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TRANSFORMATIONAL LEADERSHIP IN LOCAL GOVERNANCE: A PARTICIPATORY IRRIGATION MANAGEMENT MODEL FOR RURAL THAILAND

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Abstract

This study investigates the role of transformational leadership in fostering participatory irrigation management among local village headmen in Nakhon Phanom Province, Thailand. Addressing the critical global need for sustainable local water governance, the research employs a rigorous mixed-methods design. The study systematically collected quantitative data from 178 local leaders and analyzed them using multiple linear regression, while gathering nuanced qualitative insights through in-depth interviews with 20 key informants. The empirical results demonstrate a highly significant level of overall participation in irrigation management. Crucially, the regression analysis unequivocally reveals that inspirational motivation and intellectual stimulation are the primary transformational leadership dimensions driving this active engagement. Complementary qualitative findings further highlight that effective local leaders successfully utilize participatory decision-making platforms, establish enforceable community-based regulations, and integrate appropriate communication technologies. By synthesizing these diverse results, the study proposes a comprehensive participatory development model. Ultimately, this framework shows that sustainable rural water governance requires leaders who transcend traditional administrative roles to empower marginalized groups, cultivate collaborative problem-solving, and build long-term institutional resilience at the grassroots level.

Keywords: Transformational Leadership, Participatory Water Governance, Local Public Administration, Community-Based Management, Mixed-Methods Research

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Introduction

Transformational leadership aims to create “change” through shared values, a shared vision, and developing followers' potential to their full potential. Leaders of this type do not simply issue orders, but encourage followers to “be committed, think critically, and collaborate” to achieve common goals, enabling them to act as “representatives of change” (Bass, 1985; Bass & Riggio, 2006). Furthermore, synthetic evidence indicates a positive correlation between transformational leadership and performance at multiple levels (individual, team, and organizational), reflecting its potential to drive collaborative work (Wang et al., 2011). In the context of natural resource management, particularly “water and irrigation,” sustainability depends not only on technology or infrastructure but also on “institutions and collaboration among water users.” This reflects a common-pool resource that requires rules, trust, coordinated interests, and joint oversight to avoid conflict and overuse (Ostrom, 1990). Studies in irrigation management also emphasize that “organization and collaborative action” among water users are crucial conditions for system efficiency. (Meinzen-Dick et al., 2002) Moreover, approaches such as participatory irrigation management/irrigation management transfer in many countries show that when local participation and accountability are strengthened, operational outcomes and sustainability tend to improve (Vermillion, 1997; Garces-Restrepo et al., 2007). At the same time, modern water management faces high uncertainty (e.g., drought/flooding), thus requiring “adaptive governance” and multi-level collaborative networks (Folke et al., 2005), as well as collaborative governance processes where government agencies and stakeholders make decisions together in formal and consensus-based forums (Ansell & Gash, 2008).

In Thailand, “village headmen/chiefs” are community leaders who link the state and the people, playing roles in governance and maintaining peace, development, public services, and the conservation of natural resources and the environment. This makes local leaders' role significant in collaborative resource management in the area (Ek-Iem, 2021). However, while “leadership” and “participation” are generally accepted as central to water resource management, a significant gap remains in empirically explaining how the “mechanisms of transformational leadership” translate into “participatory behavior in irrigation management” within the context of community leadership. Furthermore, a context-specific conceptual framework is needed that reflects stakeholders' voices by integrating quantitative and qualitative evidence (Chambers, 1994). Therefore, an integrated study linking transformational leadership theory with participatory water governance at the village level is essential for developing practical approaches and policy recommendations for sustainable rural irrigation management. To address these empirical gaps, this study examines the involvement of local village headmen and chiefs in irrigation management in Mueang District, Nakhon Phanom Province, as a representative case for rural Thailand. The research examines how transformational leadership among these local leaders shapes their active engagement in water resource governance. By synthesizing both quantitative and qualitative evidence, the ultimate objective is to develop a participatory irrigation management model driven by transformational leadership, providing a practical and inclusive framework for sustainable rural water governance.

Literature Review

In social research and education, “models” serve as frameworks that organize concepts, processes, and relationships between variables, helping to clarify phenomena and design effective interventions/development strategies. Joyce and Weil describe good models as having a theoretical foundation, being systematically evaluated, and refined with empirical evidence before testing. Models should be clearly defined as “conceptual models” or “participatory models” to reflect transparency and context-aware development (Joyce et al., 2004). Models

help explain the linkages between leadership, participation, and management practices within different local contexts, particularly in community development and public resource management.

From a management perspective, key processes such as planning, organizing, staffing, leading, and controlling are mechanisms that enable “people” and “resources” to work together to achieve goals (Robbins & Coulter, 2018). When applied to community-based irrigation management and natural resource governance, reliance on social processes and collaborative group decision-making becomes even more crucial. Moreover, collective responsibility is crucial because water resources are a “common resource” that requires community-level rules and institutions to avoid overuse and conflict (Ostrom, 1990). A key governance principle in this context is “participation,” which means creating space for those affected to be involved in planning, decision-making, implementation, and monitoring and evaluation. Participation has different depths, from awareness to shared power in determining direction (Arnstein, 1969; Pretty, 1995). Participatory water management, therefore, increases fairness, efficiency, and sustainability through shared ownership, local problem-solving, and public accountability. However, it relies on crucial conditions such as “meaningful” opportunities, trust, and competent leadership.

Transformational leadership fundamentally distinguishes itself by motivating followers toward common goals and empowering them to exceed expectations through profound shifts in their internal values and motivations, rather than relying on authoritative directives or transactional exchanges of benefits (Bass, 1985). The core components of this leadership paradigm—idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration—function synergistically to cultivate a supportive and dynamic environment (Bass & Riggio, 2006). This integrated approach suits participatory contexts, as it empowers community members to think critically, participate in collaborative decision-making, and work cohesively toward shared, sustainable objectives.

For irrigation management, long-term success depends not only on infrastructure but also on leaders who build trust, cooperation, and long-term cohesion within the community (Pretty & Ward, 2001). Transformational leadership thus provides a framework to explain how village-level leaders can enhance participation through motivation, participatory decision-making, and collaborative problem-solving. However, empirical work on the “effects of sub-components” of transformational leadership on village-level participation remains limited in many contexts, especially when considering the mechanisms linking leader behavior to participatory water governance. Therefore, integrating leadership theory, participatory theory, and management concepts to create a “participatory conceptual model” using both quantitative and qualitative data is crucial to explaining the role of community leaders in irrigation management and to developing practical proposals for sustainable rural water governance.

Theoretical Framework

This study integrates three key conceptual frameworks: transformational leadership theory, participation theory, and community-based resource management, to explain the levels and patterns of participation of village leaders in irrigation management within community areas. Firstly, transformational leadership theory describes the mechanisms by which leaders can influence the attitudes, motivations, and behaviors of followers through the creation of a shared vision, inspiration, stimulation of critical thinking, and individual support, rather than through authoritarian power or transactional exchanges (Bass, 1985; Bass & Riggio, 2006). This type of leadership encourages community members to recognize common goals and work together for sustainable development.

Second, participation theory emphasizes the importance of giving stakeholders opportunities to participate in the decision-making, implementation, and evaluation of public projects or activities. Participation at various levels, from information and feedback to joint decision-

making, enhances fairness, transparency, and sustainability in resource management. This is especially true for water resources, which require cooperation among multiple water users (Arnstein, 1969; Pretty, 1995).

Third, community-led resource management and governance views irrigation management as an ongoing process of planning, organizing, leading, and collectively controlling community resource use (Robbins & Coulter, 2018). The concept of community-led resource management also highlights that creating rules and social institutions at the community level plays a crucial role in sustainable resource use because they promote cooperation, reduce conflict, and prevent resource overuse (Ostrom, 1990).

Together, these three frameworks indicate that transformational leadership is a key factor influencing the level and quality of participation in irrigation management. Community leaders who can inspire, stimulate analytical thinking, and promote participation will facilitate collaborative decision-making, creative problem-solving, and efficient, sustainable water resource management at the local level.

Conceptual Framework

This research framework describes the relationship between transformational leadership and the participation of village heads and sub-district chiefs in irrigation management in Mueang District, Nakhon Phanom Province. The study aims to examine how leadership behavior can promote the level and quality of community leaders' participation in water resource management.

Within this framework, the independent variable is transformational leadership, encompassing four core dimensions. These dimensions include idealized influence, which involves serving as an ethical and value-driven role model; inspirational motivation, focused on cultivating a shared vision; intellectual stimulation, aimed at promoting analytical thinking and innovation; and individualized consideration, which prioritizes the unique needs and development of community members (Bass, 1985; Bass & Riggio, 2006). Together, these elements reflect the leader's capacity to empower collaborative learning and encourage collective action. The dependent variable, participation in irrigation management, captures the depth and quality of community leaders' involvement. This engagement spans the entire management cycle, including problem identification, solution exploration, policy and plan formulation, collaborative decision-making, policy implementation, and ongoing monitoring and maintenance. According to theoretical paradigms, transformational leadership elevates this participatory engagement by empowering stakeholders, building trust, and enhancing collective problem-solving capabilities (Burns, 1978; Bass & Avolio, 1994).

Furthermore, the concept of people's participation in development emphasizes participatory decision-making and community empowerment, which play a crucial role in local natural resource management, especially in irrigation management, which requires cooperation among multiple stakeholders (Arnstein, 1969; Chambers, 1994). Qualitative data from key informants were therefore used to deepen understanding of leadership and participation mechanisms in community contexts, helping develop and validate the research framework in line with the real-world situation in the study area.

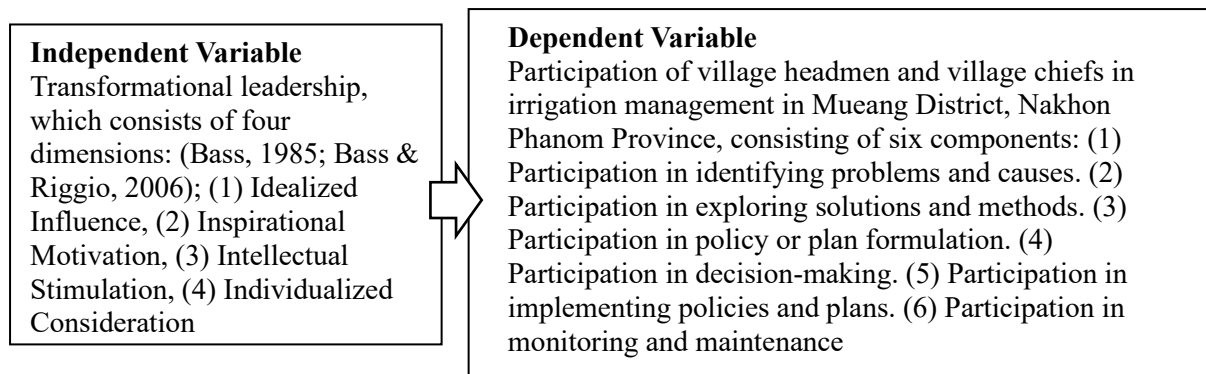


Figure 1 Conceptual Framework of the Research

Research Methodology

Research Design

This study utilized a mixed-methods approach, combining quantitative and qualitative techniques to examine transformational leadership and involvement in irrigation management. Data were gathered concurrently, analyzed separately, and integrated during interpretation to develop a participatory conceptual model.

Population and Sample

Quantitative phase: The sample included 178 village headmen in Mueang District, Nakhon Phanom Province. The researchers used total population sampling because the population size was manageable and all participants were actively involved in local government and irrigation management, ensuring thorough representation and minimizing sampling bias.

Qualitative phase: Researchers selected 20 key informants through purposive sampling, considering their leadership experience, involvement in irrigation management, and representation of diverse community situations. Some participants were village headmen or people actively involved in community work. Sampling stopped when data saturation was reached, as no new themes emerged from additional interviews.

Data Collection

The primary quantitative tool was a rigorously structured questionnaire designed to capture relevant data comprehensively. The instrument was divided into three distinct sections: the first gathered essential demographic information from the respondents; the second assessed transformational leadership behaviors across four critical dimensions—idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration; and the third evaluated participation in irrigation management through stages encompassing plan formulation, decision-making, implementation, coordination, problem resolution, and ongoing monitoring. All responses were measured utilizing a standard five-point Likert scale, ranging from 1 (lowest) to 5 (highest). To ensure robustness, experts in community development, public administration, and leadership evaluated the questionnaire's content validity using the Item-Objective Congruence (IOC) index, and all items met established standards. Furthermore, we confirmed reliability using Cronbach's alpha coefficient, demonstrating high internal consistency across the overall scale and its individual dimensions.

We collected quantitative data by administering questionnaires to village headmen, with assistance from local administrative offices. We collected qualitative data through in-depth interviews conducted in person at locations convenient for the informants. Before data collection, we informed all participants of the research goals, how the study would be conducted, and their rights.

Data Analysis

Quantitative Data Analysis: We used statistical software to process and interpret the quantitative data. We first computed descriptive statistics—frequencies, percentages, means,

and standard deviations—to summarize respondents' demographic profiles and their general levels of participation and perceived leadership. Next, we used Pearson's correlation coefficient to examine bivariate relationships between the dimensions of transformational leadership and the extent of participation in irrigation management. Finally, to assess the predictive power of these leadership characteristics, we conducted a multiple linear regression analysis (MRA) at the .05 significance level to clarify how specific transformational leadership behaviors uniquely influence local leaders' active engagement in irrigation management.

Qualitative Data Analysis: We examined qualitative data using content analysis. We classified, sorted, and organized the interview transcripts into themes related to leadership characteristics, participation, and other variables that affect irrigation management. We used the qualitative data to validate and clarify the quantitative findings and improve the interactive conceptual model.

We integrated quantitative and qualitative data during the interpretation phase by comparing and combining the results. Quantitative results identified critical leadership factors influencing participation, while qualitative insights clarified the mechanisms and reasons behind how these behaviors affect practice. This integration improved validity and made it easier to construct a participatory conceptual model based on real-world data.

Research Ethics

This study utilized human participants and complied with established ethical research standards. The study received approval from the appropriate institutional committee. Everyone who took part gave informed consent and was told their information would be kept private, that they would not be identifiable, and that they could leave at any time without hassle.

Research Results

Demographic Profile of the Respondents

The demographic information about the people who answered the survey. The sample included 178 village headmen and village chiefs; most respondents (51.7%) were women, while the rest (48.3%) were men. The largest group was 41 to 50 years old (43.8%), followed by 51 years and older (41.0%) and 31 to 40 years old (15.2%). The largest group (34.8%) said they had completed lower secondary school, followed by primary school (33.7%). Only 18.5% had a diploma, occupational certificate, or higher. Most respondents (70.2%) had served only one term, while 18.5% had served two terms and 11.2% had served three terms or more (Table 1).

Levels of Participation in Irrigation Management

Table 1 Mean and Standard Deviation of Participation of Village Headmen and Village Chiefs in Irrigation Management

No.	Dimensions of Participation in Irrigation Management	$\bar{x}$	S.D.	Interpretation
1	Participation in identifying problems and causes	4.26	0.77	High
2	Participation in exploring solutions and methods	4.14	0.90	High
3	Participation in policy or plan formulation	4.14	0.90	High
4	Participation in decision-making	4.10	0.91	High
5	Participation in implementing policies and plans	4.06	0.95	High
6	Participation in monitoring and maintenance	4.08	0.89	High
Overall		4.13	0.81	High

Table 1 shows how much village headmen and village chiefs are involved in managing irrigation. Overall engagement was high ($\bar{x} = 4.13$, S.D. = 0.81). All six categories received good ratings, showing consistent involvement in the irrigation management process (Table 2). Participation in identifying problems and causes received the highest mean score ($\bar{x} = 4.26$,

S.D. = 0.77) among the dimensions, indicating a high level of involvement in detecting irrigation-related difficulties. Next were participation in developing solutions and approaches ($\bar{x}$ = 4.14, S.D. = 0.90) and participation in developing policies or plans ($\bar{x}$ = 4.14, S.D. = 0.90). The other dimensions—decision-making ($\bar{x}$ = 4.10, S.D. = 0.91), monitoring and maintenance ($\bar{x}$ = 4.08, S.D. = 0.89), and implementing policies and plans ($\bar{x}$ = 4.06, S.D. = 0.95)—were also high, with only small differences between them (Table 2).

Influence of Transformational Leadership on Participation in Irrigation Management

Table 2 Mean and Standard Deviation of Transformational Leadership of Village Headmen and Village Chiefs in Irrigation Management

No.	Dimensions of Transformational Leadership	$\bar{x}$	S.D.	Interpretation
1	Idealized Influence	4.45	0.53	High
2	Inspirational Motivation	4.40	0.59	High
3	Intellectual Stimulation	4.39	0.60	High
4	Individualized Consideration	4.36	0.65	High
Overall		4.40	0.55	High

Table 2 shows the descriptive data for transformative leadership. The average score for transformative leadership was high ($\bar{x}$ = 4.40, S.D. = 0.55). Ratings for all four aspects were high, indicating that the village headmen and village chiefs in this study often observed transformative leadership behaviors (Table 3). Idealized influence had the highest mean score ($\bar{x}$ = 4.45, S.D. = 0.53), followed by inspirational motivation ($\bar{x}$ = 4.40, S.D. = 0.59), intellectual stimulation ($\bar{x}$ = 4.39, S.D. = 0.60), and individualized consideration ($\bar{x}$ = 4.36, S.D. = 0.65) (Table 3).

Table 3 Multiple Linear Regression Analysis of the Research Hypothesis

Transformational Leadership Dimensions	B	S.E.	Beta	t	Sig.
Constant (a)	-0.256	0.431	-	-0.592	0.555
Idealized Influence (X1)	-0.236	0.194	-0.154	-1.217	0.226
Inspirational Motivation (X2)	0.563	0.194	0.413	2.907	0.004*
Intellectual Stimulation (X3)	0.377	0.163	0.278	2.314	0.022*
Individualized Consideration (X4)	0.299	0.182	0.231	1.638	0.104

*Statistical significance at the 0.05 level

Table 3 shows the results of the multiple linear regression analysis. The study revealed two elements of transformative leadership that strongly influenced engagement in irrigation management at the 0.05 level.

Inspirational Motivation (X2) exhibited the most substantial standardized influence on involvement (Beta = 0.413), accompanied by a statistically significant positive coefficient (B = 0.563, S.E. = 0.194, t = 2.907, p = 0.004). This means that those who were more inspired to act were more likely to participate in irrigation management.

Intellectual Stimulation (X3) had a statistically significant positive effect (B = 0.377, S.E. = 0.163, Beta = 0.278, t = 2.314, p = 0.022), indicating that promoting critical thinking and problem-solving correlated with increased engagement.

In contrast, Idealized Influence (X1) did not substantially predict involvement (B = -0.236, Beta = -0.154, p = 0.226), and Individualized Consideration (X4) was likewise not statistically significant (B = 0.299, Beta = 0.231, p = 0.104) (Table 4). These coefficients indicate a direction in the model, but they do not provide sufficient evidence of a direct effect on participation at the 0.05 level in this regression study.

The regression results indicate that inspirational motivation and intellectual stimulation are the most significant transformational leadership dimensions correlated with participation in irrigation management among village headmen and chiefs in Mueang District, Nakhon Phanom Province.

Qualitative Insights into Transformational Leadership Practices

Qualitative insights from in-depth interviews with 20 key informants illustrate how transformational leadership manifests in local irrigation management. On inspirational motivation, village headmen and chiefs promoted joint regulations on water use and collaborated with environmental agencies to rehabilitate degraded water sources. They fostered citizen participation in crucial conservation efforts, such as preventing construction encroachment, regulating dry-season water use, and eliminating waste disposal into canals. Furthermore, leaders facilitated specialized training and used visual models to explain irrigation projects clearly, bolstering villagers' confidence in executing these plans.

Regarding intellectual stimulation, leaders emphasized collaborative study of local challenges, rigorous analysis of project impacts, and active coordination with external agencies. Sub-district meetings frequently functioned as dynamic platforms to deliberate on groundwater initiatives and systematize water data. Despite obstacles such as the lack of comprehensive water maps and maintenance schedules, leaders identified terrain constraints and advocated proactive annual drought- and flood-prevention plans. Communities also digitized their water management systems and exchanged best practices with neighboring villages, aligning local strategies with the Royal Irrigation Department's overarching frameworks.

Individualized consideration was distinctly evident as leaders championed inclusive participation across every stage of the management cycle. Village committees closely monitored progress, and leaders appointed citizen representatives with specific expertise to support strategic water planning. By consulting farmers directly, scheduling equitable work rotations to inspect waterway obstructions, and designating specific zones for diverse agricultural uses, leaders ensured they addressed individual community needs. Close mentoring and personalized advice further strengthened accountability within the community. At the same time, leaders demonstrated idealized influence by mitigating conflicts, fostering inclusivity, and serving as steadfast ethical role models. By adopting appropriate technologies, championing transparency, and actively engaging vulnerable groups—including empowering the youth to assume leadership roles—these leaders cultivated a cohesive and resilient community structure. Collectively, these integrated practices form the operational bedrock of a participatory transformational leadership model tailored for sustainable local irrigation governance.

Therefore, the qualitative findings elucidated essential practices that facilitate a participatory transformational leadership model for irrigation management in Mueang District, Nakhon Phanom Province. Village headmen and chiefs pushed for rules on how to use water together, worked with environmental groups to improve water sources, and involved people in saving water and protecting the environment. Dry-season controls, training on appropriate water management, and visual tools helped communities understand and implement irrigation plans effectively. Leaders also worked together to analyze problems, collect data, and mobilize villages, even as challenges remained, such as the inability to map water sources and inspect infrastructure. Village committees, public meetings, monitoring, and evaluation ensured everyone could participate at every stage. Leaders built trust and teamwork by setting an example, improving communication, promoting new community leaders, and organizing volunteer teams. Together, these methods created a participatory transformational leadership model for managing local irrigation.

Conclusion and Discussion

This study provides substantial empirical data about the impact of transformational leadership on enhancing engagement in irrigation management among village headmen and chiefs in Mueang District, Nakhon Phanom Province. The discourse is structured according to the research objectives and examined in relation to relevant leadership and participatory governance concepts.

Participation in Irrigation Management

The study found that village heads and sub-district chiefs were actively involved throughout the “irrigation management cycle,” from identifying problems and their causes to searching for solutions, formulating plans/policies, making decisions, implementing, monitoring, and maintaining. This reflects that local leaders did not merely act as “administrative intermediaries,” but as a “connecting mechanism” between the people and government agencies to foster systematic collaboration. This aligns with empirical evidence in Thailand indicating that stakeholder participation and interaction between farmers and government officials are crucial for establishing rules and making decisions in water management (Mahaarcha & Sirisunhirun, 2023). Case studies of participatory irrigation management in northern Thailand have also linked social capital, practical cooperation, and production efficiency (Suwanmaneepong et al., 2024). Internationally, literature on participatory irrigation management (PIM) emphasizes that sustainable water governance depends on empowering local stakeholders and decentralized decision-making structures. (Meinzen-Dick et al., 2002; Mukherji et al., 2009; Vermillion, 1997). At the same time, evidence from several countries shows that when water users and local leaders play a direct role in planning and monitoring irrigation systems, it enhances institutional sustainability and accountability (Garces-Restrepo et al., 2007; Ostrom, 1990). Therefore, the high level of participation in this research is consistent with the universal finding that “community governance” empowers collaborative action and the sustainability of water resources.

Transformational Leadership and Participation

The strong positive correlations between transformational leadership and participation ($r = .768-.858$) show that leadership style is closely linked to collective involvement in irrigation governance. Consistent with transformational leadership theory (Bass, 1985; Bass & Riggio, 2006), leaders who communicate a collective vision and promote intellectual involvement strengthen group commitment and collaboration.

The regression analysis indicates that only inspirational motivation and intellectual stimulation have statistically significant direct effects on participation. Inspirational motivation increases engagement by articulating common objectives, strengthening group identification, and cultivating emotional dedication. Intellectual stimulation fosters critical thinking, innovation, and collaborative problem-solving—skills vital in irrigation scenarios marked by climate variability, water scarcity, and infrastructural constraints.

Global research strongly corroborates these findings. Transformational leadership has demonstrated efficacy in fostering knowledge sharing, innovation, and team performance (Braun et al., 2013; Choi et al., 2016; Hoch et al., 2018). Research indicates that intellectual stimulation improves adaptive ability in intricate governance systems (Pieterse et al., 2010), whereas inspirational motivation bolsters collective efficacy and public involvement (Wang et al., 2011). Transformational leadership has been associated with improved civic engagement and institutional efficacy in community and public-sector contexts (Andersen, 2010).

Conversely, idealistic impact and individualized consideration did not exhibit significant direct effects in the regression model. Nonetheless, this does not denote irrelevance. Instead, these components may operate indirectly by fostering trust, legitimacy, and relational commitment—conditions that facilitate the success of participatory procedures. This perspective aligns with research showing that trust-building and ethical role modeling create essential conditions for

collaborative governance (Dirks & Ferrin, 2002; Eva et al., 2019). In community-based natural resource management, moral credibility and individualized support often strengthen sustained engagement, even when they do not directly predict immediate participation outcomes (Pretty & Ward, 2001).

Participatory Conceptual Model and Implications

Integrating quantitative and qualitative findings enables the development of a concrete, contextually relevant framework for participatory transformational leadership in irrigation management. Qualitative evidence shows that leadership characteristics can be translated into practical field processes, such as establishing rules for shared water use, interagency collaboration, participatory monitoring, community knowledge sharing, and adaptive water management planning. This contextually aligns with contemporary resource governance concepts that emphasize collaborative and adaptive leadership in shared resource management (Folke et al., 2005; Armitage et al., 2007). Transformational leadership can promote collaborative learning, strengthen institutional networks, and facilitate cross-sectoral coordination—key components of decentralized water resource governance systems (Ansell & Gash, 2008). This research therefore proposes a contextually specific conceptual model rather than a general universal framework. Consistent with the view that leadership effectiveness depends on adaptability to social and organizational contexts (Northouse, 2018), the study indicates that strengthening inspirational and intellectual stimulation among community leaders can significantly enhance participatory water governance. At the same time, role modeling and consideration of individual differences play crucial roles in building trust and long-term relationships, which are fundamental to continued collaborative activities. Therefore, the proposed framework possesses both theoretical and practical value in developing participatory governance and sustainable irrigation management in rural communities.

New Body of Knowledge

This study provides novel insights into cultivating participatory transformational leadership for irrigation management among local leaders in Mueang District, Nakhon Phanom Province. The research uncovers several significant practices that fundamentally strengthen community-based governance. Primarily, establishing sub-district-level water management regulations ensures fairness and conflict resolution, thereby fostering a shared sense of collective responsibility among villagers. Furthermore, effective local leaders successfully utilize participatory decision-making platforms, such as village forums and sub-district assemblies, to integrate local wisdom with external expertise. This inclusive approach strongly supports democratic values and amplifies the voices of marginalized groups, including women and small-scale farmers. To bolster technical proficiency and institutional resilience, these communities actively collaborate with external entities such as irrigation departments, non-governmental organizations, and academic institutions.

Additionally, integrating appropriate communication tools and affordable water technologies—such as social media platforms for real-time updates and natural filtration systems—improves operational transparency and responsiveness. Transformational leaders also prioritize developing new-generation leaders and community volunteers through targeted mentoring, ensuring the long-term continuity of local water governance. By implementing continuous monitoring and transparent evaluation processes, such as regular inspections by community teams, the organization embeds accountability and adaptive management directly into its culture. Ultimately, transformational leadership shifts the local governance focus from authoritative control to visionary, ethical guidance, creating a robust, sustainable, and highly inclusive model for rural irrigation management.



Figure 2 New Body of Knowledge

Recommendations for Implementation and Future Research

Based on the empirical findings, subdistrict and village headmen should strengthen oversight of local water sources, prioritizing rigorous maintenance and regulatory enforcement to prevent future water-related crises proactively. Local leaders should be empowered to make autonomous decisions by developing a comprehensive understanding of the implementation processes utilized by relevant government agencies. This understanding enables them to propose tailored, context-specific solutions that genuinely benefit rural communities.

For future academic inquiry, subsequent studies should examine the longitudinal evolution of transformational leadership among local leaders engaged in participatory irrigation management across broader geographical areas, including all regions of Nakhon Phanom Province. Additionally, comparative analyses of the specific determinants affecting public service delivery by local administrative bodies across districts would provide valuable guidance for ongoing governance improvements. Finally, future research should concentrate on maximizing the efficacy of irrigation management structures overseen by local leaders throughout the Upper Northeastern region, thereby broadening the practical applicability of the proposed participatory model.

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