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Public Transport Systems and Policies and Programs of the Department of Transportation (DOTr): Basis of an Enhanced Re-Engineering Program

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ABSTRACT

This study assessed public transport policies and programs of the Department of Transportation (DOTr) as the basis for an enhanced jeepney re-engineering program in the northern National Capital Region of the Philippines. The descriptive, predominantly quantitative survey involved 350 respondents from Caloocan, Malabon, Navotas, and Valenzuela: 300 commuters, 25 jeepney drivers, and 25 operators. A structured five-part questionnaire collected ratings on safety, comfort, affordability, emissions, livelihood, mobility, satisfaction, equity, implementation challenges, and proposed measures. The study used weighted means, analysis of variance, and Pearson product–moment correlation. Respondents generally agreed with the perceived benefits of existing policies (overall means of 3.10–3.16 across four dimensions) and programs (composite means of 3.02–3.10 across five dimensions). Group assessments differed significantly for policy affordability ($F = 4.521$) and for four program-benefit dimensions ($F = 5.110–10.502$), but not for policy safety, comfort, or emissions or program livelihood support. Policy and program perceptions showed a moderate positive relationship ($r = .4201$, $p = .0012$). The overall seriousness of implementation challenges was rated 3.28, with modernization costs (3.46) and perceived disadvantage of small operators (3.37) ranking highest. Respondents highly recommended financial assistance, transparent consultation, and capacity building. Based on these perceptions, the study proposed the Policy for Advancing Sustainable and Accountable Drivers and Automotive Modernization Outcomes (PASADAMO). The findings support a stakeholder-sensitive modernization approach; neither technical retrofitting performance nor the proposed policy's implementation effects were evaluated.

Keywords: *jeepney re-engineering, public utility vehicle modernization, transport policy, stakeholder perceptions, just transition, Metro Manila*

INTRODUCTION

Public transportation sustains urban access to employment, education, health services, and community life. In the Philippines, the jeepney has performed this role since its post-war adaptation from military vehicles, becoming both a low-cost mobility service and a recognizable expression of Filipino heritage. In the National Capital Region (NCR), especially in peripheral and densely populated areas, jeepneys remain consequential to the daily mobility of commuters and the livelihoods of drivers and operators. Equitable transport policy must therefore account for both vehicle performance and access to essential activities (Lucas, 2012; Litman, 2022).

The public utility vehicle modernization agenda responded to longstanding concerns about roadworthiness, emissions, operational reliability, and accessibility. The underlying regulatory context includes the Land Transportation and Traffic Code (Republic Act No. 4136, 1964), the Philippine Clean Air Act (Republic

ISSN: 3116-3475
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of Education, Research, and Innovation Perspectives
Volume 2 Issue 10 (October 2026)

Act No. 8749, 1999), the Magna Carta for Disabled Persons (Republic Act No. 7277, 1992), its amendments (Republic Act No. 9442, 2007), and the Energy Efficiency and Conservation Act (Republic Act No. 11285, 2019). DOTr's 2017 Omnibus Franchising Guidelines and subsequent implementing provisions articulated expectations for safer, more accessible, efficient, and environmentally responsive road transport (Land Transportation Franchising and Regulatory Board [LTFRB], 2018).

Modernization nevertheless imposes substantial transition costs. The thesis describes concerns about acquisition or upgrading expenses, credit obligations, fares, and the possible displacement of small operators, alongside the potential loss of the traditional jeepney's visual and cultural identity. These tensions suggest that technical modernization cannot be evaluated in isolation from affordability, service quality, institutional capacity, and social inclusion. Transport research similarly links effective operations to coordinated service planning (Ceder, 2015), while customer experience depends on several interrelated service-quality attributes (Eboli & Mazzulla, 2007).

Despite extensive discussion of modernization, locally grounded comparison of commuters, drivers, and operators remains important because these groups may experience the same reforms differently. The present study examined transport-system policy perceptions across safety, comfort, affordability, and environmental protection; program perceptions across livelihood, commuter satisfaction, mobility, transport costs, and cultural equity; differences among stakeholder groups; the association between policy and program ratings; and implementation challenges and remedies. Its aim was to develop an evidence-informed enhanced jeepney re-engineering proposal rather than to claim independently measured engineering or environmental effects.

Literature Review

Transport safety, reliability, and passenger service quality

Transit service quality includes predictable operations, safe boarding and alighting, security, cleanliness, and reliable information. Eboli and Mazzulla (2007) showed how perceptions of multiple bus-service attributes contribute to overall passenger satisfaction, while de Oña et al. (2013) emphasized the relationships among perceived service attributes through structural equation modeling. Together, these studies support the need to assess transport reform across several dimensions rather than rely on a single satisfaction score.

Ceder (2015) identified service planning, scheduling, and transfer coordination as core elements of operational performance. The Bureau of Transportation Statistics (2023) illustrates the value of safety and network-performance indicators, while the Federal Transit Administration (2024) emphasizes systematic safety management, including identifying hazards and monitoring risk controls. In a jeepney context, these ideas relate directly to respondent concerns regarding driver conduct, roadworthiness, lighting, emergency procedures, maintenance, route information, and dependable service frequency.

Affordability, livelihoods, and transport equity

Affordable transport is necessary for equitable participation in urban life. Lucas (2012) positioned transport disadvantage within broader processes of social exclusion, while Litman (2022) discussed ways to evaluate the distribution of transport costs and benefits. This literature helps explain why the affordability of modernized vehicles cannot be judged only by fare acceptability: operators face capital and financing obligations, drivers face changes in employment and boundary arrangements, and commuters bear daily travel costs.

The reform process also involves questions of transparency, decision-making, and stakeholder engagement. The Organisation for Economic Co-operation and Development (OECD, 2021) identifies inclusive governance and public accountability as relevant to reform effectiveness. The United Nations (2023) similarly emphasizes policies attentive to age and social disadvantage. These perspectives provide a rationale for examining accessibility, discounts, inclusive design, cooperative arrangements, financing support, and fair treatment of vulnerable transport users.

ISSN: 3116-3475
International Journal
of Education, Research, and Innovation Perspectives
Volume 2 Issue 10 (October 2026)

Emissions, sustainability, and modernization trade-offs

Emission control and efficient energy use provide an important policy rationale for cleaner public transport. The Philippine Clean Air Act (Republic Act No. 8749, 1999) and Energy Efficiency and Conservation Act (Republic Act No. 11285, 2019) establish relevant national commitments. Within the current study, however, environmental benefits are measured as stakeholder assessments; the survey does not directly quantify vehicle exhaust, fuel consumption, or lifecycle emissions.

The transport literature also warns against evaluating new mobility services from a single perspective. Tirachini (2020) reviewed travel-behavior and sustainability trade-offs that can accompany changes in transport supply. Accordingly, modernization planning should consider system-wide operational and equity implications together with anticipated environmental benefits. For the present study, this means interpreting favorable emission-related perceptions as reported opinions, not measured evidence of pollution reductions.

Inclusive re-engineering and policy implementation

Transport re-engineering entails more than replacing a propulsion system: it may require coordinated infrastructure, standards, driver development, accessible design, financing, and ongoing maintenance. DOTr's framework for route planning and service franchising, as operationalized in the LTFRB guidelines, locates vehicle improvements within wider governance responsibilities (LTFRB, 2018). This underscores the importance of training, route planning, credit assistance, and shared accountability among government, cooperatives, drivers, and passengers.

The reviewed literature suggests that lasting reform depends on both the perceived quality of service and the fairness of its implementation (Ceder, 2015; Eboli & Mazzulla, 2007; Lucas, 2012; OECD, 2021). The present study extends this discussion by comparing responses from three transport stakeholder groups in CAMANAVA and identifying which policy and program dimensions generated the strongest divergence. The proposed re-engineering framework integrates stakeholder alignment, financing and support systems, operational improvements, and feedback as a basis for future consideration.

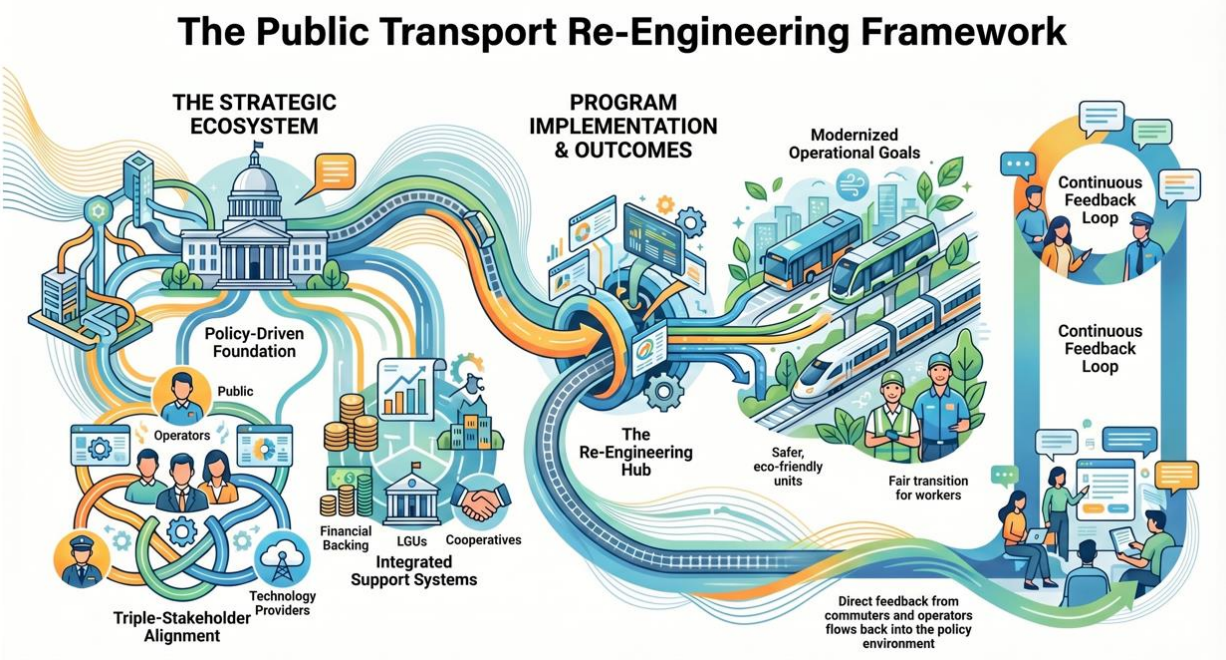


Figure 2. *The Public Transport Re-Engineering Framework*

ISSN: 3116-3475
International Journal
of Education, Research, and Innovation Perspectives
Volume 2 Issue 10 (October 2026)

METHODS

Research Design

The study employed a descriptive quantitative assessment of stakeholder perceptions concerning DOTr public transport policies and programs and their relevance to an enhanced jeepney re-engineering proposal. The thesis characterized the broader approach as mixed-methods and mentioned interviews or focus-group discussions; however, the reported empirical findings were principally questionnaire-based descriptive and inferential statistics. Consequently, this article presents only the analyses documented in the thesis and does not infer unreported qualitative themes.

Research Locale

The study was conducted in the CAMANAVA area of northern Metro Manila, specifically Caloocan, Malabon, Navotas, and Valenzuela. These localities were selected because of their reliance on jeepney transport and relevance to accessibility, affordability, safety, and environmental considerations. No national generalization beyond the selected setting is claimed.

Participants and Sampling Technique

The survey included 350 transport stakeholders: 300 commuters (75 from each of the four cities), 25 drivers, and 25 operators. The thesis described the sampling approach as simple random sampling while also specifying selection based on direct transport experience. The sampling-frame and randomization details were not documented sufficiently to independently establish equal selection probability; this limitation should be acknowledged in interpretation.

Table 1. *Distribution of survey respondents*

Stakeholder or locale	Number
Commuters—Caloocan	75
Commuters—Malabon	75
Commuters—Navotas	75
Commuters—Valenzuela	75
Jeepney drivers	25
Jeepney operators	25
Total	350

Research Instrument

A structured, researcher-developed five-part questionnaire recorded respondent profiles; ratings of public transport system policies; ratings of DOTr programs; perceived implementation issues and challenges; and proposed solutions. Policy dimensions were safety and reliability, comfort and convenience, affordability, and emission reduction. Program dimensions were livelihood protection, commuter satisfaction, daily mobility, transport costs, and dignity, cultural pride, and social equity. Four-point response scales were used for agreement, challenge seriousness, and recommendation strength.

Data Gathering Procedure

The researcher obtained institutional permission and respondent consent before administering printed and online questionnaires. The thesis also mentioned interviews or focus-group discussions with selected stakeholders and possible use of online meeting platforms, but did not present a separate systematically analyzed interview dataset. Survey responses were consolidated, encoded, and tabulated for descriptive and inferential analysis.

ISSN: 3116-3475
International Journal
of Education, Research, and Innovation Perspectives
Volume 2 Issue 10 (October 2026)

Data Analysis

Weighted means summarized the four-point ratings. The thesis used one-way analysis of variance (ANOVA) to compare three stakeholder groups across the four policy and five program dimensions, assessing each reported computed F against its stated critical F. Pearson product–moment correlation tested the association between policy and program scores, with a reported significance level of .05. Because the source did not supply all degrees of freedom, raw group-level observations, or complete inferential diagnostics, results are reported as documented rather than recomputed.

Ethical Consideration

The study stated that consent was sought and anonymity and confidentiality were observed during data gathering. Respondents were transport stakeholders reporting their own experiences, and data were presented in aggregated form. The uploaded thesis did not provide an ethics-board approval identifier, so no such approval is claimed here.

RESULTS AND DISCUSSION

Assessments of public transport system policies

Across four policy domains, respondents generally agreed that modernization is associated with improvements in safety, comfort, affordability, and environmental protection. The thesis presented overall weighted means of 3.15 for safety, 3.14 for comfort, 3.10 for affordability, and 3.16 for emission reduction, all within the Agree response category. These evaluations are perception measures rather than engineering or emissions tests. Safety and comfort findings are compatible with multidimensional passenger-service models (Eboli & Mazzulla, 2007; de Oña et al., 2013).

Table 2. *Policy-domain weighted means by stakeholder group (source values)*

Policy domain	Drivers	Operators	Commuters	Overall reported
Safety compliance and operational reliability	3.17	3.16	3.15	3.15
Passenger comfort and convenience	3.10	3.17	3.14	3.14
Affordability for operators and commuters	3.11	3.10	3.09	3.10
Emission reduction and environmental protection	3.24	3.10	3.16	3.16

Environmental improvement obtained the highest reported overall policy score (3.16), followed closely by safety (3.15). In the safety items, monitoring and protective features were positively assessed; nevertheless, the original study did not measure whether these features were present on all routes. The relatively lower affordability dimension (3.10) highlights persistent concerns about operator financing and fare burden. These findings support treating environmental aims and affordability as linked but distinct policy considerations, consistent with the equity perspective of Lucas (2012).

Differences in perceptions of policy improvements

The one-way ANOVA results indicated that affordability was the only policy domain with a significant reported difference among drivers, operators, and commuters (computed $F = 4.521$, critical $F = 3.354$). No statistically significant differences were reported for safety, comfort, or emission reduction. Stakeholders thus shared broadly similar views on technical and service-related benefits but differed in assessing the economics of transition.

ISSN: 3116-3475
International Journal
of Education, Research, and Innovation Perspectives
Volume 2 Issue 10 (October 2026)

Table 3. *Reported ANOVA tests for four policy dimensions*

Policy dimension	Computed F	Critical F	Source decision
Safety compliance and reliability	0.546	3.354	Not significant
Passenger comfort and convenience	0.951	3.354	Not significant
Affordability	4.521	3.354	Significant
Emission reduction and environmental protection	0.420	3.352	Not significant

The divergence in affordability is substantively important: vehicle procurement, loan payments, and cooperative fees directly affect transport workers, whereas fares and transfer costs more directly affect commuters. The study therefore supports differentiated financial protections and consultation procedures, rather than a single undifferentiated subsidy or fare intervention (Litman, 2022; OECD, 2021).

Assessments of DOTr program benefits

Respondents gave generally favorable ratings to all five program-benefit dimensions. Securing driver and operator livelihood received a composite mean of 3.02, raising commuter satisfaction 3.06, improving mobility and travel efficiency 3.03, reducing daily transport costs 3.09, and enhancing dignity, cultural pride, and social equity 3.10. These results suggest positive perceptions of the modernization agenda but do not establish observed causal improvements in income, travel time, or household transport spending.

Table 4. *Reported perceived program benefits by stakeholder group*

Program dimension	Drivers	Operators	Commuters	Overall reported
Livelihood security	3.03	3.03	2.99	3.02
Commuter satisfaction	3.04	3.10	3.05	3.06
Mobility and travel efficiency	3.08	3.04	2.97	3.03
Daily transport cost	3.08	3.15	3.04	3.09
Dignity, cultural pride, and social equity	3.08	3.12	3.10	3.10

Perceived equity and cultural pride scored highest (3.10), while livelihood security scored lowest (3.02). Respondents recognized improvements in vehicle design and service conduct but identified more limited gains in direct financial security. Their responses are consistent with the need to align operational planning with inclusive access and affordability (Ceder, 2015; Lucas, 2012). The modest ratings of travel-time improvement also reinforce the distinction between upgrading individual vehicles and resolving network-wide congestion.

Differences in perceptions of program benefits

Four of the five program dimensions showed significant reported between-group differences: commuter satisfaction ($F = 5.110$), mobility and efficiency (7.782), daily transport costs (9.112), and dignity, cultural pride, and social equity (10.502). No significant difference was found for livelihood security ($F = 0.762$). These comparisons illustrate how reform outcomes can be valued differently by stakeholder role even when average ratings remain positive.

Table 5. *Reported ANOVA tests for five program dimensions*

Program dimension	Computed F	Critical F	Source decision
Livelihood security	0.762	3.354	Not significant
Commuter satisfaction	5.110	3.354	Significant
Mobility and travel efficiency	7.782	3.352	Significant
Daily transport costs	9.112	3.354	Significant
Dignity, cultural pride, and equity	10.502	3.354	Significant

The differing program perceptions suggest that reforms should be judged through separate commuter, driver, and operator outcomes, rather than only a pooled average. A more comprehensive monitoring process

ISSN: 3116-3475
International Journal
of Education, Research, and Innovation Perspectives
Volume 2 Issue 10 (October 2026)

would disaggregate satisfaction, operating expenses, schedule reliability, safety compliance, and accessibility by stakeholder and route. Such an approach is consistent with broader public-sector accountability and inclusive policymaking principles (OECD, 2021).

Association between policy and program perceptions

The thesis reported a moderate positive Pearson correlation between ratings of transport-system policies and programs ($r = .4201$, $p = .0012$), significant at the .05 level. The direction indicates that respondents assigning higher ratings to policy implementation also tended to assign higher ratings to the related programs. The correlation is not evidence that either one caused the other, and the source did not provide details permitting an independent replication of the result.

Table 6. *Reported policy–program correlation*

Relationship	Pearson r	Reported p	Interpretation
Public transport system policies and programs	.4201	.0012	Moderate positive; significant

Challenges and recommended remedies

Implementation challenges were rated Very Serious overall (mean = 3.28). High modernization costs (3.46) were the highest-ranked challenge, followed by the disadvantage perceived by small operators and individual drivers (3.37), heavy credit and maintenance burdens (3.32), and the lack of clear congestion improvements (3.31). Concerns about unevenly functioning safety features and accessibility gaps were also documented. These perceived challenges are not direct measurements of technical failure, but they identify priorities for program improvement.

Table 7. *Selected source-reported challenges, ranked by seriousness*

Challenge	Overall WM	Source rank
High overall acquisition, parts, and maintenance costs	3.46	1
Small operators and individual drivers disadvantaged	3.37	2
Costly loans, cooperative fees, and maintenance burden	3.32	3
No clear improvement in congestion	3.31	4
Safety features not consistently working or monitored	3.29	5
Limited economic opportunities despite modernization	3.27	6
Accessibility features absent on some routes	3.25	7
Loss of traditional jeepney cultural identity	3.23	8
High fares perceived by lower-income riders	3.22	9
Limited improvements in frequency and reliability	3.12	10

Respondents strongly supported remedies including targeted financial assistance, payment restructuring, capacity-building on cooperative financial and fleet management, emissions and noise inspections, improved consultations, and clearer service-frequency monitoring. Their average recommendations were rated Highly Recommended for drivers (3.34), operators (3.37), and commuters (3.43). The findings suggest that the preferred responses were not purely technological; many concerned financing arrangements, institutional capacity, and public accountability.

Table 8. *Representative solutions and source-reported weighted means*

Recommended measure	Drivers	Operators	Commuters
Reduced-interest loans, subsidies, or tax incentives	3.32	3.36	3.38
Financial relief or payment-term restructuring	3.32	3.44	3.42
Capacity building in financial and fleet management	3.40	3.40	3.43
Assistance for drivers and commuters	3.40	3.44	3.46
Transparent public consultation before decisions	3.32	3.52	3.45

ISSN: 3116-3475
International Journal
of Education, Research, and Innovation Perspectives
Volume 2 Issue 10 (October 2026)

Proposed enhanced re-engineering program

From the identified needs, the researcher developed the Policy for Advancing Sustainable and Accountable Drivers and Automotive Modernization Outcomes (PASADAMO), elsewhere styled "PASADA MO" in the thesis. It emphasizes gradual vehicle improvements, livelihood-sensitive financing, operational oversight, safety and environmental standards, accessibility, cultural preservation, skills development, and continuous stakeholder feedback. Its proposed actions are intended as a policy and implementation framework; the thesis did not pilot PASADAMO or evaluate its effectiveness.

Table 9. *Condensed PASADAMO policy implementation priorities*

Priority	Indicative actions from the thesis	Intended stakeholders and purpose
Vehicle compliance	Phased re-engineering, emissions and safety checks, maintenance monitoring	DOTr, LTO, LTFRB and operators; safer, cleaner fleets
Just-transition finance	Subsidies, accessible credit, repayment restructuring, fair cost allocation	Government, lenders, operators and drivers; transition affordability
Service efficiency	Route planning, service frequency, dispatching, transparent fare information	LTFRB, LGUs, cooperatives and commuters; reliable mobility
Social inclusion and heritage	Accessible boarding, priority accommodations, Filipino design elements	Operators, LGUs and transport users; inclusion and cultural continuity
Capacity and participation	Driver professionalization, fleet-management training, recurring public consultations	Drivers, cooperatives, agencies and commuters; skills, trust and feedback

CONCLUSION

The study documented generally favorable but not uniform perceptions of DOTr transport policies and programs among 350 respondents in CAMANAVA. Safety, comfort, affordability, and environmental protection were all assessed positively, while affordability was the only policy domain showing a significant stakeholder-group difference. Four of five program-benefit dimensions showed significant group differences, and policy ratings were moderately positively associated with program ratings. The greatest perceived barriers were the high capital and maintenance costs of modernization and unequal burdens on small operators and drivers. These findings contribute a localized stakeholder perspective to the design of an enhanced jeepney re-engineering framework. They do not establish measured engineering benefits or demonstrate the effectiveness of a PASADAMO intervention that has not yet been implemented.

Recommendation

The DOTr, LTFRB, LTO, and participating local governments should assess transition-support mechanisms that distinguish the economic circumstances of commuters, small operators, and drivers. Phased financing and vehicle compliance pathways, transparent subsidy eligibility, loan restructuring, and publicly explained fare decisions may help address the differences in affordability perceptions. Cooperatives and fleet operators should strengthen vehicle maintenance, monitoring of safety equipment, driver training, accessible boarding, and predictable dispatching. Consultation processes should systematically gather and publish feedback from all three stakeholder groups while keeping the jeepney's cultural identity visible where feasible. The proposed PASADAMO framework should first undergo technical feasibility, legal compatibility, cost-effectiveness, and pilot implementation assessments; subsequent research should include measured emissions, route travel times, passenger safety, and income changes, together with a transparent sampling frame and reproducible statistical outputs.

ISSN: 3116-3475
International Journal
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Volume 2 Issue 10 (October 2026)

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