on Shared Systems
- Identification of Survey Locations

* Comprehensive Mobility Plans
  - * Policies
  - * DPR’s
Convenience of booking: 32.85%
Fare: 4.22%
Door to Door connectivity: 44.28%
Reliability: 18.65%

Reasons for using Shared system:
- I am already a PT user: 52.00%
- It is not available: 11.47%
- Doesn't provide door to door connectivity: 29.89%
- Unsafe: 1.37%
- Others (Higher Waiting Time/Over crowded/Cleanliness etc.): 5.26%

Reasons for using not using PT:
CHANDIGARH

Reasons for using On demand:

- Convenience of booking: 21.94%
- Fare: 20.41%
- Door to Door connectivity: 38.01%
- Reliability: 19.64%

Reasons for using not using PT:

- I am already a PT user: 21.22%
- It is not available: 15.92%
- Doesn't provide door to door connectivity: 41.11%
- Unsafe: 3.18%
- Others (Higher Waiting Time/Over crowded/Cleanliness etc.): 18.57%
## SHARED MOBILITY PARADIGM

### Major Trips purpose

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational trips</td>
<td>2.55%</td>
</tr>
<tr>
<td>Occasional trips</td>
<td>34.48%</td>
</tr>
<tr>
<td>Shopping/Recreational</td>
<td>22.94%</td>
</tr>
<tr>
<td>Emergency trips</td>
<td>29.06%</td>
</tr>
<tr>
<td>Most often trips</td>
<td>10.97%</td>
</tr>
</tbody>
</table>

### Prior mode of travel

<table>
<thead>
<tr>
<th>Mode</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto rickshaws/E-Rickshaws</td>
<td>21.75%</td>
</tr>
<tr>
<td>Walk</td>
<td>2.31%</td>
</tr>
<tr>
<td>Public Transport services</td>
<td>22.69%</td>
</tr>
<tr>
<td>Personal vehicle</td>
<td>53.25%</td>
</tr>
</tbody>
</table>

### Type of app based service

- Individual hire: 51%
- Bike: 23%
- Auto: 18%
- Pool/Share: 8%
NATIONAL SCENARIO
Public Transport vs. Shared Mobility

Reasons for using On demand

- Convenience of booking: 29.71%
- Fare: 8.57%
- Door to Door connectivity: 42.74%
- Reliability: 18.98%

Reasons for using not using PT

- I am already a PT user: 36.19%
- It is not available: 16.12%
- Doesn’t provide door to door connectivity: 33.29%
- Unsafe: 2.09%
- Others (Higher Waiting Time/Over crowded/Cleanliness etc.): 12.30%
Ride sourcing services are frequently used for Emergency Trips & Social/Recreational Trips—when PT services are rarely available or is Unavailable.
MODE CHOICE MODELLING FOR SHARED MOBILITY

- **Binary Logit Model** is used for predicting the travel choice between two alternatives.
- The individual will select the alternative from set of available alternatives having maximum utility.
- Attributes Selected:

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Combined</th>
<th>Large Cities</th>
<th>Small Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability of choosing Public Transport</td>
<td>0.723 (72.3%)</td>
<td>0.64 (64%)</td>
<td>0.794 (79.4%)</td>
</tr>
<tr>
<td>Probability of choosing Shared Mobility</td>
<td>0.277 (27.7%)</td>
<td>0.36 (36%)</td>
<td>0.206 (20.6%)</td>
</tr>
</tbody>
</table>

**Utility Equation** \( U_T = 0.383 + 1.12(\text{Access Distance}) -0.0065(\text{WT}) + 0.006(\text{TT}) -0.0028 \text{ (Cost)} \)
Conclusion I

- More than 40% of users having an average income profile of Rs. 20,000-50,000, spend less than Rs. 50 for their daily trips
- Majority of shared mobility users having an average income profile of Rs. 50,000-Rs.1,00,000

Signifies that majority of Indian users still prefer Public transport over shared services
Conclusion II

The shift attributed towards shared mobility systems is primarily from personal vehicles whereas public transport systems have been much lesser impacted.

In medium size cities where 2 wheeled shared mobility system exists major shift is attributed towards public transport systems.
Most of the shared users preferred it over PT because:

Users are ready to shift to PT if it provide with better connectivity and service
Future Shared mobility Paradigms- Bike sharing

- 2W is Most affordable & Convenient mode of Transport
- It is observed that among the 2W App based mobility users, around 35% users prior mode was Public Transport Services
- As per the Pre-feasibility Rider survey conducted by Uber in Delhi
  - 52% people may prefer Uber MOTO for their Daily Work trips
  - 24% would prefer Uber MOTO for first & Last mile connectivity from metro stations

Prior mode of travel of App based 2W Users

- **29.00%** Personal vehicle
- **35.00%** Public Transport services
- **20.00%** Auto rickshaws/E-Rickshaws
- **16.00%** Walk
KEY ELEMENTS OF INDIA’S MOBILITY TRANSFORMATION