AASHTO COMMITTEE ON PERFORMANCE-BASED MANAGEMENT

Research Roadmap

2026

Organizational Excellence

Contents

OE Scope

Organizational Excellence (OE)

Definition. Organizational Excellence (OE) refers to ongoing efforts to establish an internal framework of standards and processes intended to engage and motivate employees to deliver products and services that fulfill customer requirements within business expectations. It is the achievement by an organization of consistent superior performance—for example, outputs that exceed meeting objectives, needs, or expectations. there is a correlation between an agency's capabilities in people, operations, and agency strategies to successfully implement their goals and objectives. (American Society for Quality)

Focus. The OE subcommittee focuses on the development and implementation of organizational performance management processes, measures, improvement frameworks, and strategies in order to optimize the efficiency and effectiveness of transportation agencies.

OE Research Themes and Needs

Organizational Excellence (OE)

A. **Organizational Models.** Research to identify how different STA organizational models impact organizational performance and the effectiveness of performance-based management.

B. **Efficiency and Process Improvements.** Research to advance transportation agency practices for measuring and improving internal efficiency and effectiveness.

C. **Organizational Change.** Research to advance models, methods, and leadership strategies to help transportation agencies improve performance and adapt to a changing environment.

Organizational Excellence (OE) Future Research Needs

Research Need	RRM Track	Collaborators
A. Organizational Models Research to identify how different DOT organizational models impact organizational performance and the effectiveness of performance-based management		
A1. Identify and share effective organizational models for DOT performance-based management • Develop a synthesis of how different agencies are organized to empower performance management • Identify approaches to strengthening organizational alignment needed for effective performance management • Identify effective leadership models supporting effective performance management	OC	AASHTO CPBM-Cross-Cutting TRB AQB11, AQB13
A2. Develop models for assessing organizational maturity for performance-based management • Establish a framework for assessing organizational health • Self-assessment tool(s) to identify gaps and guide organizational improvements • Consider leadership, alignment, culture, workforce engagement, role clarity, line of sight to performance objectives, workforce skills, data literacy, performance literacy, information access	OC	AASHTO CPBM-Cross-Cutting TRB AQB11, AQB13
A3. Investigate relationships between internal organizational performance and the effectiveness of performance-based management • Develop guidance on development and application of internal organizational effectiveness metrics • Develop framework and methodology for understanding how organizational effectiveness (workforce capacity, employee engagement, alignment, leadership) impacts transportation performance (safety, project delivery, resilience, asset condition)	OC	AASHTO CPBM-Cross-Cutting AQB11, AQB13
A4. Investigate how DOT organizational culture impacts the effectiveness of performance-based management • Scan/case studies of different DOTs – characterize elements of culture, key drivers, deep dive for agencies with different cultures	OC	AASHTO CPBM-Cross-Cutting AQB11, AQB13

Research Need	RRM Track	Collaborators
B. Efficiency and Process Improvements Research to advance transportation agency practices for measuring and improving internal efficiency and effectiveness		
B1. Advance use of AI to improve efficiency of STA internal processes • Identify key opportunities to leverage AI for improved efficiencies • Gather case studies • Provide guidance • *Build on results of NCHRP 23-46 AI Integration and Workforce Transformation for State DOTs (2028)* • *Build on results of NCHRP 8-127 Impact of New Disruptive Technologies on the Performance of DOTs (2023)*	OC	TRB AQB11, AQB13. AED12
B2. Advance STA process improvement practices • Identify current state of the practice – what approaches are being used, what results have been achieved in different agencies • Identify barriers, gaps, and opportunities for advancement – including cultural factors (e.g., employee openness to change) • Provide guidance and tools to help agencies adopt more effective approaches to process improvement • *Build on results of NCHRP 23-37 - Integrating Performance Management, Risk Management, and Process Improvement: A Guide (2027)*	OC	TRB AQB11
B3. Advance STA project management practices • Identify opportunities for project managers to make adjustments based on available performance indicators • Identify management and communication approaches to strengthen feedback loops between project and program-level performance management • Investigate innovative project management approaches used in other industries (e.g., agile) • *Build on results of NCHRP 20-24(144) - Enhancing State DOTs Agility in Project Development and Delivery (2026)*	OC	TRB AQB11

Research Need	RRM Track	Collaborators
C. Organizational Change Research to advance models, methods, and leadership strategies to help transportation agencies improve performance and adapt to a changing environment		
C1. Provide guidance to assess and strengthen STA's ability to adapt performance management approaches in a changing environment • Develop methods to measure workforce agility • Identify best practices that DOTs can apply to facilitate adaptation to significant transitions (e.g., funding, political leadership, regulatory changes, major disruptions in travel, etc.) • Identify employee development needs to enhance workforce adaptability • Identify structural barriers impacting DOTs ability to change and adapt (e.g., communication, organizational structure-silos, technology/systems) • Create a playbook for building organizational and workforce agility and resiliency in a state DOT • *Build on results of NCHRP 20-24(095) - Ensuring Essential Capability for the Future Transportation Agency and NCHRP 20-44(40) Implementing the Agency Capability Building Framework to Activate Organizational Change (2025)* • *Build on results of NCHRP Project 20-68, Scan 21-01 Lessons of Agency Resilience During Periods of Disruption (2022)*	OC	AASHTO CHR TRB AQB12
C2. Facilitate adoption of data-driven decision making technologies and processes for performance management • Develop case studies of successful approaches to technology implementation supporting performance measurement and reporting • Create standard job descriptions for key roles needed to support data-driven decision making (data analysts, programmers, electrical and communications engineers, and cybersecurity and artificial intelligence specialists) • Identify workforce development strategies to increase workforce technological literacy and help employees shift to new decision making approaches • Identify management and leadership strategies to reinforce use of data for decision making • *Build on results of NCHRP 20-68, Scan 18-02 Leading Practices in Modifying Agency Organization and Management to Accommodate Changing Transportation System Technologies (2020)*	OC	AASHTO CDMA TRB AQB13

Research Need	RRM Track	Collaborators
C3. Prepare DOTs for Transformational Change to Move the Performance Needle • Identify models for the DOT of the future • Provide guidance to help transportation agencies prepare for transformational changes needed to achieve ambitious performance objectives • *Build on results of NCHRP 20-24 (138)A Collective and Individual Actions to Envision and Realize the Next Era of America's Transportation Infrastructure (2025)* • *Build on results of NCHRP 8-127 Impact of New Disruptive Technologies on the Performance of DOTs (2023)*	OC	TRB AQB11

OE Draft Problem Statements

CPBM OE RRM Research Problem Statement

8. **Organizational Models for Effective Transportation Performance Management**
9. **The Role of Organizational Culture in Transportation Performance Management**
10. **Improving State DOT Agility in a Changing Transportation Environment**
11. **Building Organizational Capacity for Data-Driven Decision Making in State DOTs**

8. Organizational Models for Effective Transportation Performance Management

PROBLEM STATEMENT TITLE

Organizational Models for Effective Transportation Performance Management

KEYWORDS / TERMS

- Transportation performance management
- Organizational structure
- Governance models
- Performance-based management
- State DOT leadership
- Organizational effectiveness

RESEARCH OBJECTIVE

The objective of this research is to identify, evaluate, and document effective organizational models that enable state DOTs to successfully implement and sustain transportation performance management (TPM). The research will examine how organizational structure, governance, roles, leadership, and cross-functional coordination influence the effectiveness of performance-based decision making and use of performance information.

Expected products include:

(1) a practitioner-oriented guide describing organizational models and design principles that support effective TPM;
(2) a typology of organizational approaches used by state DOTs, including centralized, distributed, and hybrid models;
(3) case examples illustrating how organizational design influences performance outcomes and decision processes; and
(4) implementation guidance to help agencies assess and refine their own organizational arrangements.

Major research tasks are expected to include:

(a) review of TPM-related organizational research and guidance;
(b) assessment of state DOT organizational models and practices;
(c) identification of success factors and common challenges;
(d) development of an organizational assessment framework; and
(e) preparation of implementation-ready guidance and examples.

URGENCY AND POTENTIAL BENEFITS

State DOTs are increasingly expected to use performance information to guide investment decisions, demonstrate accountability, and respond to evolving policy priorities. While most agencies have established TPM processes, effectiveness varies widely, often due to differences in organizational structure, leadership engagement, and coordination across functional units.

This research is important to a majority of state DOTs because organizational design plays a critical role in whether performance management influences decisions or remains a reporting exercise. Benefits include clearer roles and accountability, stronger leadership engagement, improved cross-functional coordination, and more consistent use of performance information in planning and programming. Without this research, agencies are likely to continue struggling with organizational misalignment that limits the impact of TPM.

BACKGROUND INFORMATION AND NEED FOR RESEARCH

Over the past decade, federal requirements and AASHTO guidance have driven widespread adoption of TPM practices. State DOTs have invested heavily in measures, targets, data systems, and reporting processes. However, experience shows that technical capability alone is insufficient; organizational factors strongly influence whether performance information is used effectively.

DOTs vary widely in how TPM responsibilities are assigned, coordinated, and governed. Some agencies centralize TPM within planning or performance offices, while others distribute responsibilities across asset, modal, and operational units. Targeted research is needed to help agencies understand which organizational approaches best support effective TPM under different contexts.

LITERATURE SEARCH SUMMARY

A review of relevant literature indicates substantial research on transportation performance management methods, measures, and reporting, but limited focus on organizational models that enable effective use of performance information in state DOTs.

Guidance such as the **FHWA Transportation Performance Management Guidebook** and **FHWA TPM technical assistance materials** emphasize processes for setting targets, monitoring performance, and reporting results. While these resources recognize the importance of leadership and coordination, they provide limited guidance on how DOTs should organize staff, roles, and governance structures to support TPM.

Several NCHRP studies have highlighted organizational factors affecting performance management. **NCHRP 08-102 (Performance-Based Management Framework)** and related research document the evolution of TPM practices but focus primarily on analytical frameworks rather than organizational design. More recent research, including the currently active **NCHRP 23-37 (Integrating Performance Management, Risk Management, and Process Improvement: A Guide)**, emphasizes the need for integration across management disciplines but does not examine specific organizational models or structures.

Organizational excellence and capability-building research offers additional insights. **NCHRP 20-44(40) (Implementing the Agency Capability Building Framework to Activate Organizational Change)** identifies leadership alignment, role clarity, and cross-functional collaboration as critical enablers of performance-based management. However, this work does not provide detailed guidance on alternative organizational models for TPM implementation.

Syntheses and peer exchange findings consistently note wide variation in how DOTs assign responsibility for performance management and differing levels of success in embedding TPM into decision making. The literature suggests that organizational context, agency size, and governance environment influence which models are most effective, yet no consolidated, implementation-ready guidance exists to help agencies assess and refine their organizational approach to TPM.

This proposed research addresses that gap by synthesizing existing TPM and organizational research and translating it into practical guidance on organizational models that support effective, sustained transportation performance management.

LINK TO 2021–2026 AASHTO STRATEGIC PLAN

This research supports the AASHTO Strategic Plan by strengthening organizational effectiveness, improving data-driven decision making, and enhancing agencies' ability to deliver safe, efficient, and accountable transportation systems.

IMPLEMENTATION CONSIDERATIONS AND SUPPORTERS

State DOTs can implement the research results by using the guidance to assess and refine their TPM organizational structures, governance arrangements, and leadership roles. Likely users include executive leadership, planning and performance offices, and division managers.

Implementation can be supported through AASHTO committee activities (CPBM, OE), FHWA peer exchanges, and leadership workshops. Case studies and self-assessment tools would facilitate adoption across agencies with diverse organizational contexts.

RECOMMENDED RESEARCH FUNDING AND RESEARCH PERIOD:

[To be completed]

PROBLEM STATEMENT AUTHOR(S):

[To be completed]

POTENTIAL PANEL MEMBERS:

[To be completed]

PERSON SUBMITTING THE PROBLEM STATEMENT:

[To be completed]

9. The Role of Organizational Culture in Transportation Performance Management

PROBLEM STATEMENT TITLE

The Role of Organizational Culture in Transportation Performance Management

KEYWORDS / TERMS

- Organizational culture
- Transportation performance management
- Performance-based management
- Organizational change
- Leadership and governance
- State DOT effectiveness

RESEARCH OBJECTIVE

The objective of this research is to examine how organizational culture influences the effectiveness of transportation performance management (TPM) in state DOTs and to develop practical guidance for strengthening cultural conditions that support performance-based decision making. The research will focus on identifying cultural attributes, behaviors, and leadership practices that enable or inhibit the use of performance information in planning, programming, and management decisions.

Expected products include:

(1) a practitioner-oriented guide describing cultural factors that affect TPM effectiveness;
(2) a framework linking organizational culture to performance management behaviors and outcomes;
(3) diagnostic tools to help agencies assess cultural readiness for TPM; and
(4) implementation guidance and case examples illustrating strategies for fostering a performance-oriented culture.

Major research tasks are expected to include:

(a) review of organizational culture and change management literature relevant to public-sector transportation agencies;
(b) assessment of cultural challenges and enablers observed in state DOT TPM practice;
(c) development of a culture–performance linkage framework;
(d) validation through practitioner engagement; and
(e) preparation of implementation-ready guidance and tools.

URGENCY AND POTENTIAL BENEFITS

Most state DOTs have established TPM processes, measures, and reporting systems; however, many agencies report uneven use of performance information in decision making. In practice, cultural factors—such as risk aversion, siloed decision making, compliance-oriented mindsets, and limited trust in data—often determine whether TPM influences decisions or remains a reporting exercise.

This research is important to a majority of state DOTs because organizational culture is a critical, yet underaddressed, determinant of TPM success. Benefits include improved use of performance information, stronger leadership engagement, more constructive dialogue around tradeoffs, and greater organizational alignment around strategic objectives. Without this research, agencies may continue to invest in TPM tools and data without achieving meaningful behavioral or decision-making change.

BACKGROUND INFORMATION AND NEED FOR RESEARCH

Federal requirements and AASHTO guidance have driven widespread adoption of TPM practices, and state DOTs have made significant investments in measures, targets, data systems, and reporting. However, experience across agencies shows that technical capability alone does not ensure effective performance-based management.

Organizational culture shapes how performance information is perceived, trusted, and used. While DOTs increasingly recognize the importance of culture in organizational effectiveness, limited guidance exists on how culture interacts specifically with TPM. Targeted research is needed to help agencies understand and intentionally shape cultural conditions that support sustained performance-based decision making.

LITERATURE SEARCH SUMMARY

A review of relevant literature indicates substantial research on transportation performance management methods, performance measures, and reporting requirements, but comparatively limited focus on the role of organizational culture in enabling effective use of performance information in state DOTs.

TPM guidance such as **FHWA's Transportation Performance Management Guidebook** emphasizes processes for setting targets, monitoring outcomes, and reporting results. While leadership and collaboration are acknowledged as important, these resources provide limited discussion of organizational culture and its influence on TPM behaviors and decisions.

Several NCHRP studies have identified cultural and behavioral factors as barriers or enablers of performance-based management. **NCHRP 08-102 (Performance-Based Management Framework)** and related research document challenges related to data trust, risk aversion, and organizational silos, but do not provide structured guidance on addressing cultural issues. The currently active **NCHRP 23-37 (Integrating Performance Management, Risk Management, and Process Improvement: A Guide)** is highlighting the need for alignment across management disciplines and notes the influence of organizational norms, yet remains focused on process integration rather than cultural change.

Organizational excellence and capability-building research offers additional insights. **NCHRP 20-44(40) (Implementing the Agency Capability Building Framework to Activate Organizational Change)** identifies culture, leadership, and behaviors as key drivers of organizational performance. However, this work does not focus specifically on transportation performance management or provide TPM-specific cultural diagnostic tools.

Broader public-sector and transportation management literature consistently finds that performance systems are most effective when supported by cultures that value learning, transparency, and constructive use of data. Despite this recognition, the literature lacks a consolidated, implementation-ready resource that translates these findings into actionable guidance for state DOT TPM practice.

This proposed research addresses that gap by synthesizing TPM, organizational culture, and change management research and translating it into practical tools and guidance to help state DOTs strengthen the cultural foundations of effective transportation performance management.

LINK TO 2021–2026 AASHTO STRATEGIC PLAN

This research supports the AASHTO Strategic Plan by strengthening organizational effectiveness, advancing data-driven decision making, and enabling agencies to deliver accountable, high-performing transportation systems through effective leadership and culture.

IMPLEMENTATION CONSIDERATIONS AND SUPPORTERS

State DOTs can implement the research results by using the guidance and diagnostic tools to assess cultural readiness, inform leadership development, and align TPM practices with organizational values and behaviors. Likely users include executive leadership, performance management offices, organizational excellence teams, and division managers.

Implementation can be supported through AASHTO committee activities (CPBM, OE), FHWA peer exchanges, leadership workshops, and internal training programs. Case examples and self-assessment tools would facilitate adoption across agencies with varying cultural contexts.

RECOMMENDED RESEARCH FUNDING AND RESEARCH PERIOD:

[To be completed]

PROBLEM STATEMENT AUTHOR(S):

[To be completed]

POTENTIAL PANEL MEMBERS:

[To be completed]

PERSON SUBMITTING THE PROBLEM STATEMENT:

[To be completed]

10. Improving State DOT Agility in a Changing Transportation Environment

PROBLEM STATEMENT TITLE

Improving State DOT Agility in a Changing Transportation Environment

KEYWORDS / TERMS

- Organizational agility
- Transportation performance management
- Adaptive management
- Innovation management
- State DOT governance
- Organizational resilience

RESEARCH OBJECTIVE

The objective of this research is to develop practical guidance to help state DOTs improve organizational agility—the ability to sense change, respond effectively, and adapt strategies, processes, and investments in a rapidly evolving transportation environment. The research will focus on identifying organizational practices, decision frameworks, and management approaches that enable DOTs to respond more quickly and effectively to emerging technologies, policy shifts, funding uncertainty, and changing public expectations.

Expected products include:

(1) a practitioner-oriented guide describing core dimensions of organizational agility relevant to state DOTs;
(2) a framework linking agility to performance management, risk management, and decision-making processes;
(3) diagnostic tools to help agencies assess their current level of agility; and
(4) implementation guidance and case examples illustrating strategies for strengthening agility within existing organizational and governance constraints.

Major research tasks are expected to include:

(a) review of literature on organizational agility, adaptive management, and innovation in public-sector and transportation contexts;
(b) assessment of state DOT experiences responding to recent disruptions and change;
(c) identification of agility-enabling practices and barriers;
(d) development of practical frameworks and tools; and
(e) validation through practitioner engagement.

URGENCY AND POTENTIAL BENEFITS

State DOTs are increasingly operating in an environment characterized by accelerated change, including technological innovation, evolving federal and state policy, workforce transitions, weather-related disruptions, and increasing stakeholder expectations. Many agencies report difficulty adapting established processes, organizational structures, and decision frameworks to respond effectively to these changes.

This research is important to a majority of state DOTs because organizational agility is critical to maintaining performance, relevance, and public trust. Benefits include improved responsiveness to emerging issues, more adaptive investment strategies, stronger alignment between strategy and execution, and enhanced ability to innovate while managing risk. Without this research, agencies may continue to rely on rigid processes that limit their ability to adapt in a timely and effective manner.

BACKGROUND INFORMATION AND NEED FOR RESEARCH

State DOTs have invested heavily in performance management, asset management, and risk management to improve accountability and decision making. However, these systems are often designed for stability and predictability rather than rapid adaptation. Recent events—including extreme weather, supply chain disruptions, and rapid technological change—have highlighted the need for more agile organizational approaches.

While agility is widely discussed in private-sector and technology contexts, limited guidance exists on how public-sector transportation agencies can operationalize agility within regulatory, fiscal, and governance constraints. Targeted research is needed to translate agility concepts into practical strategies suitable for state DOTs.

LITERATURE SEARCH SUMMARY

A review of relevant literature indicates growing interest in organizational agility, adaptive management, and innovation in the public sector, but limited transportation-specific guidance focused on state DOT implementation.

Transportation management guidance, including **FHWA's Transportation Performance Management Guidebook**, emphasizes structured processes for planning, target setting, and reporting. While these processes support accountability, they provide limited guidance on how agencies can adapt performance frameworks in response to rapidly changing conditions.

Several NCHRP studies identify challenges related to organizational adaptability. **NCHRP 20-44(40) (Implementing the Agency Capability Building Framework to Activate Organizational Change)** highlights the importance of leadership, culture, and capabilities in enabling change but does not focus specifically on agility or adaptive decision making. The currently active **NCHRP 23-37 (Integrating Performance Management, Risk Management, and Process Improvement: A Guide)** is focusing on integration across management disciplines but remains oriented toward process alignment rather than rapid adaptation.

Research on innovation and emerging technologies, including **NCHRP 23-15 (Guidance on Risks Related to Emerging and Disruptive Transportation Technologies)**, underscores the pace of change facing transportation agencies and the difficulty of adapting traditional decision frameworks. Broader public-sector literature on adaptive governance and learning organizations consistently finds that agility depends on decentralized decision authority, feedback loops, and leadership support for experimentation.

Despite these insights, the literature lacks a consolidated, implementation-ready resource that translates agility concepts into practical tools and strategies for state DOTs operating within public-sector constraints. This proposed research addresses that gap by synthesizing transportation, public-sector management, and organizational change research and translating it into actionable guidance to improve state DOT agility.

LINK TO 2021–2026 AASHTO STRATEGIC PLAN

This research supports the AASHTO Strategic Plan by strengthening organizational effectiveness, enabling data-driven and adaptive decision making, and helping agencies respond to change while delivering safe, reliable, and resilient transportation systems.

IMPLEMENTATION CONSIDERATIONS AND SUPPORTERS

State DOTs can implement the research results by using the guidance and diagnostic tools to assess agility, inform leadership development, and adapt performance, risk, and planning processes. Likely users include executive leadership, organizational excellence teams, planning and performance offices, and innovation units.

Implementation can be supported through AASHTO committee activities (CPBM, OE), FHWA peer exchanges, leadership forums, and training workshops. Case examples and self-assessment tools would support adoption across agencies with diverse contexts and constraints.

RECOMMENDED RESEARCH FUNDING AND RESEARCH PERIOD:

[To be completed]

PROBLEM STATEMENT AUTHOR(S):

[To be completed]

POTENTIAL PANEL MEMBERS:

[To be completed]

PERSON SUBMITTING THE PROBLEM STATEMENT:

[To be completed]

11. Building Organizational Capacity for Data-Driven Decision Making in State DOTs

PROBLEM STATEMENT TITLE

Building Organizational Capacity for Data-Driven Decision Making in State DOTs

KEYWORDS / TERMS

- Data-driven decision making
- Organizational capacity
- Performance-based management
- Data governance
- Workforce development
- State DOT effectiveness

RESEARCH OBJECTIVE

The objective of this research is to develop practical, implementation-ready guidance to help state DOTs build and sustain organizational capacity for data-driven decision making. The research will focus on identifying the skills, structures, governance practices, and cultural conditions required for effective use of data and analytics in planning, asset management, performance management, and investment decisions.

Expected products include:

(1) a practitioner-oriented guide describing core components of organizational capacity for data-driven decision making;
(2) a capacity framework linking people, processes, data, and technology to decision outcomes;
(3) diagnostic tools to help agencies assess current capacity and identify gaps; and
(4) implementation guidance and case examples illustrating phased capacity-building strategies.

Major research tasks are expected to include:

(a) review of existing research on data-driven decision making and organizational capability;
(b) assessment of state DOT practices, challenges, and maturity levels;
(c) identification of critical success factors and common barriers;
(d) development of practical frameworks and tools; and
(e) validation through practitioner engagement.

URGENCY AND POTENTIAL BENEFITS

State DOTs have made significant investments in data systems, analytics, and performance management tools. However, many agencies report difficulty translating data into consistent, timely, and trusted decisions. Challenges often stem not from data availability, but from gaps in organizational capacity, including workforce skills, governance, incentives, and decision processes.

This research is important to a majority of state DOTs because data-driven decision making is central to performance-based management, accountability, and public trust. Benefits include more consistent and transparent decisions, improved use of analytical tools, stronger alignment between data and policy objectives, and better return on investment in data systems. Without this research, agencies may continue to underutilize data assets and struggle to institutionalize data-driven practices.

BACKGROUND INFORMATION AND NEED FOR RESEARCH

Federal requirements and AASHTO guidance have encouraged state DOTs to adopt performance-based management and evidence-based planning. As a result, agencies now manage increasingly complex data environments. However, experience shows that technical systems alone do not ensure effective data use.

Organizational capacity—including skills, governance, leadership support, and culture—plays a decisive role in whether data informs decisions. While DOTs recognize this challenge, limited guidance exists on how to systematically build and sustain capacity for data-driven decision making across the organization. Targeted research is needed to translate existing knowledge into actionable, DOT-specific capacity-building guidance.

LITERATURE SEARCH SUMMARY

A review of relevant literature indicates substantial research on transportation performance management, data systems, and analytics, but comparatively limited focus on organizational capacity-building for data-driven decision making in state DOTs.

Guidance such as **FHWA's Transportation Performance Management Guidebook** and **AASHTO's Transportation Asset Management Guide** emphasize analytical rigor, data quality, and reporting requirements. While these resources describe what data should be used, they provide limited guidance on how organizations develop the skills, governance, and processes needed to consistently use data in decision making.

Several NCHRP studies highlight organizational capability challenges. **NCHRP 20-44(40) (Implementing the Agency Capability Building Framework to Activate Organizational Change)** identifies people, processes, culture, and leadership as key enablers of performance-based management, but does not focus specifically on data-driven decision making. The currently active **NCHRP 23-37 (Integrating Performance Management, Risk Management, and Process Improvement: A Guide)** is emphasizing integration across management disciplines, yet less focused on practical tools for building data literacy and analytical capacity.

Research on data governance and information systems, including **NCHRP 08-115 (Guidebook for Data and Information Systems for Transportation Asset Management)**, addresses data stewardship, system architecture, and governance structures. However, this work focuses primarily on technical and managerial aspects of data systems rather than workforce capability, decision processes, or organizational incentives.

Broader public-sector and transportation management literature consistently finds that data-driven decision making depends on leadership commitment, data literacy, trust in data, and alignment between analysis and decision authority. Despite this recognition, the literature lacks a consolidated, implementation-ready resource that helps state DOTs assess and build organizational capacity for data-driven decision making.

This proposed research addresses that gap by synthesizing transportation, organizational capability, and data governance research and translating it into practical guidance and tools tailored to state DOT contexts.

LINK TO 2021–2026 AASHTO STRATEGIC PLAN

This research supports the AASHTO Strategic Plan by strengthening organizational effectiveness, advancing data-driven decision making, and enabling agencies to deliver transparent, accountable, and high-performing transportation systems.

IMPLEMENTATION CONSIDERATIONS AND SUPPORTERS

State DOTs can implement the research results by using the guidance and diagnostic tools to inform workforce development, data governance, performance management, and leadership practices. Likely users include executive leadership, performance management offices, data governance teams, and human resources staff.

Implementation can be supported through AASHTO committee activities (CPBM, OE), FHWA peer exchanges, training programs, and leadership development initiatives. Modular tools and phased guidance would facilitate adoption across agencies with varying levels of maturity.

RECOMMENDED RESEARCH FUNDING AND RESEARCH PERIOD:

[To be completed]

PROBLEM STATEMENT AUTHOR(S):

[To be completed]

POTENTIAL PANEL MEMBERS:

[To be completed]

PERSON SUBMITTING THE PROBLEM STATEMENT:

[To be completed]

Appendix: Research Projects Related to CPBM's Scope

Projects are listed in reverse chronological order by end date. End years for pending projects were estimated based on fiscal year and duration.

Project	CPBM Area(s)	Timing Start	End	Funding	Program	Research Question	Tags
NCHRP 20-24(153) Roadmap to Addressing State DOT Workforce Planning and Development Needs	OE	Pending	2028	$400,000	NCHRP	What research is needed to address STA workforce planning and development needs?	Workforce
NCHRP 23-46 AI Integration and Workforce Transformation for State DOTs	OE	Pending	2028	$500,000	NCHRP	What is needed to help state and local transportation agencies improve workforce capacity to make use of AI technologies?	AI, Workforce
NCHRP 23-42 Scoping Study to Identify Curriculum Development Needs for Workforce Development in Transportation Asset Management (CY2023)	TAM, OE	Pending	2027	$250,000	NCHRP	What are the expected competencies and skills for TAM professionals, and associated curriculum development needs	Workforce
NCHRP 23-37 Integrating Performance Management, Risk Management, and Process Improvement: A Guide	RM, OE	Oct-24	Mar-27	$400,000	NCHRP	How to integrate the disciplines of performance management, risk management, and process improvement	TAM/RM/P&P Process Integration

Project	CPBM Area(s)	Timing Start	End	Funding	Program	Research Question	Tags
NCHRP 23-36 Developing a Knowledge Capture Toolkit	OE	Jun-24	Jun-26	$225,000	NCHRP	How to capture critical knowledge of employees to sustain organizational performance and productivity	Workforce, Knowledge Management
NCHRP 20-102(20) Preparing the Transportation Workforce for the Deployment of Emerging Technology	OE	Oct-23	Oct-25	$300,000	NCHRP	How can STAs recruit, hire, develop, and retain a workforce proficient in developing and deploying complex transportation technology and systems?	Workforce, Emerging Technologies
NCHRP 08-127 Impact of New Disruptive Technologies on the Performance of DOTs	OE	Sep-25	Aug-25	$ 250,000	NCHRP	How to understand, predict, plan for, and adapt to the potential impacts of emerging disruptive technologies?	Emerging Technologies
NCHRP 20-44(40) Implementing the Agency Capability Building Framework to Activate Organizational Change	OE	Jul-23	Jul-25	$300,000	NCHRP	How can transportation agencies better respond and adapt to changes in technology, workforce, legislation and funding, roles, and public expectations?	Workforce, Emerging Technologies
NCHRP 23-17 Assessing and Measuring the Business Value of Knowledge Management	OE	Jun-23	Jun-25	$550,000	NCHRP	How can the effectiveness of knowledge management be assessed and improved?	Workforce, Knowledge Management

Project	CPBM Area(s)	Timing Start	End	Funding	Program	Research Question	Tags
NCHRP 23-15 Guidance on Risks Related to Emerging and Disruptive Transportation Technologies	OE	Oct-25	Jun-25	$500,000	NCHRP	What risks are posed by emerging technologies of CAVs, electric vehicles, Mobility on Demand/ Mobility as a Service, and Advanced Air Mobility, and how can these risks be addressed?	Emerging Technologies
NCHRP 08-151 Risk Management at State DOTs: Building Momentum and Sustaining the Practice	RM, OE	Jun-22	Jun-24	$350,000	NCHRP	How to how to implement and sustain the use of formal risk management at STAs?	Risk Management
NCHRP Synthesis 20-05/Topic 54-17 State DOT Innovation Programs and Practices	OE	Feb-23	May-24	$55,000	NCHRP Synthesis	What are current state DOT innovation programs and initiatives, areas of focus on the innovation spectrum, and associated activities?	Innovation
NCHRP 02-25 Attracting, Retaining, and Developing the 2030 Transportation Workforce: Design, Construction, and Maintenance (NCHRP Research Report 1008)	OE	May-19	Apr-22	$ 700,000	NCHRP	How to facilitate the development and maintenance of a high quality workforce in transportation design, construction, and maintenance	Workforce
NCHRP 08-122 Metropolitan Planning Organizations: Strategies for Future Success	OE	Jun-19	Sep-21	$400,000	NCHRP	What strategies can MPOs use to adapt to changing technologies, economics, culture, and demographics?	MPOs, Innovation, Adaptation

Project	CPBM Area(s)	Timing Start	End	Funding	Program	Research Question	Tags
NCHRP Project 20-68A, Scan 18-02 Leading Practices in Modifying Agency Organization and Management to Accommodate Changing Transportation System Technologies	OE		Jan-20		NCHRP Domestic Scan	How are DOTs are changing their organizations, institutional arrangements, and management practices to improve transportation system performance through adoption of new technologies?	Emerging Technologies
NCHRP 20-24(095) Ensuring Essential Capability for the Future Transportation Agency	OE	Oct-16	Dec-19	$550,000	NCHRP	How can transportation agencies develop and maintain essential capabilities in the face of emerging issues and societal and technological trends?	Workforce, Adaptation, Knowledge Management
NCHRP 20-108 Guide to Sustaining a Culture of Innovation within Departments of Transportation	OE	Jul-16	Jun-18	$250,000	NCHRP	How can transportation agencies encourage and sustain a culture of innovation?	Innovation