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COLLABORATIVE PUBLIC MANAGEMENT IN UNDERGROUND WATER BANK PROJECTS: A MULTI-THEORETICAL ANALYSIS OF LOCAL GOVERNMENT INNOVATION IN THAILAND

GESTIÓN PÚBLICA COLABORATIVA EN PROYECTOS DE BANCOS DE AGUA SUBTERRÁNEA: UN ANÁLISIS MULTI-TEÓRICO DE LA INNOVACIÓN DEL GOBIERNO LOCAL EN TAILANDIA

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Abstract
This study examines collaborative public management (CPM) in underground water bank projects across three Thai local governments, addressing gaps in CPM research that predominantly focuses on developed countries. Using qualitative methodology with 32 in-depth interviews across five stakeholder groups local government officials (9), government agency representatives (9), academic experts (3), community leaders and citizens (9), and civil society organizations (2) the research investigates how CPM operates in resource-constrained environments. The study explores three key questions: how CPM dimensions manifest in resource-limited contexts, whether technology enhances collaborative governance relationships, and what mechanisms enable knowledge integration in environmental management. Findings reveal that effective CPM requires hybrid leadership combining transformational and network orchestration capabilities, technology-enhanced coordination that builds upon rather than replaces existing social capital, and institutional layering that creates new arrangements while respecting traditional structures. The research contributes eight theoretical advances to collaborative governance understanding, demonstrating that CPM dimensions manifest differently in developing countries and require systematic adaptation rather than direct replication of developed country models. Results highlight the importance of context-sensitive CPM approaches

Resumo
Este estudio examina la gestión pública colaborativa (GPC) en proyectos de bancos de agua subterránea en tres gobiernos locales tailandeses, abordando vacíos en la investigación de GPC que se enfoca predominantemente en países desarrollados. Utilizando metodología cualitativa con 32 entrevistas en profundidad entre cinco grupos de partes interesadas funcionarios de gobierno local (9), representantes de agencias gubernamentales (9), expertos académicos (3), líderes comunitarios y ciudadanos (9), y organizaciones de la sociedad civil (2)la investigación examina cómo opera la GPC en entornos con recursos limitados. El estudio explora tres preguntas clave: cómo se manifiestan las dimensiones de GPC en contextos con recursos limitados, si la tecnología mejora las relaciones de gobernanza colaborativa, y qué mecanismos permiten la integración del conocimiento en la gestión ambiental. Los hallazgos revelan que la GPC efectiva requiere liderazgo híbrido que combine capacidades transformacionales y de orquestación de redes, coordinación mejorada por tecnología que se construye sobre el capital social existente en lugar de reemplazarlo, y estratificación institucional que crea nuevos arreglos mientras respeta las estructuras tradicionales. La investigación contribuye con ocho avances teóricos al entendimiento de la gobernanza colaborativa, demostrando que las dimensiones de GPC se manifiestan de manera diferente en países en desarrollo y requieren adaptación sistemática en

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and advance knowledge of technology-social capital integration in developing country environmental governance, particularly in water resource management.

Keywords: Collaborative Public Management. CPM, Local Government. Environmental Governance. Water Management. Developing Countries.

lugar de replicación directa de modelos de países desarrollados. Los resultados destacan la importancia de enfoques de GPC sensibles al contexto y avanzan el conocimiento de la integración tecnología-capital social en la gobernanza ambiental de países en desarrollo, particularmente en la gestión de recursos hídricos.

Palavras-chave: *Gestión Pública Colaborativa. GPC. Gobierno Local. Gobernanza Ambiental. Gestión del Agua. Países en Desarrollo.*

1 INTRODUCTION

Environmental challenges of the 21st century call for governance beyond traditional bureaucratic boundaries (O'Leary & Bingham, 2009); yet most theoretical underpinnings are based on experiences from developed countries because the developmental needs of developing countries might not have been fully factored in. At a more local level, some Thai governments now collaborate for water scarcity and flooding by an organization called the Underground Water Bank Project, involving several governmental bodies (Chuenchum, 2024). While these projects are related to principles of collaborative governance that have received considerable attention within contemporary public administration scholarship (Bryson et al., 2015), the efforts represent a considerable break from traditional top-down water management approaches and take place in institutional, resource, and social contexts far removed from where most Collaborative Public Management (CPM) theory has been developed and tested.

The answer to the complexity of water management challenges lies in multi-stakeholder collaborations rather than single-organization solutions (Ansell & Gash, 2008). Still, the conventional hierarchical methods of water governance have failed to cater to the complex social and environmental dimensions related to water security that require coordination across organizational as well as sectoral boundaries (Pahl-Wostl, 2019). The case of underground water bank projects provides an example that illustrates the need for collaboration, as it demands integration of geological insight, community awareness and understanding, institutional capacity, and technological capability between organizational boundaries but we have a limited theoretical understanding of integration taking place in developing country settings. While CPM (McGuire, 2006) has emerged as a key theoretical approach to understanding how public managers engage with multiple

stakeholders in complex environments to create public value, much CPM work is focused on the developed country context, and relatively few empirical studies of collaborative governance in developing countries exist these are contexts where institutional capacity, social capital, and digital resources are quite different from those that have given rise to our current understanding of challenges facing management in complex multi-stakeholder environments across sectors.

This gap is particularly visible in the field of environmental governance, for many years recognized as one in which collaborative processes are crucial to addressing complexity and sustainability (Emerson et al., 2012), but without a clearly defined explanation of how collaboration works well within developing country context is less available and more needed in both theory and empirical terms. Theoretical underpinnings of CPM, although strong in describing how collaboration on resource-based institutional environments may behave, could need a substantial transformation to reflect the practices of highly resource-scarce environments and weak formal institutions where developing country contexts can no longer accommodate the social capital required for success (Evans & Heller, 2015). In order to advance the theoretical knowledge of, and practical capacity for, implementing collaborative governance as an appropriate response to many of the most significant environmental challenges facing a diversity of global contexts, it is essential to learn more about these adaptations.

This study addresses these gaps by examining CPM implementation in underground water bank projects across three Thai local government areas, providing empirical insights into how collaborative governance dynamics operate in developing country contexts while contributing to broader theoretical understanding of multi-stakeholder environmental management. The research specifically investigates three interconnected theoretical gaps: how the four CPM dimensions manifest differently in resource-constrained environments compared to developed country applications, whether digital technologies enhance or replace social relationships in collaborative governance arrangements, and what mechanisms enable systematic integration of diverse knowledge types including scientific expertise, traditional ecological knowledge, and local experiential knowledge in multi-stakeholder environmental decision-making processes.

2 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

It argues that the theoretical underpinnings for how collaborative public management is employed in developing and likely highly contested institutional theater may not only need to be considered with but also integrated into CPM theory. This integrated approach starts by scrutinizing the restrictions of established CPM theory when used in settings other than those for which it was originally developed in Western countries and then systemically constructs a complete model that attends to these theoretical gaps by pragmatically merging disparate theoretical views.

2.1 Collaborative Public Management (CPM) theory: foundations and contextual limitations

The core ideas of CPM take issue with traditional hierarchical public administration and the New Public Management's market-oriented approaches (McGuire, 2006; Agranoff & McGuire, 2003), thus identifying its emergence as a paradigm shift in governance towards network involvement of all partners to resolve complex issues. According to McGuire (2006), CPM is a four-dimensional policy practice focused on:

- Activating stakeholder networks,
- Framing common problems and solutions,
- Mobilizing resources across organizations, and
- Building consensus around broad interests over time.

While this theory has demonstrated considerable explanatory power for the collaborative dynamics across contexts in developed countries, with strong institutional frameworks, ample resources, and an existing social capital base to work from there is little direct theoretical or empirical evidence available in relation to developing country settings where these conditions exist only fleetingly, if at all. Newer research also indicates that public governance ties international collaboration to intricate institutional dynamics and collective action that go beyond classical organizational boundaries (Tarasenko et al., 2024), and government performance in improving governance depends on systematic application related to institutional effectiveness for the government entities (Sriram et al., 2024).

The theoretical background of CPM is based on network theory, collaborative governance, as well as new public governance streams of scholarship, which stress the shared authority, joint problem-solving, and network coordination rather than hierarchical control (Bryson et al., 2006). Nevertheless, these theoretical influences make assumptions about institutional capacity, the availability of resources, and social capital patterns that may not be transferable in developing country contexts where formal institutions are weaker, resources are more constrained, and social capital configurations differ from those in developed countries. This limitation directly reflects one of the first theoretical gaps: that existing CPM theory does not provide adequate analytical leverage to specify the ways in which these four dimensions take shape differently in resource-constrained environments, nor how processes of collaborative governance might need to be adapted to function effectively within developing country contexts.

2.2 Technology-social capital integration in collaborative governance

The Digital Era Governance theory similarly focuses on how technological capabilities might provide the necessary tools and mechanisms to improve communication, coordination, and information sharing across organizational boundaries (Dunleavy et al., 2006) by stressing digital integration, needs-based holism, and data-driven decision making. That said, Digital Era Governance theory is a body of thought that largely advocates technical solutions without due attention to the intersection between digital innovations and established social capital haunches upon which trusting partnerships are based. The significance of this limitation is particularly relevant in the contexts of developing countries, where social capital patterns may differ from those in developed countries, and technological adoption may be more closely affiliated with existing social relationships that are enabled by trust networks.

Social Capital theory offers important underpinning to understanding the social relationships that can inculcate trust, networks, and common norms supporting cooperation among varied stakeholders (Lin, 2001; Putnam, 1993). The fusion of bonding, bridging, and linking dimensions of social capital generates the basis for interactive relationships; however, the intersection between social capital and digital technologies in cooperative governance settings is still theoretically underdeveloped. This applies to the second theoretical gap: the current theory about whether digital

technologies supplement or supplant social relationships in collaborative governance and how success in technology adoption is predicated upon developed stakeholder networks, rather than just technical capacity

2.3 Multi-modal knowledge integration in environmental governance

Theoretical orientation towards Knowledge Management in Public Administration addresses how various types of knowledge can be created, transferred, stored, and applied within the organizational context (Sandhu et al., 2011; Wiig, 2002), but its adaptation to multi-stakeholder, cross-sector collaborative frameworks is less sophisticated. Environmental governance necessitates the integration of scientific, traditional ecological, and local experiential knowledge to gain a holistic understanding of environmental issues and responses, yet much of our current knowledge management theory is rooted in an organizational rather than collaborative context. This limitation is a hindrance to exploring ways in which diverse knowledge can be systematically integrated into (and not only added to) collaborative decision-making processes, treating different forms of validity and relevance as on a par.

To bring different ways of knowing and types of information together under the umbrella of collaboration, this is an ongoing challenge that requires processes allowing multiple areas of expertise to enlighten a shared understanding while still being accurate and acknowledging different epistemological bases. The combination often involves the presence of skilled intermediaries who are able to translate across different knowledge domains and communication styles, whilst at the same time preserving what each kind of knowledge brings to collaborative problem-solving. The third theoretical "gap" stems from this point: existing knowledge management theory does not have a systematic way to integrate different knowledge types in many-person environmental governance arrangements, or any understanding of how such integration may be turned into collaborative governance strategy rather than simply an organizational process capability.

2.4 Theoretical integration framework for developing country CPM

This is by integrating the tenets of CPM theory with relevant supporting theories to offer a holistic framework for understanding collaborative governance within

developing country environmental management contexts, which addresses the identified theoretical gaps and builds upon existing theoretical strengths. At the three interlinked levels, this integration can help explain collaborative governance dynamics in resource-constrained settings. At the micro-level, transformational leadership and social capital theories outline how individual leaders leverage networks and inspire stakeholder involvement in resource-constrained or institutionally restricted contexts. At the organization level, inter-organizational collaboration, institutional theory, and knowledge management theory basically explain how works are done across respective organizations' cultural or sectoral boundaries in the context of different institutions sharing knowledge and resources. At the system level, collaborative governance theory, New Public Governance theory, Digital Era Governance theory, and conflict theory carry the conceptual load of how governance networks in a system can handle complex collaboration with appropriate technology support (and conflict resolution mechanisms) tuned to local cases.

This is the theoretical integration that allows us to address the three research questions, which relate to varying degrees to these gaps:

1. How do the four CPM dimensions differentiate across developed vs. developing country contexts where institutional capacity, resource availability, and patterns of social capital vest very differently?
2. To what extent do digital technologies support rather than substitute the collaborative relationships inscribed in governance arrangements by their relations with existing social capital?
3. How can the integration of different types of knowledge in decision-making, which include scientific expertise, traditional ecological knowledge, and local experiential knowledge, be produced systematically between communities?

We use these questions to direct our empirical inquiry and as a framework for theoretical advancements in the study of collaborative governance in developing country settings.

3 RESEARCH DESIGN AND METHODOLOGY

Using a qualitative approach to research, the study aims at examining the interactions of collaborative public management in naturally occurring environments by

grounding results with systematic analyses of empirical cases. Our research design then embeds both multi-method data collection and analysis approaches, so as to be able to theoretically generalize and compare the dynamics of collaborative governance processes across different policy sectors while not losing the necessary epistemic rigor for a theory-building exercise in public administration.

3.1 Case selection and justification

Through theoretical sampling to maximize variation across key contextual dimensions but comparability in collaborative objectives, we selected three local government areas in Thailand engaged with implementing underground water bank projects to participate in the study. Examples of this purposive sampling strategy on how various mixes of institutional, resource, and social capital configurations impact CPM implementation include:

Case 1: Tambon Administrative Organization (TAO) Kao Kham, Udon Thani Province (Name Yuen District), urban context with relatively strong local institutional capacity and diversified resource access examining CPM dynamics in more resource-rich environments.

Case 2: TAO Ban Phueng, Mueang District, Nakhon Phanom Province, rural case. This case focuses on a policy context where government institutional capacity is limited but traditional social capital remains strong; an examination of how traditional social capital compensates for the shortcomings of formal institutions.

Case 3: Sub-district municipality Nong Ma Mong, Chai Nat Province. It illustrates the mixed institutional and resource characteristics of many peri-urban areas to examine how CPM deals with changing environments.

3.2 Participant selection and stakeholder mapping

For the data collection, we selected 32 key informants systematically in each of three different study areas to cover five different stakeholder groups according to their participation in collaborative governance:

1. Primary Coordinators (elected civilians) and those responsible for implementing plans (technicians, officers).

2. Local Government Officials: Mayors, deputy mayors, farmer agriculture officer, civil engineer, community development specialists. The Local Government Voice Group was made up of three study sites to ensure capture of variation in local government approaches.
3. Government Agency Representatives (n=9): Official representatives of the Provincial Local Administration, Ground Water resources, and Natural Resources and Environmental departments as technical providers, regulators, and cross-provincial government coordinators among the three provinces.
4. Academic Experts (n=3): University researchers and international technical advisors providing scientific knowledge, research capacity, and external validation in co-operative processes.
5. Community Leaders and Citizens (n=9): Village headmen, farmers, teachers, local knowledge holders, merchants, religious leaders, and students representing a variety of community perspectives and local knowledge in rural mofussil towns/peri-urban contexts.
6. Civil Society Organizations (n=2): Representatives from Foundations and NGOs helping resource mobilization, capacity building in collaborative networks.

This broader stakeholder mapping assures representation of the main collaborative governance actors, allowing assessment of how different roles and perspectives contribute to CPM effectiveness in different contexts.

3.3 Data collection procedures

3.3.1 In-depth interviews

Methods: Primary data collection: 32 semi-structured interviews, November 2023 to March 2024. Following the four-dimensional CPM framework, interview protocols were constructed to illustrate how theoretical constructs were expressed at each dimension of activation, framing, mobilizing, synthesizing. Interviews, which ranged in time from 60 to 90 minutes, were conducted in Thai, digitally recorded with the permission of participants, transcribed using verbatim transcripts, and translated into English for analysis.

3.3.2 Observation with participation and documental analysis

Interview data were complemented by systematic observation of collaborative meetings, project implementation activities, and community engagement events to provide dynamic views of collaboration. It included field notes that recorded how stakeholders interacted, made decisions, and so on. We systematically reviewed relevant government reports, project documentation, meeting minutes, and policy documents as well as any memoranda of understanding between institutions to capture formalized collaborative arrangements and their progression over time.

3.4 Data analysis strategy

For this analysis, we used established qualitative analysis methods that have a lot of experience and precedent in Public Administration theory-building research. The CPM framework and associated theoretical concepts provided direction for coding interview transcripts, observation notes, and document excerpts, but we also heeded emergent themes that could suggest avenues of inquiry leading to new theory. The first-round coding focused on the representativeness of theory, emphasizing when empirical outcomes supported or departed from theorized predictions and how theoretical constructs were enacted under the variegated conditions in which they operate within developing countries versus their native contexts.

Thematic analysis unveiled patterns in the data to identify common dynamics, unexpected phenomena, and situational factors that affected collaboration effectiveness. A cross-case analysis was employed to compare collaborative approaches, processes, and outcomes in the three study sites informing how various institutional, resource, and social contexts shaped the implementation of CPM in order to identify common patterns that might yield broader theoretical contributions. Theoretical synthesis was combined with empirical results and prior literature to underscore contributions toward CPM theory development and any underpinning theoretical framework, considering how the empirical findings designed to address the existing research gaps further tell our understanding of collaborative governance in developing country contexts.

3.5 Research quality and ethical considerations

3.5.1 Validation strategies

We believe a confluence of multiple data sources (interviews, observations, as well as documents) and stakeholder perspectives diligently triangulate to complement the study, further bolstering its validity and reliability. We shared key results with selected participants for validation and presented our preliminary findings at academic conferences.

3.5.2 Ethical compliance

Research was approved by Khon Kaen University Ethics Committee (IRB: IRB00012791), Reference: HE663336, approved November 6, 2023) and undertaken within the context of the principles outlined in the Belmont Report and Good Clinical Practice. Participants were fully informed and consented to partake in the study, in accordance with principles of anonymity and confidentiality. Proper safety measures were also observed, and the sensitive information was safely managed to keep participants safe from exposure and ensure consistent ethics.

4 RESULTS AND FINDINGS

Findings are organized around the three research questions that address identified theoretical gaps. Each section integrates evidence from across the three case study areas to build a comprehensive understanding of collaborative governance dynamics.

4.1 CPM dimensional manifestations in resource-constrained contexts

Examining the manner in which CPM dimensions evolve in such developing country contexts will show that these modifications are not merely targeted to transform substitutable resources, but that they have far-reaching effects on collaborative strategies and relational behavior. The Activation dimension suggested successful collaborative initiation involved local government leaders as institutional entrepreneurs who sought to

activate existing community networks and/or purposefully established new relationships with external partners, complementing their own resource bases and know-how. While in developed countries, formal processes of stakeholder identification and engagement characterize the activation process, informal relationship networks and traditional leadership structures ensure legitimacy and compliance with community mobilization. More than a matter of formal authority, local government executives appeared to have been the main catalysts of change by linking old community structures with new institutional demands while maintaining legibility across different constituencies and stakeholder groups.

Findings of the Framing dimension evinced an impressive set of problem-centered strategies that established linkages, multi-level dialogues, and learning processes across individualized views on water security as unique to ensure local environmental sustainability while at the same time blending scientific knowledge with traditional ecological knowledge and local practices. What we found was that, while the technical framings common in developed country contexts provide useful ways of organizing information, successful framing within these Thai cases had to rely on a significant level of cultural translation, respect for different agendas and understandings of environmental problems, and shared commitment to collaborative solution-seeking. It took circle-by-circle conversations for community ownership of shared frameworks to emerge, through a process that has passed many checkpoints from technical dissemination all the way to cultural penetration, not only getting stakeholders to see their own worries in the collective concerns but also communicating clearly how everything done collaboratively scales capacities beyond what any individual organization could achieve independently.

The Mobilizing dimension showcased inventive multi-source financing models that melded government funds, academic know-how, community sweat equity, and private sector collaboration in ways that were value-adding at scale while also developing by design within the local talent to ultimately deliver organically. Mobilizing resources in the Thai cases meant seeing that stakeholders could provide different sorts of resources (economic capital, human capital, social capital, and knowledge), and good mobilization depended on being able to identify their various inputs rather than assuming they were like money. The input from the community was not just in labor but also in the social, cultural, and local ways of knowing, which contributed to the successful implementation of the project. Academic institutions were able to provide domain expertise and to

generate research opportunities; government agencies met mandates by leveraging local implementation capacity; communities advanced water security issues through development while enhancing local technical understanding.

The highlight of the "Syntropic" dimension was the crucial importance of technology-enhanced coordination, combined with good adaptability and conflict resolution mechanisms, based on but not replacing traditional social capital. Moreover, using digital platforms such as Internet of Things (IoT) sensors for groundwater monitoring and handheld communications systems enhances the efficiency of coordination and at the same time provides clear information which supports decision-making and cuts down on conflicts over resources.

However, successful technological adoption requires soil fertilizer application: organizations should embed digital tools within their existing relationship networks and not use technology to circumvent social processes. The polarity of data-driven approaches offers neutral reasons for resolving technical disputes; and the polarity of relationship-based approaches deals with value conflicts, maintaining long-term cooperative commitments. Making collaborative relationships institutional demanded that formal structures be created which recognized informal relationship patterns while also providing for this adaptation and evolution of form over time. The analysis reveals systematic differences in how CPM dimensions operate across developed and developing country contexts. Table 1 summarizes the key adaptations required for effective collaborative governance in resource-constrained environments

Table 1

CPM Dimensional Adaptations in Resource-Constrained Contexts

CPM Dimension	Developed Country Approach	Resource-Constrained Adaptation	Key Mechanisms
Activation	Formal stakeholder identification	Existing social networks and traditional leadership	Community gatekeepers, informal relationship building
Framing	Technical problem definitions	Cultural translation with traditional knowledge	Multi-epistemological dialogue, elder consultation
Mobilizing	Financial resource pooling	Creative resource combinations	Volunteer labor, in-kind contributions, knowledge sharing
Synthesizing	Formal institutional coordination	Technology-enhanced informal relationships	Digital tools + face-to-face meetings, hybrid coordination

4.2 Technology-social capital integration dynamics

Analysis of the way in which digital technologies and social capital interact in respect of collaborative governance arrangements indicates that technology adoption is best seen as complementing rather than substituting existing social relationships, with successful adoption being critically dependent upon pre-existing social capital. The cases from Thailand illustrated that effective digital governance projects need to leverage existing ecosystems of trust and communication, rather than trying to build entirely new technological connections. The collaborative decision-making tool and IoT sensors for groundwater monitoring were dependent on community trust in the organizations installing and interpreting the technology as much as it was on its technical sophistication to be adopted both at nuanced levels of use and widespread acceptance. It was therefore still face-to-face relationship-building activities that ensured collaboration, but via mobile communication systems across geographic distances.

The analysis illustrated how social capital was the cornerstone of digital technology adoption, acting as the necessary conduit and delivery mechanism for technology acquisition, training, and continued use across collaborative service processes. Communities characterized by the presence of bonding social capital were inclined to embrace monitoring technologies and participate in digital communication systems, whereas bridging social capital supported technology transfer between organizational and sectoral boundaries. The case studies demonstrated that social capital plays the linking role between community-level technology adoption and institutional systems and policy processes using technological information for decision-making support. Successfully integrating technology seemed not to diminish the significance of personal relationships but rather to require more intentional building, both in how one trusted system and with whom/how technological information would be utilized for collaborative decision-making.

Digital channels expanded possibilities for stakeholder engagement but were complicated by the need to ensure that digital divides and varying technological capacity among stakeholders were accounted for. Examples include online ‘pitch’ functions where the wider organization could provide input, but in-person meetings were still held for relationship building and eventually complex decision-making operations. Geographic

Information Systems (GIS) delivered spatial visualizations of water resources and project impacts that enabled communication between multiple knowledge systems but also necessitated translation and interpretation across them, which in turn were embedded within pre-existing social relationships among technical experts and community members. When used for collaborative engagements, data visualization tools aligned understanding of environmental information around common reference points.

4.3 Multi-modal knowledge integration mechanisms

The analysis of the processes whereby types of knowledge are synthesized in response to environmental management needs finds specific procedures that balance such a classification with shared understanding and coordinated decision-making. In Thailand, the cases involved complex ways of bringing together academic/scientific knowledge in the second and third approaches with traditional ecological knowledge from community elders, university affiliate practitioners combined with experiential knowledge in local government staff/community workers who understood local political and social dynamics. Rather than engaging unreasonable power in an effort to align scientific knowledge with local understandings, the integration of knowledge was realized by recognizing various types or degrees of validity and relevancy, utilizing skilled intermediaries who could translate between usages yet keep them accurate at the same time as respectful of their cultural context. The technical knowledge related to groundwater systems, hydrological processes, and engineering solutions provided the scientific expertise required for informed decisions regarding project design and modes of implementation.

Academic researchers provided technical as well as systematic process design and outcome evaluation knowledge. In the end, even what we thought was a sufficient scientific background could not provide us with the local insights into water use, community preferences, social dynamics, and cultural practices that were crucial to whether or not a project was successful. The data recorded by traditional ecological knowledge significantly helped to understand local environmental patterns, historical water availability, and seasonal variations, as well as traditional water management practices developed over generations of community interaction with their environment.

Experiential knowledge at the local level offered critical understanding of community social structures, how decisions are made, and political dynamics to make technical solutions acceptable and implementable within the context of collaboration. The knowledge ranged in scope from information about informal leadership networks and traditional conflict resolution mechanisms to community resource-sharing practices, expressions of local institutional capacity that affected the way collaborative projects could most effectively be conducted. This involved developing explicit ways of integrating these various types of knowledge and made room for collaboration so that expertise in different domains could contribute to a shared understanding yet also fostered respect for diverse epistemologies and evaluation criteria.

One illustrative subset of these mechanisms for knowledge integration included structured dialogue processes that brought representatives of different knowledge systems into interaction with one another in a careful process designed to highlight synergies and complementarities between, not just conflicts among, knowledges. Scientific experts participated in technical briefings to obtain complete information about specific research findings and interpretations that have implications for the local relevance and cultural specificity of their area. This sharing of indigenous knowledge, while at the same time learning some nitty-gritty technical intricacies of groundwater systems, was facilitated by our community mapping exercises. These exercises were instrumental in allowing community members to respond to questions about their water resources and how they used water, as well as changes that might have occurred in their environment. The workshop exercise allowed for mutual problem-solving as another way of allowing the new forms of knowledge to weigh in as contributing to the co-decisions; and simultaneously, it contributed to common respect among different stakeholder representatives for their own knowledge traditions.

4.4 Cross-case comparative analysis

Three study areas exhibit significant convergence in comparative analysis but differ in precisely how this is accomplished. Depending on their local institutional, resource, and social context, the mechanisms involved also vary. This allows for a better understanding of how different settings affect collaborative governance performance. In addition, it provides some determinants for guaranteeing the success of CPM adaptation

in developing countries. In all three cases, what they have in common is to deepen the characteristics of transformational leadership (suiting vision with network practice). However, how that leadership actually operated varied greatly given local political culture, institutional traditions, and social capital configurations. The urban context meant that a more formal institutional approach was allowed, while the rural context worked through traditional leadership structures and informal relationships.

The technology adoption patterns in each case varied widely, not just because of local resource availability but also due to pre-existing social capital and community technology innovation spirit. The urban case shows how complex digital governance tools emerged from intra- and inter-departmental applications, generating dashboards with real-time monitoring features as well as interactive social platforms for citizens. The rural cases make use of more basic communication technologies: simple extension radios or television sets often lie in striking contrast to the large-scale communication networks that now characterize today's countryside. Yet, in all successful examples, technological capacities came to be used within relationship-building contexts that kept human connections as the grounds for collaborative trust, and hence commitment. Technology was not an alternative but an instrument to support the social process that made it possible to coordinate and resolve conflicts among stakeholders. From varying resource environments and capacities among stakeholders across the three contexts, significant differences were noted in strategies for mobilizing resources. Rural settings disproportionately relied on community contributions and volunteer labor, pioneering novel strategies for doing more with less. The closer to cities and people, the greater access to more diverse funding sources and technical expertise on one hand, but some of the toughest challenges in building community ownership and crucial social legitimacy on the other. In a peri-urban setting, hybrid models were needed where formal resource mobilization had to be complemented by community-based contributions. While no uniform solution presided in the successful cases, they all revealed that the nature of resource contributions was paramount, rather than financial resources; and standardized provision across stakeholders' estates is uncalled for. Cross-case analysis demonstrates both common patterns and contextual variations in collaborative success factors across the three study areas. Table 2 compares the distinctive approaches and mechanisms employed in each case.

Table 2

Cross-Case Comparative Analysis of Collaborative Success Factors

Success Factor	TAO Kao Kham (Urban)	TAO Ban Phueng (Rural)	Municipal Nong Ma Mong (Peri-urban)
Leadership Type	Institutional entrepreneurs with network skills	Traditional leaders + formal roles	Hybrid professional-community leadership
Technology Role	Advanced IoT with citizen engagement	Basic tools + strong social support	Graduated implementation with training
Resource Strategy	Government + academic + private partnerships	Community contributions + volunteer labor	Mixed funding with technology investment
Knowledge Integration	Scientific + technical expertise	Traditional ecological + local knowledge	Multi-modal with structured dialogue
Sustainability Mechanism	Policy embedding + institutional continuity	Community ownership + cultural integration	System redundancy + capacity building

5 THEORETICAL CONTRIBUTIONS TO PUBLIC ADMINISTRATION LITERATURE

The empirical findings generate eight specific theoretical contributions that advance understanding of collaborative governance while addressing the identified research gaps and extending existing Public Administration theory to better address developing country contexts and contemporary governance challenges.

5.1 Context-sensitive CPM theory development

Hence, this research makes a significant contribution towards the theoretical advancement of CPM: not only does it help to extend our knowledge about how adopting firms can change and develop on multiple dimensions when implementing CPM , but it also advances that the four-dimensional framework needs to undergo systematic adaptation instead of simple replication based on different institutional, resource, as well as social capital characteristics in developing country contexts. The study finds that the operation of each CPM dimension differs when it is applied in resource-constrained environments:

- *Activation* relies more on existing social networks and traditional leadership structures.

- *Framing* requires more cultural translation and traditional knowledge integration detail.
- *Mobilizing* demands more creativity in combining resources to leverage community contributions.
- *Synthesizing* depends even more on informal coordination mechanisms and personal relationship maintenance.

This contribution decouples the specific requirements of adaptation and preserves the analytical capacity of CPM theory under a variety of contextual conditions.

5.2 Hybrid leadership theory in collaborative networks

This article moves public administration leadership theory forward by showing that good collaborative governance rests on the simultaneous integration of multiple leadership roles, rather than the sequential or partial application of single types of leadership. Consider the experience of two Thai cases, where successful collaborative leaders combined transformational leadership capabilities to gain stakeholder support with network orchestration skills to coordinate across organizational boundaries and institutional entrepreneurship activities that resulted in new inter-organizational collaborations while operating within existing institutional constraints. It suggests one also needs a multi-dimensional theory-based leadership development and not just learning a single leadership competency every day. It offers an implicit critique and meta-theory of leadership theory that transcends the operationalization of individual frameworks, to respond to the suturing complexity in today's collaborative governance arrangements.

5.3 Social capital as digital infrastructure theory

We contribute to the *Social Capital theory* and the *Digital Era Governance* theory, suggesting that rather than representing a challenge for technological innovation in governance contexts, existing social relationships represent important infrastructure needed to ensure successful implementation of digital technologies. The results show that the success of technology adoption relies on social capital resources and strength rather than technical capacity or financial capability. Social capital lays a foundation for digital governance implementation, where digital technologies figure as a tool to supplement

rather than substitute relational importance. In proposing this contribution, we recommend that digital governance initiatives encompass social capital development as one of its essential components, thus setting together the path for the relation between social capital and digital technologies to be co-evolved to achieve better governance.

5.4 Multi-modal knowledge integration framework

This study contributes to *Knowledge Management* theory by creating structured ways to combine different forms of knowledge in a context for collaborative governance, which respects the pluralistic epistemologies and can still work collaboratively with better understanding and actions. Our findings also suggest that effective intermediaries could play a key role in knowledge integration by translating across domains without compromising rigor and cultural respect for validity criteria. Here we provide an empirical contribution to the general stream of Knowledge Management theory by making it extra-organizational and applying the concept at a trans-sectorial level, while offering practical intermediary tools in linking scientific, traditional ecological, and experiential knowledge systems to multilateral participatory decision-making situations within complex contemporary contexts.

5.5 Institutional layering for collaborative innovation

This research contributes to broader institutional theory by illustrating that effective institutional innovation in the context of collaborative governance involves building upon, rather than replacing, traditional institutions with entirely new institutional arrangements. Our findings demonstrate that the combination of formal and informal institutions produces optimal conditions for collaborative governance in contexts with modest formal institutional capacity, without undermining established systematic strengths. This finding has significant implications for institutional development strategies by showing that strategy collaborate management system initiatives should be evaluated and developed based on the existing rather than new institutions, which are less likely to have social legitimacy and cultural appropriateness.

5.6 Technology-enhanced relationship building

In Digital Era Governance theory, the study's main contribution is to show how digital technologies could enhance collaborative relationships by fitting in with the existing social capital foundation, rather than serving as Homo sapiens substitutes at any stage of governance. The results show that successful digital governance involves embedding the tools of technology within relationship webs and using technologies not to eliminate social activities that allow stakeholders to coordinate or resolve disputes, but rather fortify such processes. This contribution undermines expectations that technology adoption necessarily lowers personal interaction. It also provides a basis for strategies on how to implement information technology, which will build upon rather than erode the existing social capital foundations.

5.7 Conflict transformation in sustained collaboration

Defined systematically transforming conflict in *Conflict Theory* via *Public Administration,* this report introduces a way of turning barriers into cooperation power. It also turns on the lights for us with brand-new systematic conflict transformation methods through repeated action that lets our project proceed and, as we can see, continue.

Collaborative governance has come alive in terms of research and practice. The only question is whether or not political science will grasp the opportunity to expand its conceptual frontiers during this process of qualitative change. However, there needs to be a response via academic endeavor. This paper argues that defining conflict transformation as a primary aspect of conflict management and learning in collaborative governance is essential. Conflict is not something to be avoided or resolved so much as it should be embraced as part of the process, even a necessary and beneficial aspect when professionally trained.

5.8 Dynamic resource integration in network governance

The study tells us about the evolution of resource relationships from transactional exchange to joint capacity building within sustained collaborations through collective experiences and mutual learning processes, which contributes to Inter-organizational

Collaboration theory. Results showed an evolution from funding source pooling through knowledge source pooling to social capital formation over time, and that flexible resource bundling promoted stronger stakeholder relationships than straightforward exchange arrangements. This is not to say that the temporal dimension merely adds another layer of focus to inter-organizational collaboration theory but also provides insight into how we see relations becoming more collaborative, as well as providing an explanation for sustainability or resource mobilization strategies that generally cannot be short-term in nature but build long-term capacity that can be capitalized on.

To sum up, the eight theoretical contributions made above form an overarching framework to better understand how collaborative governance has been studied in a developing country context. Based on findings from this study, we synthesize the contributions into a model (Figure 1) representing the theoretical journey from identification of research gaps through empirical investigation to powerful theoretical development. This model illustrates how this study contributes to the gaps in CPM theory resource-constrained contexts, technology-social capital fusion, and multimodal knowledge synthesis interactions by examining four underground water bank projects in Thailand to develop an agentic understanding of collaborative public management. Our theoretical contribution model illustrates how the eight advances are intertwined in nature, and therefore how context-sensitive CPM adaptations, hybrid leadership requirements, and technology-enhanced social capital combine to support effective collaborative governance.

We emphasize the need for a reimagining of the operation of CPM in developing countries, highlighting that CPM adaptation is more than simply adjusting each dimension (one by one) to new country settings it is, rather, about considering different ways mechanisms can work together when operating across diverse institutional, resource, and social capital configurations. Thus, this model offers a conceptual framework for considering the direction of future research on collaborative governance and empirical insights from actual environmental management in resource-constrained contexts.

The model's structure emphasizes that these contributions are not isolated theoretical advances but rather complementary insights that collectively enhance our understanding of collaborative governance dynamics. This integrated perspective is

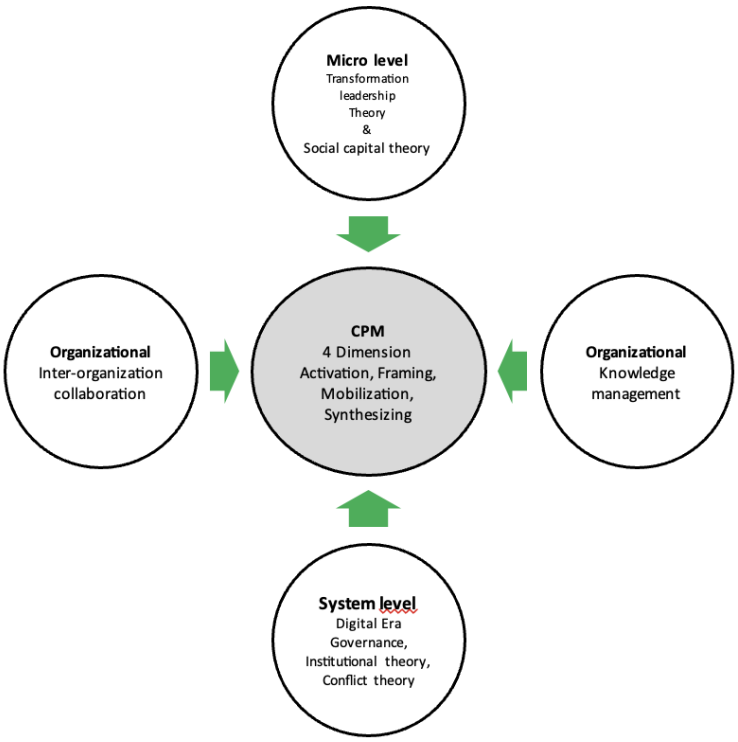
essential for both advancing Public Administration theory and informing practical collaborative governance initiatives in developing countries and beyond.

6 DISCUSSION AND IMPLICATIONS

Contributions of this study are of a theoretical nature in public management as well as theories of collaborative governance in environmental and other similarly complex policy spheres. By resorting to cross-reference methods for the integration of public management theory and nine different supporting theories, it was possible to demonstrate that complex governance challenge subjects need us to draw on several types of theoretical approaches instead of some unified framework. As a consequence, the theory of public management making future progress may rely on theoretical synthesis and multi-dimensional frameworks rather than competing theories or single-case theory applications.

Figure 1

CPM Integration Model



6.1 Theoretical implications and comparative analysis

This study highlights an obvious fact: you cannot simply copy and paste any theory of public administration as practiced in rich, developed countries to the developing world. This should not be done piecemeal but systematically, requiring it to be tried and adapted at the local level. Klijn (2025) on the adaptive context in network governance theories. From this vantage point, we unpack how collaborative public management unfolds uniquely in economies of slacks compared to its well-capitalized big brother. In contrast to the view expressed by Imperial (2005) that collaborative governance is bound to fail in developing countries, we argue, and our analysis indicates that they can indeed work provided they are reconfigured rather than written off and local circumstances consider. Finally, the study suggests that collaborating more effectively requires taking an approach to hybrids combining multiple theoretical considerations which aligns with Cristofoli et al.'s (2017) call for multi-dimensional public management but extends these arguments by illustrating how this aggregation functions in environmental governance. They must at once be transformational leaders, network orchestrators, and institutional entrepreneurs.

The finding of how these roles interconnect in a system also aligns with Silvia’s (2018) research on boundary-spanning leadership and develops the transverse leadership theory beyond individual competencies, since hybrid levels operate in a more collaborative way than Morse and Stephens (2012) suggest. Finally, our evidence of the importance of social capital as the sine qua non for digital governance also directly answers Margetts and Dunleavy's (2013) claim that technology is all that remains when we strip away human agency from administration. Instead, our results lend support to a position advanced by Janssen and Estevez (2013) reminding that effective digital government requires a social foundation through which we elaborate mechanisms for the adoption of technology. This contradicts Cordella and Tempini (2015) as they believe the more digital governance was important, the less social interactions would be relevant. Opposing this, we find that technology can promote interactions with correct implementation techniques.

The identification of multi-modal knowledge integration mechanisms extends Head's (2008) work on evidence-based policy by demonstrating systematic approaches to combining different epistemological frameworks in collaborative decision-making.

While Nutley et al. (2007) focus primarily on research utilization in policy contexts, this study shows how traditional ecological knowledge and local experiential knowledge can be integrated with scientific expertise through structured collaborative processes. This finding addresses Young et al.'s (2014) critique that knowledge management theory inadequately addresses cross-cultural knowledge integration by providing empirical evidence of successful integration mechanisms.

6.2 Comparative governance context analysis

The findings from institutional layering support Mahoney and Thelen's (2009) theory of gradual institutional change by drawing on broader evidence of collaborative governance in developing countries. While Peters (2019) focuses on governance reform and presents complete institutional replacement as the main message, this study provides evidence that layering approaches, instead of breaking away from existing institutions, are more effective for collaborative innovation building upon the institutional foundations.

While these findings are also consistent with Helmke and Levitsky's (2012) predictions about formal and informal institutional linkages, they also illustrate the precise ways in which such linkages function within collaborative environmental governance. This agrees with recent research that governance effectiveness can be improved using formal anti-corruption tools and institutional transparency mechanisms (Nonik et al., 2024) and other international collaborative projects that revealed the need for collective approaches to complex governance problems (Tarasenko et al., 2024). These resource integration dynamics, identified in this study, build on Provan and Kenis's (2008) network governance work by illustrating the evolution of resource relationships from transactional exchange to joint capacity building over time. While Agranoff's (2007) work speaks to network activation and management, this study suggests that ongoing collaboration also produces evolving resource interrelations that expand collaborative capacity over time. This is in line with Klijn and Teisman's (2003) claim about network evolution, but along with that, it also presents empirical evidence of how specific evolutionary mechanisms can occur in the contexts of developing nations.

These conflict transformation mechanisms identified go well beyond Innes and Booher's (2010) call to extend their collaborative planning theory to offer more systemic strategies for transforming technical disagreement into learning. Gray's (1999) emphasis on collaborative problem-solving and conflict resolution is complemented by our observations of how conflict, rather than leading to collaboration-impaired dyads (Putnam & Wilson, 1982), can be reframed as the very fuel that energizes relationship-enhancing episodes, which engender positive collaboration experiences. This result answers Ansell and Gash's (2008) call for improved insight into the dynamics of conflict transformation processes and their consequences in collaborative governance.

6.3 Practical implications for collaborative governance

These research results have implications for how to achieve successful collaborative governance in the field of environmental management, as well as broader challenges linked to large-scale, competing interests and requirements for multi-stakeholder coordination.

Like O'Leary and Bingham's (2009) collaborative public manager, the hybrid leadership requirements identified are consistent with that concept while providing integration mechanisms based in other literatures beyond their focus on competency. The technology-social capital integration results provide a counterexample to the case made by Gil-Garcia (2007) focusing on technological fixes for governance problems like most contemporary development literature and instead shows that technology adoption success is shaped by its social foundations. Strategies to integrate knowledge ought to acknowledge explicitly that there can be different forms of validity and describe a similarly explicit method for combining different fields through non-reductionist, systematic approaches that aim at respecting both epistemological premises and cultural contexts grounded in the argument by Fischer (2000) for deliberative policy analysis but expanding to empirical evidence on integration mechanisms. Resource mobilization logic should focus instead on identifying and stitching together a range of resource contributions financial, social capital, knowledge capital rather than making all forms of resources fungible or assuming standardized levels of investments are necessary to remain viable an approach that supports Alexander's (2014) reworked understanding of

resource dependence while explaining how resource dependencies become embedded in ongoing collaborations.

In order to promote and successfully implement collaborative governance, it is critical to recognize the importance of existing institutional legacies and design collaborative policy in a layered manner that embodies but also transcends traditional institutions within the Ostrom (2009) framework. These results thus provide specific mechanisms to implement Emerson and Nabatchi's (2015) notion of a collaborative governance regime that provide for the peculiarities of developing country contexts which their framework only partly covers.

7 CONCLUSION

Drawing on a study of underground water bank projects in three Thai local governments, this article addresses ongoing questions about the dynamics of collaborative governance in developing country contexts marked by very different patterns of institutional capacity, resource availability, and social capital from developed countries. Utilizing systematic CPM theory integration with nine supporting Public Administration theories and a series of conceptual matrices, combined with qualitative analysis from stakeholder interviews totaling 32, this research found that effective collaborative governance experience cannot be copied due to successful practices being too context-dependent; having been learned outside their institutional setting.

7.1 Conclusion and public administration contributions

Empirically, the study uncovered eight specific theoretical insights that facilitate a deeper understanding of how collaborative governance dynamics are managed in environmental management for developing countries and enrich Public Administration research. This study shows that although CPM facets differently materialize in resource-constrained settings, activation needs an established network, framing is achieved through cross-cultural translation of technical knowledge, mobilizing creatively bricolaging multiple resource forms, and synthesizing are leverage points from relationships coordinated by the right technology. These results help to generalize CPM theory beyond its developed country origins, validating that the theory is analytically useful for

understanding provincial collaboration across unlike contexts. This article finds that, while digital technology supplements social relationships in collaborative governance when appropriately configured with base levels of existing social capital, it should not be taken as evidence that the role of human interaction in governance necessarily contracts with the uptake of new technology.

This contribution integrates *Social Capital theory* with *Digital Era Governance* theory: it reveals that social relationships are an important infrastructure for enabling technology implementation but also that technology enables the development of collaborative policy coordination. Development of systematic approaches to blending scientific expertise with traditional and local experiential knowledge extends Knowledge Management theory out past the bounds of organizational silos in order to address multi-organizational, cross-cultural collaboration challenges. The demonstration of the effectiveness of layering new governance structures over old, moreover and more fundamentally, extends institutional theory by illustrating how formal-informal institutional combinations permit collaborative robustness to be accomplished in situations where there are restricted formal institutional means. The evidence that hybrid leadership combining transformational, network orchestration, and institutional entrepreneurship capabilities is a necessary condition for collaborative success:

i) extends leadership beyond stewardship theory , prefiguring integrated advantages by cosmetic effects of leaders exerting authority to legislative instruments;
ii) allows therefore the formulation of multi-dimensional hybrids concerning multiple constituent dimensions of contemporary governance complexity.

Together, these contributions illustrate that effective collaborative public management involves an ability for both theoretical synthesis and practical application that is sensitive to contextual differences but also relies on some invariances of collaborative principles across contexts.

Our results support recent findings documenting the need for formal mechanisms of collective governance within international collaborative initiatives (Tarasenko et al., 2024) and for transparency and accountability to be incorporated into institutional performance frameworks that enhance governance (Nonik et al., 2024; Sriram et al., 2024).

7.2 Limitations and future research directions

Although this paper provides a comprehensive understanding of the collaborative dynamics of underground water bank projects in Thai local governments, the findings and lessons learned are constrained to that *Policy Domain* and *Cultural Context*. While the qualitative methodology allowed us to gain an in-depth understanding of collaborative processes in particular contexts, it also limited our ability to generalize statistically within broader populations of collaborative governance initiatives. Further research is needed, quite possibly engaging with a variety of environmental policy areas and national contexts, to strengthen the work of how different institutional traditions, political systems, along with other cultural factors, determine collaborative adaptation needs and conceptualize new theoretical understandings, though also broadening our knowledge regarding the governance diversity in developing countries.

Longitudinal studies could further the understanding of how relationships form and change, what is learned institutionally about governance and management, and under what conditions e.g., social contexts, biophysical conditions, political dynamics a society uses collaborative governance to maintain the shared ecosystem services versus abandoning collaboration for some other form of interaction.

Comparative studies across other developing countries are likely to result in a better understanding of how different contextual factors interact with one another to influence the success of collaborative governance and reveal the universal versus context-specific drivers of outcomes related to collaborative governance. Studying scaling mechanisms would focus on the ways that effective local collaborations can be expanded to new environments without compromising cultural fit and institutional efficiency.

The study of technology-collaboration dynamics needs to consider the ways in which digital governance tools can generate and/or support patterns of relationships, coordination practices, and stakeholder participation over time, as well as investigate how distinct technological designs articulate with different forms of social capital. Research on the designs of knowledge integration will have to make a substantial contribution in dealing with how such congruence between different modes of knowing can be forged to provide a common ground for joint decision-making across sociocultural and professional norms.

Such investigation will provide a stimulus for deeper research into how we might transform conflict and organize to turn differences into spaces of strength, aiding our ability to manage disagreement in systematic ways that enhance, not diminish, collaborative relations across culturally diverse groups, as well as support the development of institutional endogenous capacities around ongoing conflict management concerns.

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REFERENCES

Agranoff, R. (2007). *Managing within networks: Adding value to public organizations*. Georgetown University Press.

Agranoff, R., & McGuire, M. (2003). *Collaborative public management: New strategies for local governments*. Georgetown University Press.

Alexander, E. (2014). *How organizations act together: Interorganizational coordination in theory and practice*. Routledge.

Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of public administration research and theory*, *18*(4), 543-571. https://doi.org/10.1093/jopart/mum032

Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership*. Psychology press.

Bingham, G. (1985). *Resolving Environmental Disputes: A Decade of Experience: Executive Summary*. Conservation Foundation.

Bryson, J. M., Crosby, B. C., & Stone, M. M. (2006). The design and implementation of Cross-Sector collaborations: Propositions from the literature. *Public administration review*, *66*, 44-55. https://doi.org/10.1111/j.1540-6210.2006.00665.x

Bryson, J. M., Crosby, B. C., & Stone, M. M. (2015). Designing and implementing cross-sector collaborations: Needed and challenging. *Public administration review*, *75*(5), 647-663. https://doi.org/10.1111/puar.12432

Chuenchum, P., Meneesrikum, C., Teerapanuchaikul, C., & Sriariyawat, A. (2024). Community participation and effective water management: A study on water user organizations (WUOs) in Thailand. *World Development Perspectives*, *34*, 100589. https://doi.org/10.1016/j.wdp.2024.100589

Cordella, A., & Tempini, N. (2015). E-government and organizational change: Reappraising the role of ICT and bureaucracy in public service delivery. *Government information quarterly*, *32*(3), 279-286. https://doi.org/10.1016/j.giq.2015.03.005

Cristofoli, D., Meneguzzo, M., & Riccucci, N. (2017). Collaborative administration: the management of successful networks. *Public management review*, *19*(3), 275-283. https://doi.org/10.1080/14719037.2016.1209236

Dunleavy, P., Margetts, H., Bastow, S., & Tinkler, J. (2006). New public management is dead long live digital-era governance. *Journal of public administration research and theory*, *16*(3), 467-494. https://doi.org/10.1093/jopart/mui057

Emerson, K., & Nabatchi, T. (2015). *Collaborative governance regimes*. Georgetown University Press.

Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. *Journal of public administration research and theory*, *22*(1), 1-29. https://doi.org/10.1093/jopart/mur011

Evans, P., & Heller, P. (2015). Human development, state transformation and the politics of the developmental state. In S. Leibfried, F. Nullmeier, E. Huber, M. Lange, J. Levy, & J. D. Stephens (Eds.), *The Oxford handbook of transformations of the state (pp. 691-713).* Oxford University Press.

Fischer, F. (2000). *Citizens, experts, and the environment: The politics of local knowledge*. Duke University Press.

Gil-Garcia, J. R., Pardo, T. A., & Gasco-Hernandez, M. (2020). Internet of things and the public sector. In *Beyond smart and connected governments: Sensors and the Internet of things in the public sector* (pp. 3-24). Cham: Springer International Publishing.

Gray, B. (1999). *Collaborating: Finding common ground for multiparty problems*. Jossey Bass.

Head, B. W. (2008). Three lenses of evidence-based policy. *Australian Journal of Public Administration*, *67*(1), 1-11. https://doi.org/10.1111/j.1467-8500.2007.00564.x

Helmke, G., & Levitsky, S. (2012). *Informal institutions and comparative politics: A research agenda*. Edward Elgar Publishing.

Imperial, M. T. (2005). Using collaboration as a governance strategy: Lessons from six watershed management programs. *Administration & society*, *37*(3), 281-320. https://doi.org/10.1177/0095399705276111

Innes, J. E., & Booher, D. E. (2010). *Planning with complexity: An introduction to collaborative rationality for public policy*. Routledge.

Janssen, M., & Estevez, E. (2013). Lean government and platform-based governance Doing more with less. *Government Information Quarterly*, *30*, S1-S8. https://doi.org/10.1016/j.giq.2012.11.003

Klijn, E. H., & Teisman, G. R. (2003). Institutional and strategic barriers to public private partnership: An analysis of Dutch cases. *Public money and Management*, *23*(3), 137-146. https://doi.org/10.1111/1467-9302.00361

Klijn, E. H., Koppenjan, J., Spekkink, W., & Warsen, R. (2025). *Governance networks in the public sector* (p. 283). Taylor & Francis.

Lin, N. (2002). *Social capital: A theory of social structure and action* (Vol. 19). Cambridge university press.

Mahoney, J., & Thelen, K. (Eds.). (2009). *Explaining institutional change: Ambiguity, agency, and power*. Cambridge University Press.

March, J. G., & Olsen, J. P. (1989). *Rediscovering institutions: The organizational basis of politics*. Free Press.

Margetts, H., & Dunleavy, P. (2013). The second wave of digital-era governance: a quasi-paradigm for government on the Web. *Philosophical transactions of the royal society A: mathematical, physical and engineering sciences*, *371*(1987), 20120382. https://doi.org/10.1098/rsta.2012.0382

McGuire, M. (2006). Collaborative public management: Assessing what we know and how we know it. *Public administration review*, *66*, 33-43. https://doi.org/10.1111/j.1540-6210.2006.00664.x

Morse, R. S., & Stephens, J. B. (2012). Teaching collaborative governance: Phases, competencies, and case-based learning. *Journal of Public Affairs Education*, *18*(3), 565-583. https://doi.org/10.1080/15236803.2012.12001700

Muenratch, P., & Nguyen, T. P. L. (2022). Local Governance of Groundwater Resources through the Lens of Stakeholders in the Context of State-Led Management in the Lower Mekong Region. *Water*, *14*(19), 3043. https://doi.org/10.3390/w14193043

Nabatchi, T. (2007). *Deliberative democracy: The effects of participation on political efficacy* (Doctoral dissertation, Indiana University).

Nonik, V., Tkachenko, A., Arifkhodzhaieva, T., Halunko, O., & Trehub, D. (2024). Enhancing governance through anti-corruption strategies: Exemplary approaches and obstacles . *Multidisciplinary Science Journal*, *6*, 2024ss0704. https://doi.org/10.31893/multiscience.2024ss0704

Nutley, S. M., Walter, I., & Davies, H. T. (2007). Improving research use in practice contexts. In *Using evidence* (pp. 195-230). Policy Press.

O'Leary, R., & Bingham, L. B. (2009). *The collaborative public manager: New ideas for the twenty-first century*. Georgetown University Press.

Osborne, S. P. (2006). The new public governance? *Public Management Review*, 8(3), 377-387. https://doi.org/10.1080/14719030600853022

Ostrom, E. (2009). *Understanding institutional diversity*. Princeton university press.

Pahl-Wostl, C. (2019). The role of governance modes and meta-governance in the transformation towards sustainable water governance. *Environmental science & policy*, *91*, 6-16. https://doi.org/10.1016/j.envsci.2018.10.008

Peters, B. G. (2019). *Institutional theory in political science: The new institutionalism*. Edward Elgar Publishing.

Pfeffer, J., & Salancik, G. (2015). External control of organizations---Resource dependence perspective. In *Organizational behavior 2* (pp. 355-370). Routledge.

Provan, K. G., & Kenis, P. (2008). Modes of network governance: Structure, management, and effectiveness. *Journal of public administration research and theory*, *18*(2), 229-252. https://doi.org/10.1093/jopart/mum015

Putnam, R. D. (1993). *Making democracy work: Civic traditions in modern Italy*. Princeton University Press.

Sandhu, M. S., Jain, K. K., & bte Ahmad, I. U. K. (2011). Knowledge sharing among public sector employees: evidence from Malaysia. *International Journal of Public Sector Management*, *24*(3), 206-226. https://doi.org/10.1108/09513551111121347

Silvia, C. (2018). Evaluating collaboration: The solution to one problem often causes another. *Public Administration Review*, *78*(3), 472-478. https://doi.org/10.1111/puar.12888

Sriram, S., Shrivastav, A. K., Sony, A., Singh, V. A., & Banu, S. (2024). Investigation of significance of enhancing governance performance in government entities . *Multidisciplinary Science Journal*, *6*, 2024ss0401. https://doi.org/10.31893/multiscience.2024ss0401

Tarasenko, T., Sorokina, N., Kashchenko, N., Branitska, T., & Kukhar, I. (2024). International collaboration in public governance: assessing the role of collective initiatives and organisations. *Multidisciplinary Science Journal*, *6*, 2024ss0715. https://doi.org/10.31893/multiscience.2024ss0715

Torfing, J. (2012). *Interactive governance: Advancing the paradigm*. Oxford University Press.

Wiig, K. M. (2002). Knowledge management in public administration. *Journal of Knowledge Management*, 6(3), 224-239. https://doi.org/10.1108/13673270210434331

Wright, B. E., & Pandey, S. K. (2010). Transformational leadership in the public sector: Does structure matter?. *Journal of public administration research and theory*, *20*(1), 75-89. https://doi.org/10.1093/jopart/mup003

Yang, K. (2007). Individual social capital and its measurement in social surveys. *Survey Research Methods*, 1(1), 19-27. https://doi.org/10.18148/srm/2007.v1i1.48

Young, J.C., Waylen, K.A., Sarkki, S. *et al.* (2014). Improving the science-policy dialogue to meet the challenges of biodiversity conservation: having conversations rather than talking at one-another. *Biodiversity and Conservation*, *23*(2), 387-404. https://doi.org/10.1007/s10531-013-0607-0