

Managerial Strategies for the Strengthening of Road Education Programs in San Cristóbal City

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Abstract

This scientific article derives from a research project aimed at proposing an Comprehensive Managerial Model to overcome critical management deficiencies in road safety education programs in San Cristóbal, Táchira State, Venezuela. The current scenario is characterized by operational discontinuity, scarce community involvement, lack of strategic planning, and absolute absence of monitoring mechanisms. Under a quantitative, descriptive-propositive, and field-based approach with a non-experimental cross-sectional design, a validated dichotomous questionnaire (KR-20) was administered to an intentional sample of 126 key actors (60 students, 15 teachers, 40 citizens, 8 authorities, and 3 experts). Results reveal that only 39% perceive regularity in school workshops, 21% of teachers have received specialized training, 88% of citizens acknowledge the preventive importance of road education while only 27% observe compliance among drivers, and 100% of authorities confirm the absence of evaluation reports. To solve this, a Comprehensive Managerial Model based on four pillars is proposed: Strategic Planning, Interinstitutional Articulation (creating the Municipal Road Safety Committee - CMSV), Participatory Execution, and Continuous Evaluation, relying on public-private partnerships for budgetary and social sustainability.

Keywords: Road Education, Managerial Strategies, Road Safety, Public Management, Road Culture, San Cristóbal.

I. INTRODUCTION

Road safety represents an imperative for public health, urban development, and democratic governance. The accelerated expansion of the vehicle fleet in Latin American cities, combined with limited road infrastructure and risky behavioral patterns, has consolidated traffic accidents as one of the leading causes of morbidity and mortality. In the city of San Cristóbal, capital of Táchira State (Venezuela), the constant increase in traffic accidents generates a severe impact on the physical integrity of the population, economic productivity, and the response capacity of healthcare centers.

Despite the existence of educational initiatives in schools and eventual deployments by security agencies, institutional fragmentation prevails, characterized by operational improvisation, budgetary suffocation, and the absence of management controls. This phenomenon is not solely due to financial constraints or monitoring gaps, but fundamentally to a deficit in the public management of road education programs. The absence of a comprehensive

strategic design restricts the sustainability of initiatives and promotes cultural resistance to regulatory compliance.

In response to this problem, the general objective of this research was to propose managerial strategies for strengthening road education programs in San Cristóbal. This purpose entailed diagnosing weaknesses in current management, identifying the needs and expectations of the actors involved, and structuring a viable technical-managerial alternative aligned with the Constitution of the Bolivarian Republic of Venezuela (Art. 127), the Organic Law of Education (Art. 42), the Land Transport Law (Art. 35), and the National Road Safety Plan 2021–2025.

II. THEORETICAL AND LEGAL FOUNDATIONS

The doctrinal framework of the research is grounded in public strategic management theory and management by objectives, which postulate that organizational effectiveness requires systemic interdependence among planning, interinstitutional coordination, resource

allocation, and continuous control. Authors such as Zambrano (1999) and Gutiérrez Bernal (2021) highlight that transforming collective behaviors in urban spaces is not achieved through isolated coercive actions, but through models of participatory governance and continuous instructional delivery.

From a legal perspective, the research applies Hans Kelsen's doctrine of normative hierarchy. The Venezuelan Constitution (1999) establishes the State's duty to guarantee a safe environment and protect the right to life (Arts. 43 and 127). In ordinary law, the Land Transport Law (2008) requires the mandatory execution of road education programs by municipalities, while the Organic Law of Education (2009) defines the pedagogical cross-cut nature of road safety within the school system. Finally, the National Road Safety Plan 2021–2025 and the Resolutions of the Ministry of People's Power for Transport provide the procedural basis for municipal articulation.

III. METHODOLOGY

The study adopted a quantitative, descriptive-propositional, and field-based approach. Its design was non-experimental and cross-sectional, collecting data in its natural environment at a single point in time (Hernández Sampieri et al., 2018). The population consisted of key actors in the mobility and education system of San Cristóbal. A non-probability purposive sampling was used, establishing a total sample of 126 subjects distributed evenly according to their strategic role:

- Students (n=60): Belonging to 5 educational institutions located in high-accident areas.
- Teachers (n=15): Pedagogical coordinators and civic development tutors.
- Citizens (n=40): Pedestrians, drivers, and merchants along critical road corridors (Libertador Ave., Bus Terminal, Bolívar Park).
- Authorities (n=8): Representatives of the Municipality of San Cristóbal, Bolivarian National Police (Traffic division), Ministry of Transport, and the academic sector (UCAT).
- Experts (n=3): Specialists designated for procedural validation judgment.

As the primary instrument, a structured questionnaire of 15 dichotomous items (Yes / No) was designed, strictly operationalized from the dimensions of Road Education, Road Safety Culture, and Strategic Management. The instrument underwent content validation through expert judgment by three specialists, obtaining 90% agreement. Internal consistency reliability was established using the Kuder-Richardson formula (KR-20), yielding a coefficient of 0.88, which is highly satisfactory for applied research in social sciences.

IV. RESULTS AND DISCUSSION

The analysis of empirical data was structured around the three specific objectives of the research, processing absolute and percentage frequencies:

➤ *Diagnosis of Current Educational Management (Specific Objective 1)*

The findings reflect severe limitations in the school administration of road safety content. In Item 1, only 39% of the total sample (40% of students and 33% of teachers) affirmed that road education workshops are taught regularly, demonstrating discontinuity in academic programming. In Item 3, barely 21% of teachers stated they had received specialized training to deliver the subject, constituting a bottleneck for pedagogical quality. Likewise, Item 4 yielded a critical 15% of community involvement (parents and neighbors), confirming the school's operational isolation from its social environment.

➤ *Needs and Expectations of the Actors Involved (Specific Objective 2)*

Data show a marked gap between the theoretical valuation of regulations and operational citizen behavior. In Item 7, 88% of citizens and 100% of authorities acknowledged the vital importance of road education for accident prevention. However, in Item 6, only 27% believed that drivers respect traffic signs in San Cristóbal. Similarly, Item 8 revealed that only 33% of pedestrians use safe crosswalks. Regarding communications (Item 9), 79% of respondents reported a lack of mass awareness campaigns in local media.

Table 1 Consolidation of Empirical Findings by Research Item.

Item / Evaluated Variable	Informant Group	Yes Frequency (%)	No Frequency (%)
1. Regular frequency of school workshops	Students / Teachers (n=75)	39%	61%
3. Specialized teacher training	Students / Teachers (n=75)	21%	79%
4. Community and neighborhood involvement	Total Sample (n=123)	15%	85%
6. Drivers' behavioral compliance with signs	Citizens / Authorities (n=48)	27%	73%
7. Social preventive valuation of road education	Citizens / Authorities (n=48)	88%	12%
8. Pedestrian compliance with safe crosswalks	Citizens / Authorities (n=48)	33%	67%
9. Presence of mass media campaigns	Citizens / Authorities (n=48)	21%	79%
11. Existence of a formal strategic plan	Authorities (n=8)	25%	75%
12. Periodic training of technical personnel	Authorities (n=8)	12%	88%
13. Preparation of monitoring/evaluation reports	Authorities (n=8)	0%	100%
14. Effective interinstitutional coordination	Authorities (n=8)	25%	75%
15. Allocation of specific financial resources	Authorities (n=8)	12%	88%

➤ *Institutional and Managerial Evaluation (Specific Objective 3)*

The management-level diagnosis reveals a collapse in the public management cycle. Barely 25% of authorities stated they have a formal strategic plan (Item 11) and coordination mechanisms between the Mayor's Office, Traffic Police, and schools (Item 14). 88% indicated they have no budget allocated for materials or workshops (Item 15). The most alarming finding was recorded in Item 13, where 100% of authorities admitted that no monitoring or impact evaluation reports are produced, preventing technical audits and correction of deviations.

• *Diagnostic Synthesis of Municipal Management*

The overall average compliance across strategic management indicators stood at a critical 15%. This evidence validates the assertions of Zambrano (1999) and Sánchez Rodríguez (2023) by demonstrating that the absence of a formal plan, combined with budgetary paralysis and the breakdown of evaluation controls, disables the effectiveness of public road safety policies.

V. PROPOSAL: COMPREHENSIVE MANAGERIAL MODEL FOR ROAD EDUCATION

As a transformative response to the empirical diagnosis, a Comprehensive Managerial Model for Road Education was formulated for the city of San Cristóbal, designed around results-based management and participatory governance. This model is articulated across four interdependent pillars:

➤ *Pillar 1: Strategic Planning (Municipal Plan 2026–2030)*

Design and approval through municipal ordinance of the Five-Year Strategic Plan, defining vision, quantifiable goals, execution schedules, and a protected budget item within the Mayor's Office Annual Operating Plan (POA).

➤ *Pillar 2: Interinstitutional Articulation (Creation of the CMSV)*

Establishment of the Municipal Road Safety Committee (CMSV) as a permanent collegiate body integrating the Mayor's Office of San Cristóbal, PNB (Traffic division), Ministry of Transport, Educational Zone, UCAT, UPTT "Manuela Sáenz", and private sector transport and commercial guilds. This entity will eliminate duplication of functions and coordinate territorial deployment.

➤ *Pillar 3: Participatory and Diversified Execution*

Simultaneous implementation across two domains:

- Formal: Institutionalizing the mandatory school calendar, reactivating School Road Coexistence Committees, and mass training of teachers in simulation and game-based methodologies.
- Informal: Deploying awareness campaigns across local media and digital platforms, combined with incentive and positive reinforcement programs for drivers and pedestrians at critical intersections.

➤ *Pillar 4: Integrated System of Monitoring, Evaluation, and Sustainability*

Creation of a digital management dashboard for the mandatory issuance of quarterly reports on educational coverage, infraction rates, and collision reductions. To overcome budgetary constraints, the model incorporates a Public-Private Partnership (PPP) scheme under corporate social responsibility, funding educational material and road signage in exchange for local tax incentives.

VI. CONCLUSIONS AND RECOMMENDATIONS

- The empirical diagnosis confirms the hypothesis that high traffic accident rates and a weak preventive culture in San Cristóbal are direct consequences of disjointed, discontinuous public management lacking funding and evaluation. Although citizens unanimously

recognize the importance of prevention, the lack of continuity in instruction and the absence of oversight encourage non-compliance with rules.

- It is recommended that municipal and educational authorities prioritize adopting the proposed Comprehensive Managerial Model, formalizing the creation of the Municipal Road Safety Committee (CMSV), institutionalizing continuous teacher training, and securing shared budget allocations with the private sector to consolidate a culture of co-responsibility and preservation of life in the urban space.

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