

Driving Mechanisms for Policy Implementation in Smart City Development of Songkhla City Municipality, Songkhla Province

Watcharawin Kamkiew^{*1}, Seksak Yoodee², Kornphanat Chanachon³

¹ Faculty of Commerce and Management, Prince of Songkla University, Trang Campus, Thailand

² Management for Development College, Thaksin University, Phatthalung Campus, Thailand

³ Management for Development College, Thaksin University, Songkhla Campus, Thailand

* Corresponding author e-mail: watcharawin.k@psu.ac.th

Abstract

Although Thailand's smart city policy is strategically anchored in clear national development frameworks, its implementation at the municipal level remains institutionally complex. This qualitative research study examines the dynamics of smart city policy implementation in Songkhla City Municipality through in-depth interviews, focus groups, and documentary analysis. The analysis is guided by the policy implementation framework of Sabatier and Mazmanian and Chandharasorn's integrated implementation model and complemented by street-level bureaucracy and governance perspectives.

The findings indicate that policy implementation is driven by four interrelated mechanisms: (1) organizational competency and personnel capacity, (2) strategic planning and control systems, (3) leadership and cross-sector collaboration, and (4) support from national-level agencies. However, these enabling factors coexist with persistent structural constraints, including heavy workloads and staff rotation, fragmented project management, limited fiscal capacity, political discontinuity, rigid procurement regulations, overlapping jurisdiction among government agencies, and limited participation from private actors and citizens.

Analytically, the tension between "strong driving mechanisms" and "enduring obstacles" should not be interpreted as separate findings. Rather, it reflects a structural gap between policy design and operational execution, shaped by institutional arrangements, inter-organizational coordination, and the discretionary practices of frontline officials. The study demonstrates that the effectiveness of smart city implementation is not determined solely by technological readiness but by institutional coherence and governance integration. By situating the empirical findings within established policy implementation theories, this research contributes a

context-sensitive explanation of how structural and operational conditions shape the trajectory and limitations of smart city development at the municipal level.

Keywords: Policy Implementation, Smart City, Songkhla City Municipality

Introduction

The concept of the Smart City has emerged as a significant global urban development trend aimed at enhancing public service efficiency, quality of life, and urban security through interconnected data systems and digital technologies. Its implementation requires collaboration among government, the private sector, and local communities, often through public-private partnerships (PPP), as seen in countries such as Singapore, South Korea, and Spain, where ICT integration has positioned these cities as global models (Prawanne, 2020). Although widely promoted internationally and nationally, including in Thailand, the effective translation of smart city policy into local-level practice remains insufficiently examined in academic discourse (Smitananda & Akahat, 2024). Thailand has advanced smart city initiatives across several provinces, emphasizing technological innovation to improve urban management and sustainability. Smart city development encompasses seven key dimensions: Smart Environment, Smart Mobility, Smart Living, Smart People, Smart Energy, Smart Economy, and Smart Governance (Smart City Office, 2021). Under the government of Prime Minister General Prayut Chan-o-cha, 36 pilot areas in 25 provinces were designated, with expansion plans underway. The initiative is guided by five strategic pillars, coordinated by the Digital Economy Promotion Agency (DEPA), and aligned with Thailand's 20-Year National Strategy (2018–2037) (Public Relations Department, 2023).

Despite strategic policy promotion, most Thai studies describe smart city components without sufficiently linking them to policy implementation theory, leaving a theoretical gap in explaining why certain arrangements succeed or fail (Jumnong & Lowatcharin, 2022). Policy implementation involves complex processes of decision-making, coordination, and resource allocation, and its outcomes depend on policy clarity, organizational structure, resources, and socio-political context (Pressman & Wildavsky, 1984; Sabatier & Mazmanian, 1980). However, these theoretical perspectives remain underutilized in Thai smart city research. While existing Thai studies tend to describe smart city components and technological initiatives, they rarely theorize how implementation dynamics unfold within a centralized administrative system. As a result, there is limited understanding of how formal institutional design interacts with local administrative discretion, collaborative governance, networks, and contextual constraints to shape implementation outcomes. This study addresses this theoretical gap by integrating structural implementation theory with governance and street-level perspectives to explain how smart city policies are translated into practice in a centralized context.

Songkhla Province in southern Thailand has been identified as a potential smart city and regional economic hub. To advance this goal, the province established the Songkhla Smart City Steering Committee to enhance competitiveness and align development with the 20-Year National Strategy and the 13th National Economic and Social Development Plan (2023–2027), particularly Target 8 on safe and sustainable cities (Songkhla Provincial Public Relations Office, 2022). Smart city development in Songkhla covers seven dimensions under the supervision of relevant ministries. At the municipal level, Songkhla City Municipality formulated the Revised Local Development Plan (2023–2027), Amendment 2/2024, aligning with national development plans and Sustainable Development Goal 9 (Office of the National Economic and Social Development Council, 2022; Strategy and Budget Division, 2024). The plan also corresponds with provincial and municipal strategies emphasizing infrastructure and information network development toward a smart city (Songkhla City Municipality, 2023). The municipality has been designated as a smart city promotion zone, marking a critical step toward sustainable transformation (Songkhla City Municipality, 2023).

This study, *Driving mechanisms for policy implementation in Smart City development of Songkhla City Municipality, Songkhla Province*, applies an integrated policy implementation framework. It draws on Sabatier and Mazmanian's (1980) conditions: policy clarity, organizational authority, inter-agency coordination, and resource capacity as structural determinants of implementation success. It also incorporates Chandharasorn's (2011) integrated model, which emphasizes four core variables: planning and control efficiency, organizational competency, leadership and collaboration, and political external environment management. These factors shape policy outputs, outcomes, and broader societal impacts. To broaden the assessment of policy success, the study engages McConnell's (2010) and McConnell et al. (2020) governance perspective, which highlights stakeholder perceptions, legitimacy, and inclusiveness, alongside Lipsky's (2010) street-level bureaucracy theory, which explains how frontline discretion mediates policy translation in practice. Guided by this framework, the study identifies the driving mechanisms shaping smart city implementation in Songkhla City Municipality. Despite formal strategic alignment and national support, constraints such as limited budgets, coordination fragmentation, and restricted civic participation reveal a gap between policy design and operational coherence. Comparative references to Hat Yai Municipality and Cork City Council in Ireland further illustrate how differences in institutional capacity and governance structure influence implementation outcomes as well. This study contributes to the smart city governance debate by theorizing implementation under centralized administrative regimes.

Objectives

1. To examine the mechanisms driving policy implementation for the development of a smart city in Songkhla City Municipality, Songkhla Province.

2. To investigate the obstacles encountered in the policy implementation process for smart city development in Songkhla City Municipality, Songkhla Province.

3. To propose recommendations for enhancing policy implementation toward the development of a smart city in Songkhla City Municipality, with Hat Yai Municipality, and Cork City Council.

Literature Review

1. The Concept of Smart Cities

A Smart City is an urban development approach that shifts emphasis from physical infrastructure to digital technology-driven governance aimed at comprehensively improving citizens' quality of life across economic, social, environmental, safety, transportation, education, and public service dimensions. It requires a clear policy vision, digital culture, human capacity development, big data integration, and cross-sector participation, viewing technology as a tool for efficient, transparent, and sustainable governance aligned with local contexts (Smitananda & Akahat, 2024). According to the Organization for Economic Co-operation and Development (OECD) reports that smart city data governance: challenges and the way forward, smart City success depends not merely on data volume or technological sophistication but on effective data governance, including shared standards, privacy protection, cybersecurity, interoperability, and public trust. Key global challenges include data fragmentation, unclear accountability, and limited data skills. The OECD therefore recommends establishing institutional data governance frameworks, promoting cross-sector data sharing, and designing citizen-centered policies to support evidence-based decision-making and sustainable public service improvement (OECD, 2023). Moreover, the Smart City Office (2021) defines a smart city as an urban area that strategically applies technology and innovation to enhance public service efficiency, improve urban management, reduce resource consumption, and sustainably improve citizens' quality of life under the vision of a "Livable and Modern City." The concept emphasizes integrated urban development with active collaboration among government, the private sector, and citizens. The framework consists of seven interconnected dimensions: Smart Environment, Smart Mobility, Smart Living, Smart People, Smart Energy, Smart Economy, and Smart Governance as well.

Haque et al. (2025) also conducted a systematic literature review of over 3,000 studies, identifying 67 relevant articles to examine how smart city development addresses justice, equity, responsibility, and inclusion. The findings illustrate that justice in smart cities includes infrastructural justice concerning unequal access to basic infrastructure and procedural justice emphasizing participatory decision-making. The study also highlights that vulnerable groups, such as low-income populations, women, and persons with disabilities, are often disproportionately affected by rising housing costs, displacement, and limited opportunities. It concludes that

justice must be embedded as a core principle in smart city policy and governance to ensure inclusive urban development.

Components of a Smart City Development Plan

The implementation of smart cities at the local level is guided by five main pillars Smart City Office (2021)

- (1) Defining the target area: establishing a clear vision, goals, boundaries, scale (e.g., province or municipality), ownership status, and coverage of live–work–play functions, with a minimum population density requirement and participation from citizens and the private sector.
- (2) Infrastructure development plan: outlining physical and digital infrastructure aligned with city objectives, including investment models, budgets, and funding sources.
- (3) Data and security development plan: developing a city data platform, data catalog, data sharing mechanisms, and data governance to ensure security and personal data protection.
- (4) Smart city services: providing services in at least two of the seven areas, with Smart Environment mandatory, along with defined targets, strategies, and KPIs.
- (5) Sustainable management: specifying governance models, budget arrangements, and stakeholder participation to ensure transparent, accountable, and sustainable smart city development.

The implementation approach for promoting smart city development generally focuses on policy processes, strategies, plans, projects, and collaborative mechanisms among relevant sectors, including the government, private sector, civil society, local administrative organizations, and academic or research institutions. Hence, in Thailand, similar to other countries, importance has been placed on promoting and developing smart city capabilities. The clear concepts and policies for smart city implementation have been established both under the 20-Year National Strategy (2018–2037) as a national-level framework for practical implementation and within national and organizational plans and policies, such as the Thailand 4.0 initiative as well (Department of International Law, 2021).

2. Concepts of Public Policy

Public policy is a tool utilized by governments to administer the country, address social problems, and respond to citizens' needs to improve their quality of life. According to Dye (2021) mentions that public policy refers to "whatever governments choose to do or not to do." Similarly, Thamrongthanyawong (2019, pp. 43-44) defines public policy as state action or inaction intended to produce social benefits and reflect collective values within a legal framework. Successful implementation sustains governmental authority, whereas failure to address citizens' needs may weaken legitimacy. The extent to which governments respond to public demands depends on the political system: authoritarian regimes limit citizen influence due to centralized power, while democratic systems allow citizens, especially in highly democratic contexts, to shape public policy more directly. Meanwhile, Lipsky (2010) argues that "street-level bureaucrats" such as teachers, police officers, social workers, and local officials exercise significant discretion in interpreting and implementing policy under constraints of limited time,

resources, rules, and public expectations. To manage these pressures, they adopt coping strategies such as task prioritization, routine standardization, and client screening, which shape how policies are delivered in practice. Consequently, frontline officials effectively become *de facto* policymakers, and variations in policy outcomes often stem from their working conditions and discretionary decisions.

Once policies are formulated, the next critical step is policy implementation, which is central to the public policy process and essential for achieving the objectives set by policymakers.

3. Policy Implementation

Policy implementation is the stage following policy or legal formulation, involving the administration of policies through various actors, organizations, and operational methods to achieve established goals. It encompasses processes, outputs, and outcomes in line with system theory, ranging from authoritative decisions and program expenditures (outputs) to broader societal changes (outcomes). Thus, policy implementation includes the analysis of organizational behavior, interactions, and other factors influencing the achievement of policy objectives (Nimpanich, 2011, pp. 5-10). Public policy plays a central role in national development as an output of political processes designed to address citizens' needs and reflect societal values. The government, as the legitimate authority, formulates and selects policies to solve public problems and guide national administration. Public policy encompasses planning, program design, project management, and operational processes, and typically follows five stages: agenda setting, policy formulation, decision making, implementation, and evaluation. The government serves as the primary mechanism for translating policies into tangible and sustained outcomes. Policy implementation absolutely is a crucial task of the bureaucracy, which must execute government policies to ensure consistent administration and achieve policy objectives. The success of implementation depends on organizational competency (Sricharumedhiyan et al., 2023).

According to Chandharasorn (2011) also integrated models of policy implementation, drawing from five approaches (rational, managerial, organizational development, bureaucratic process, and political models) seek to understand the effects of various factors on successful policy implementation, which can be analyzed across three dimensions: (1) Measuring success and failure is based on outputs, outcomes, and ultimate outcomes. (2) Policy impact is evaluating the influence of policies. (3) National benefit is assessing whether policy outcomes serve the country as a whole.

Key variables for consideration include

(1) Planning and control efficiency is clarity and feasibility of objectives, task assignments, performance standards, and systems for monitoring, controlling, and evaluating policies. (2) Organizational competency is a strong organizational structure, effective budget allocation, sufficient and skilled personnel, appropriate

equipment and technology, and adequate operational facilities. (3) Leadership and collaboration are managerial leadership, motivational strategies, employee participation, team-building, and internal cohesion. (4) Political and external environment management whose success depends on the capabilities of stakeholders (organizations, groups, institutions), inter-agency dependencies, negotiation capacity, and changes in economic, social, and political conditions. (Chandharasorn, 2011)

Policy proponents often claim success, whereas opponents may view the same policy as a failure. In reality, policy outcomes typically lie between these extremes and are further complicated by multidimensionality: process, program/project, and political dimensions, which may experience success in some aspects but failure in others, depending on factual circumstances and interpretations. A policy can be categorized into varying levels of success: complete success, sustainable success, conflicting success, fragile success, and failure as well (McConnell, 2010, p. 345). Uncertainty in evaluating policy success often arises from unclear or multiple policy objectives. Policy outcomes are influenced by policymakers' decisions, which are in turn affected by institutions, interests, and ideologies that shape incentives and data utilization. These factors, which may introduce bias, ultimately impact the quality of policy decisions (FitzGerald et al., 2019, p. 1). Additionally, the concept proposed by Sabatier and Mazmanian (1980) argues that policy implementation success depends not only on policy content but on key structural and political conditions, including statutory clarity, appropriate authority and control mechanisms, capable implementing agencies, and sustained political and societal support. As implementation is a long-term, multi-actor process shaped by external factors, careful statutory and administrative design is essential to reduce the gap between policy intent and practical outcomes.

While early implementation research, particularly the top-down approach of Sabatier and Mazmanian, emphasized statutory clarity and hierarchical control, subsequent scholarship introduced bottom-up perspectives highlighting the discretionary power of street-level actors (Lipsky, 1980). More recent governance and network theories further reconceptualize implementation as a collaborative and negotiated process occurring within complex policy networks (Rhodes, 1997; Sørensen & Torfing, 2007; Ansell & Gash, 2008).

4. Smart City Development Policy of Songkhla City Municipality

Songkhla Province in the South of Thailand has supported and promoted the Songkhla City Municipality in advancing toward becoming a smart city. Accordingly, a policy for smart city development was established within the municipal jurisdiction to ensure effective implementation of this policy. Songkhla City Municipality (2021) formulated a local development plan (2023–2027), which includes various development projects and strategic directions as follows: Strategy 1: Social development and enhancement of the quality of life to strengthen community resilience. Strategy 2: Improvement of educational quality and standards, and promotion of religion,

arts, culture, and traditions. Strategy 3: Economic, social, sports, recreational, and creative tourism development, promoting grassroots economy toward international standards. Strategy 4: Resource and environmental management for sustainable development. Strategy 5: Development of infrastructure and information network systems toward a smart city. Strategy 6: Enhancement of public administration quality toward organizational excellence. Digital Economy Promotion Agency (2025) reports that Songkhla City Municipality has translated its Smart City policy into practice in the dimension of Smart Living through the project entitled “1,000-Bed Hospital: Bonded Hearts, Caring for Bo Yang Community.” This initiative represents a significant milestone in advancing toward a smart city that enhances convenience and promotes improved health outcomes for residents within the municipal jurisdiction. The project aligns with the mayor’s policy vision of “Quality of Life,” which emphasizes citizen-centered urban development and well-being. As a result of this initiative, the municipality received the “Good” level award in the Smart Living category from DEPA at the Smart City Solutions Awards 2025. This award aims to recognize exemplary applications of technology and innovation in accordance with smart city development frameworks, contributing to enhanced urban management efficiency and improved public service delivery. The project is implemented under the responsibility of the Public Health and Environment Division of Songkhla City Municipality.

5. Hat Yai Smart City

Smart city development in Hat Yai has been driven through structured administrative mechanisms and multi-sector coordination led by the municipal authority. According to Wongkittipat (2022) found that the municipality established dedicated committees to advance the seven smart city dimensions, with particular progress observed in Smart Mobility and public service modernization, reflecting Hat Yai’s role as the economic and transportation hub of Southern Thailand. The study also indicates that while strategic direction and leadership support have facilitated project advancement, implementation remains constrained by personnel resistance to change, limited equipment, and coordination challenges across departments. Similarly, broader Thai smart city research emphasizes that effective smart governance depends on sustained collaboration, communication, and stakeholder participation to enhance service delivery and urban management (Worrakittimalae et al., 2024). Overall, Hat Yai’s experience demonstrates that smart city progress is closely linked to organizational capacity, leadership commitment, and inter-agency coordination, yet still reflects the challenges of institutional integration within Thailand’s centralized administrative context.

6. Cork City Council in Ireland

Smart city development in Cork City Council, Ireland, which is embedded within a multi-level governance framework led by Cork City Council and supported by Ireland’s participation in the EU Climate-Neutral and Smart

Cities Mission (Cork City Council, n.d.; Government of Ireland, 2025). Rather than focusing solely on technological deployment, Cork integrates digital innovation with climate neutrality goals, sustainable infrastructure, and data-driven urban management (Cork City Council, n.d.). A central institutional mechanism is the Cork Smart Gateway, which functions as a formalized innovation ecosystem linking the City Council, universities, industry partners, and community actors. Through structured public–private–academic collaboration, interoperable data platforms, and open data governance, Cork institutionalizes smart city implementation within a stable organizational architecture (Cork Smart Gateway, n.d.). This integrated governance model demonstrates that smart city effectiveness is contingent not merely on technological capacity but on coherent institutional design, strategic policy alignment, and sustained collaborative networks that support long-term urban transformation toward sustainability and climate neutrality.

Therefore, Cork City Council, Hat Yai Municipality, and Songkhla City Municipality share common features in being municipally driven initiatives aligned with national strategies and focused on using digital technologies to improve public services and urban management. All three emphasize multi-sector collaboration and face similar challenges in coordination, resource constraints, and citizen engagement. Their experiences indicate that smart city effectiveness depends not only on technology, but also on governance capacity and institutional coherence.

Related Research

1. Studies Conducted in Thailand

Worrakittmalee et al. (2024) found that smart governance plays a decisive role in Thailand's smart city success. Collaboration, partnership, participation, communication, and accountability positively influence perceived effectiveness, while transparency may produce negative effects under resource limitations. The study emphasizes that sustained public–private cooperation and citizen involvement are essential for improving service delivery and achieving sustainable urban management. Chittmittrapap et al. (2022) also observe that Phuket Smart City has not yet achieved sustainable outcomes due to fragmented data systems, limited private-sector collaboration, budget constraints, and legal obstacles. The study underscores that integrated cooperation among government, private sector, and citizens supported by coherent policies and sufficient resources is central to success. Similarly, Jumnong and Lowatcharin (2022) identify DEPA as the primary policy driver in Phuket but highlight financial constraints and procedural delays as major barriers. They recommend greater budgetary support and broader dissemination of smart city knowledge to foster coordinated implementation. Temphoemphoon et al. (2020) demonstrate that Shanghai's Smart City development followed a phased strategic framework (2011-2020), combining clear policy direction, effective governance, infrastructure investment,

public–private partnerships, and human resource development. These coordinated elements contributed to sustained progress. Chaiseeha (2020) found that Khon Kaen encountered bureaucratic rigidity, unclear task prioritization, and limited public understanding of the smart city concept. Nevertheless, visible improvements in Smart Mobility provided tangible outcomes. Transformational leadership and structured multi-sector collaboration were also identified as critical mechanisms for advancing smart city development.

2. International Empirical Studies

Prakash and Karvonen (2026) argue that smart cities should be understood not merely as technological projects but as arenas shaped by competing and hybridizing institutional logics, market tech, state bureaucratic, and civic at the local level. Their study shows that the interaction among these logics generates new, networked configurations of local governance in which authority is negotiated among government, private sector actors, and civil society rather than monopolized by the state. Accordingly, the effectiveness of smart city initiatives depends on a city's ability to balance divergent institutional logics and to design governance mechanisms that are flexible, transparent, and inclusive. Lian et al. (2025) also conceptualize state-led smart city policy change in China as an institutional and political process shaped by digital economy pressures, leadership transitions, stakeholder networks, and national regulatory frameworks rather than as a purely technological initiative. They show that policy transformation occurs through policy learning, reframing, and power negotiations among public and private actors, while long-term continuity depends on local governments' capacity to build consensus, foster collaborative network governance, and tailor strategies to diverse urban contexts. Overall, the study frames smart city policy as a dynamic and evolving governance process requiring institutional flexibility and multi-actor coordination to sustain urban growth and management outcomes. Prateppornnarong (2025) argues that smart city implementation can advance social sustainability by improving the quality of life, expanding equitable access to services, enhancing civic participation, and increasing transparency through digital technologies. However, these benefits are not automatic, as implementation is constrained by the digital divide, power asymmetries, data privacy concerns, and tokenistic participation. The study concludes that achieving genuine social sustainability requires governance mechanisms that emphasize inclusiveness, accountability, and meaningful public engagement rather than a predominantly technology-driven approach. Chen et al. (2024) utilized China's Smart City Pilot Program as a quasi-natural experiment, applying multi-period DID (Difference-in-Differences) and PSM-DID (Propensity Score Matching – Difference-in-Differences) to panel data from 296 cities (2001-2021), and found that smart city policies significantly promote urban innovation. The effects operate mainly through industrial upgrading and increased informatization, display regional heterogeneity, and are strongest in the early stages before stabilizing over time. The authors recommend differentiated, context-sensitive smart city strategies and

sustained investment in science, technology, and intelligent industries to support long-term innovation. Sulistyaningsih et al. (2023) also argue that smart city implementation in Indonesia must extend beyond digital technology to encompass smart urban governance grounded in policy integration, institutional clarity, and multi-level coordination. They found that successful implementation depends on organizational readiness, administrative capacity, adequate funding, and citizen participation, while key barriers include fragmented coordination, uneven city capacities, and weak monitoring and evaluation systems. The study concludes that strengthening institutional capacity and cross-sector collaboration is essential for translating smart city initiatives into improved urban governance outcomes.

Research Methodology

1. Research Design

This study is a qualitative research aimed at analyzing the mechanisms driving the implementation of policies for smart city development in Songkhla City Municipality, Songkhla Province. The research methods include documentary research, in-depth interviews, focus groups, participant observation, and non-participant observation as well.

2. Key Informants

The study utilized snowball sampling to select the key informants, including: (1) Municipal personnel were 20 individuals from the Songkhla City Municipality. (2) Residents were 20 individuals who resided within the municipal area. (3) Private sector representatives were 20 individuals who operated in Songkhla City Municipality. Thus, a total of 60 key informants participated in in-depth interviews, and focus groups were 3 groups as the municipal personnel, consisting of 10 people, local residents, consisting of 10 people, and the private sector representatives also were 10 people. These participants were selected based on their experience in driving policy implementation for smart city development in Songkhla Municipality.

3. Ethical Considerations

The researcher designed an in-depth interview guide to be used with the key informants for this study. The in-depth interview questions were then reviewed by five experts to ensure their alignment with the research objectives, the conceptual framework, the context of the key informants, and the study area. Subsequently, the questions were submitted to the Institutional Review Board for Human Subjects Research at Sirindhorn College of Public Health, Yala Province, for ethical review and approval.

4. Data Verification

For in-depth interviews, the researcher ensured the quality, accuracy, consistency, and reliability of the data through triangulation, as proposed by Miles and Huberman (1994, p. 267) across three dimensions:

(1) Times were spent comparing and verifying information obtained from interviews conducted at different times to identify similarities or differences. (2) The places were comparing and verifying data collected from interviews conducted at different locations to identify similarities or differences. (3) Persons were comparing and verifying data obtained from multiple key informants to identify similarities or differences.

5. Qualitative Data Analysis

Data analysis in this research followed the framework of Miles and Huberman (1994, pp. 10-12), comprising three main steps: (1) Data reduction was condensing and refining the data to focus on the most relevant and clear information. (2) Data display was organizing the reduced data into categories aligned with the conceptual framework. (3) Conclusion drawing and verification involved interpreting and drawing conclusions from the findings while verifying accuracy, relevance, and reliability to ensure credible research results.

6. Limitations of the Study

The researcher initially designed a mixed-methods research approach. However, when conducting quantitative data collection, it was not feasible because some residents and the private sectors of Songkhla City Municipality area, and the Municipal personnel of Songkhla City Municipality, who constituted the sample group (n) were either illiterate or had limited literacy skills, completing the questionnaires of this research. Consequently, the researcher was required to adjust the research design from a mixed-methods approach to a qualitative research approach only. The data collection was therefore carried out through in-depth interviews, focus groups, participant observation, and non-participant observation. These methods were deemed more appropriate for the target population. Moreover, such methods enabled the collection of more detailed and in-depth information as well. During the in-depth interviews, the researcher encountered additional challenges, as most of the residents primarily communicated in the Southern Thai dialect rather than Standard Thai. This often made comprehension difficult, requiring the researcher to repeat and rephrase the questions many times to ensure complete and accurate data collection. Furthermore, some community members refused to provide information, considering the matter irrelevant to them or due to the absence of budget compensation. In addition, some of the private sector participants lacked awareness or prior knowledge regarding the Songkhla City Municipality's implementation of the smart city initiative. Thus, they did not give information to the researcher. Furthermore, comparative cases are document-based analytical comparisons, not full empirical case studies.

Research Findings

The mechanisms driving the implementation of policies for smart city development in Songkhla City Municipality are as follows: (1) Organizational competency is that municipal personnel possess the knowledge, skills, and positive attitudes necessary to achieve the primary goals of smart city development, focusing on three

key areas: Smart Environment, Smart Living, and Smart Governance, because in all three aspects, the Songkhla City Municipality has more potential than the others. The various municipal departments are well-prepared and capable of supporting the advancement of these initiatives; another will do so in the future as long as three key areas are successfully addressed. (2) Planning and control efficiency are the municipal leadership has established long-term plans targeting the three primary smart city dimensions, with the remaining four dimensions to be implemented once the initial three are completed. These plans are integrated into the municipality's strategic framework, with dedicated working teams, budget allocations, and monitoring and evaluation systems led by the strategic division to ensure effective policy implementation. (3) Leadership and collaboration are also strong, with leadership and collaborative mechanisms being critical. The mayor and deputy mayors provide visionary leadership, facilitating policy support, planning, and budget allocation for smart city initiatives. Advisory teams, municipal personnel, residents, private organizations, and government agencies actively collaborate to drive the successful implementation of smart city projects in the Songkhla City Municipality. (4) The political and external environment are supported by the national government, the Department of Local Administration, and the Digital Economy Promotion Agency (DEPA) also assists in promoting the modernization of cities, including Songkhla, alongside other southern cities such as Hat Yai, Yala, Nakhon Si Thammarat, Phuket, and Surat Thani. National-level initiatives encourage local administrative organizations to pursue smart city development, while DEPA, together with the Prince of Songkla University, Thaksin University and Rajamangala University of Technology Srivijaya in Songkhla province, provides guidance, assistance, and consultancy to Songkhla City Municipality throughout the development process.

Obstacles to Policy Implementation for Smart City Development in Songkhla City Municipality

The implementation of smart city policies in Songkhla City Municipality has several problems: (1) Heavy workload of personnel for Municipal staff often has multiple responsibilities, limiting their participation in smart city development activities. Frequent staff transfers and a lack of interest from some daily-wage employees further reduce engagement. (2) Fragmented project management is that departments often operate independently, resulting in uncoordinated initiatives and a lack of unified direction, which delays the achievement of smart city goals. This situation reflects what Sabatier and Mazmanian (1980) describe as the challenge of inter-organizational coordination, where the involvement of multiple implementing units without strong integrative mechanisms increases the difficulty of achieving consistent policy execution. (3) Limited budget is a smart city development that requires substantial investment, yet municipal revenue is sometimes below target, and most funds are allocated to regular expenditures such as salaries. Hence, this limits budget allocation for smart city projects. (4) Political turnover is changes in political leadership every four years by election from voters, leading

to shifts in policy priorities, affecting the continuity of smart city initiatives and their implementation, as long as they cannot return to the position of mayor at Songkhla City Municipality again. (5) Limited public support because some residents view smart city development as irrelevant to their daily lives. Thus, several are low-income, have limited access to modern technology, or are transient merchants, reducing their engagement and support. (6) Insufficient public awareness is a lack of comprehensive communication about smart city initiatives, which means that some municipal personnel, residents, government agencies, and private organizations are unaware of project directions, plans, implementation, monitoring, or benefits. (7) Government procurement regulations are existing procurement rules that are not conducive to smart city project execution, causing concerns over budget allocation, purchasing processes, and audits by the State Audit Office of the Kingdom of Thailand. (8) Multiple government agencies in jurisdiction are numerous agencies that operate within the municipality, each pursuing separate development projects based on their mandates, resulting in fragmented, uncoordinated efforts and limited integration with municipal initiatives. Such dispersed responsibility illustrates the absence of clear jurisdiction and implementation authority, another critical condition identified by Sabatier and Mazmanian (1980) for successful policy implementation. (9) Limited private sector participation is restricted by the small number of local private enterprises, which restricts tax revenue collection and reduces opportunities for private investment in smart city projects. Even with government tax incentives, private participation remains lower compared to cities such as Hat Yai City, Phuket Province, or Khon Kaen Province.

This study examine the policy implementation comparison of smart city initiatives in Songkhla City Municipality, Hat Yai Municipality, and Cork City Council in Ireland are grounded in the combined analytical frameworks of Sabatier and Mazmanian (1980); Chandharasorn's (2011); McConnell (2010); McConnell et al. (2020) as Sabatier and Mazmanian's top-down implementation theory explains how the success of policy implementation depends on the clarity and consistency of policy objectives, the presence of a well-defined organizational structure and authority, effective inter-organizational coordination, the availability of adequate resources and technical competence among implementing officials (Sabatier & Mazmanian, 1980). Also, Chandharasorn (2011) proposes an integrated policy implementation model that synthesizes five approaches: rational, managerial, organizational development, bureaucratic, and political to explain factors shaping implementation success. The framework assesses performance across outputs, outcomes, ultimate outcomes, policy impacts, and national benefits, emphasizing four key variables: planning and control efficiency, organizational competency, leadership and collaboration, and management of the political and external environment. These factors are directly reflected in the variables concerning policy clarity, responsible organizational structure, data integration across agencies, and personnel capacity. Complementing this,

McConnell's framework extends the analysis beyond administrative capacity to consider for whom and in what sense a policy can be considered successful, emphasizing governance networks, public–private partnerships, citizen participation, and the distribution and nature of implementation problems (McConnell, 2010; McConnell et al. 2020). Together, these frameworks enable a comprehensive analysis that not only assesses whether smart city policies can be effectively implemented by municipal administrations but also evaluates the quality, legitimacy, and inclusiveness of policy success from a governance and citizen-oriented perspective.

Policy Implementation Comparison of Smart City (with theoretical references)

Table 1 Policy Implementation Comparison of Smart City

Analytical Variable (with theory)	Songkhla City Municipality	Hat Yai City Municipality	Cork City Council
1. Policy clarity and objective consistency. (Sabatier & Mazmanian, 1980)	A Smart City vision exists, but remains project/activity-based.	A clearer Smart City plan linked to the city's strategic framework.	A clearly articulated municipal Smart City Strategy as a formal policy document.
2. Responsible organizational structure and implementation authority. (Sabatier & Mazmanian, 1980)	Responsibilities are dispersed across multiple departments. (IT, planning, public health, etc.).	Emerging clearer digital coordination unit.	Dedicated Smart City Office and data team.
3. Inter-agency data integration and administrative coordination capacity. (Sabatier & Mazmanian, 1980)	Data remains fragmented (data silos).	Initial integration across some systems.	Open data platform and interoperable systems in use.
4. Resources and personnel skills for implementation. (Sabatier & Mazmanian, 1980)	Limitations in digital skills and capacity.	Increasing training and capacity development.	Specialized personnel in data governance.
5. Public–private partnership and governance network. (McConnell, 2010; McConnell et al., 2020)	Exists on a project-by-project basis.	Expanding area-based collaboration.	Institutionalized, long-term smart city partnership structure.
6. Citizen participation and stakeholder engagement. (McConnell, 2010; McConnell et al., 2020)	Primarily, awareness and participation in activities.	Growing communication channels with citizens.	Civic engagement through digital platforms.

Table 1 (continued)

Analytical Variable (with theory)	Songkhla City Municipality	Hat Yai City Municipality	Cork City Council
7. Nature of implementation problems and distribution of policy success. (McConnell, 2010; McConnell et al., 2020)	Budget, personnel, and coordination constraints.	Data management and multi-agency coordination challenges.	Complexity related to privacy and data protection.
8. Planning and Control Efficiency. (Chandharasorn, 2011)	The Smart City plan is clearly aligned with the provincial strategy and strategy five of the municipality, emphasizing infrastructure and information network development with explicit goals.	Urban development planning focuses on transportation, public services, and digital systems, though strategic integration is less explicit than in Songkhla.	A clearly articulated digital strategy with KPIs and data-driven monitoring, supported by the EU Smart Cities Mission framework.
9. Organizational Competency. (Chandharasorn, 2011)	Strong capacity in ICT infrastructure and municipal data management systems.	Large urban economy with substantial human resources and organizational capacity to support city services.	The Cork Smart Gateway model integrates the city council, universities, and industry into an innovation ecosystem.
10. Leadership and Collaboration. (Chandharasorn, 2011)	The mayor actively promotes smart city development as a strategic priority and coordinates with provincial agencies.	Local leadership emphasizes public service delivery and collaboration with the private sector in the city.	Strong institutional collaboration among the City Council, University College Cork (UCC), industry partners, and EU networks.
11. Political and External Environment Management. (Chandharasorn, 2011)	Requires coordination with the provincial government, DEPA, and central agencies for budgetary and technological support.	The city's economic centrality attracts private sector support and favorable local political dynamics.	Driven by national Irish policies and the EU Climate-Neutral and Smart Cities Mission, requiring multi-level governance coordination.

Table 1 (continued)

Analytical Variable (with theory)	Songkhla City Municipality	Hat Yai City Municipality	Cork City Council
12. Measurement of Success (Outputs–Outcomes– Ultimate Outcomes). (Chandharasorn, 2011)	Visible improvements in infrastructure, data systems, and public service delivery.	Improvements in urban services and transportation systems.	Measured through quality of life, sustainability, carbon neutrality, and urban innovation indicators.
13. Policy Impact. (Chandharasorn, 2011)	Enhances municipal administration through digital transformation.	Improves the efficiency of services in a large metropolitan context.	Systematically transforms the city toward a smart and climate-neutral model.
14. National Benefit. (Chandharasorn, 2011)	Serves as a smart city model at the municipal level in Thailand.	Functions as the economic hub of Southern Thailand.	Recognized as a model smart city within the European Union framework.

Source Developed by the author based on Sabatier and Mazmanian (1980), Chandharasorn (2011), McConnell (2010), McConnell et al. (2020)

The comparative analysis indicates that the development of smart city initiatives in Songkhla City Municipality, Hat Yai City Municipality, and Cork City Council can be systematically explained through the combined lenses of Sabatier and Mazmanian's (1980) implementation conditions, McConnell (2010), McConnell et al. (2020) perspectives on governance networks and policy success, and Chandharasorn's (2011) integrated implementation model. Songkhla's Smart City development remains largely project-based, with fragmented data systems and dispersed responsibilities despite strong alignment with municipal and provincial strategies. Hat Yai City demonstrates a more coherent strategic direction, improving coordination, capacity development, and stakeholder communication, though challenges in data integration and inter-agency management persist. In contrast, Cork City is located in Ireland exhibits a highly institutionalized smart city framework characterized by a dedicated organizational structure, interoperable data systems, specialized personnel, and long-term public–private–academic partnerships supported by national policy and the EU Climate-Neutral and Smart Cities Mission. Across the cases, variations in planning and control efficiency, organizational competency, leadership and collaboration, and political and external environment management shape differing levels of policy success, policy impact, and broader societal benefit, underscoring that smart city effectiveness depends not only on technology but on the quality of governance and implementation capacity.

Summary of Research Findings (Analytical Synthesis)

This study finds that smart city policy implementation in Songkhla City Municipality is driven by four interrelated mechanisms: organizational competency, planning and control efficiency, leadership and collaboration, and political and external support. These mechanisms operate interactively rather than independently in translating policy intentions into practice. First, organizational competency forms the foundation of implementation. Municipal personnel demonstrate adequate knowledge and commitment, particularly in the priority dimensions of Smart Environment, Smart Living, and Smart Governance, which serve as pilot areas for gradual expansion. Second, planning and control efficiency provide the structural backbone. Strategic plans, designated working teams, allocated budgets, and monitoring systems coordinated by the strategic division ensure coherent and trackable implementation. Third, leadership and collaboration act as enabling forces. Strong mayoral leadership supports resource mobilization and institutional commitment, while cooperation among municipal staff, community members, private actors, and government agencies fosters participatory implementation. Fourth, political and external support reinforce local efforts. National agencies and academic institutions provide policy alignment, technical expertise, and institutional backing, strengthening municipal capacity and confidence in advancing smart city development.

However, the study also identifies structural obstacles that constrain effective implementation. Budget limitations, inter-agency coordination challenges, and limited public participation create a gap between policy design and actual outcomes. These findings indicate that smart city implementation in Songkhla City Municipality is shaped not by a single factor, but by the interaction of organizational capacity, managerial systems, collaborative leadership, and external support, moderated by structural constraints. This integrated perspective explains both the progress achieved and the limitations encountered in local smart city development.

Recommendations for Policy Implementation to Improve Smart City Development in Songkhla City Municipality

1. Align departmental projects with core smart city goals- Departments should focus projects on the three primary areas of Smart City development where Songkhla City Municipality has strong readiness: Smart Environment, Smart Living, and Smart Governance, before expanding to Smart Mobility, Smart People, Smart Energy, and Smart Economy.

2. Promote teamwork and collaboration- Municipal personnel, private sector partners, residents, and government agencies should coordinate closely, forming networks and fostering integration in policy implementation.

3. Relax procurement regulations – The government should introduce measures to ease procurement rules, enabling more agile, flexible, and efficient project execution, consistent with the principle of New Public Management (NPM) in Public Administration.

4. Establish monitoring and evaluation systems – Departments should implement project monitoring and evaluation systems based on KPIs, applying frameworks such as Plan-Do-Check-Act (PDCA) to assess progress and address gaps effectively.

5. Ensure adequate budget allocation – Municipal leadership should provide sufficient funding to support the execution of projects aligned with the initial three priority areas of Smart Environment, Smart Living, and Smart Governance.

6. Outsource technology development – The municipality should consider outsourcing modern technological solutions, such as unified applications, to provide citizens, businesses, government agencies, and tourists with consistent access to information, alerts, and services in multiple languages (Thai, English, Malay, and Chinese).

7. Benchmark against successful smart cities – Songkhla City Municipality should study other successful municipalities with similar contexts, such as Yala, Nakhon Si Thammarat, Surat Thani, Hat Yai, and Phuket, or other countries such as Singapore, Ireland, Malaysia, South Korea, and Japan to identify best practices and key success factors, particularly in the primary focus areas.

8. Develop national and international smart city networks – Participating in networks allows knowledge exchange, sharing research, data, and experiences, accelerating policy implementation, and avoiding trial-and-error approaches. Cities such as Singapore, Tokyo, Seoul, Taipei, Cork, and Shanghai demonstrate the principles of New Public Governance (NPG) in public administration.

9. Enhance public awareness and communication – Comprehensive dissemination of smart city plans, project benefits, and participation opportunities is necessary to engage residents, municipal personnel, private organizations, and local government units effectively.

10. Prioritize feasible areas first – Focus initial development efforts on Smart Environment, Smart Living, and Smart Governance, followed by gradual expansion to other areas, in line with DEPA's requirement to implement at least two domains with Smart Environment as the priority.

Although the findings are primarily based on municipal officials' perspectives, this represents an analytical strength rather than merely a limitation, as it reveals how smart city policy is interpreted and operationalized within the implementing structure. These perspectives explain the coexistence of strong enabling factors such as leadership support and inter-agency cooperation with persistent obstacles, including data fragmentation and coordination constraints. The tension highlights a gap between policy design and administrative execution, showing that managerial support alone does not ensure smooth implementation; institutional capacity and organizational arrangements ultimately shape how initiatives unfold in practice.

Discussion and Recommendations

The empirical findings align closely with the implementation conditions proposed by Sabatier and Mazmanian (1980), particularly regarding policy clarity, organizational authority, inter-agency coordination, and resource capacity. Differences in how smart city initiatives are perceived by administrators, partners, and citizens also support McConnell's (2010) argument that policy success should be evaluated beyond administrative performance and include governance processes and stakeholder perceptions. These interpretations are further reinforced by Chandharasorn's (2011) integrated model, which highlights planning and control efficiency, organizational competency, leadership and collaboration, and political and external environment management as key determinants of implementation outcomes, impacts, and broader national benefits. In Songkhla City Municipality, smart city development is supported by structured planning, mayoral leadership, organizational capacity, and backing from national agencies such as DEPA and the Thai government as well. These enabling factors reflect favorable implementation conditions consistent with Sabatier and Mazmanian (1980) and Chandharasorn (2011). Similar administrative mechanisms have been identified in Hat Yai, Phuket, and Khon Kaen (Wongkittipat, 2022; Chittmittrapap et al., 2022; Chaiseeha, 2020). However, persistent constraints, including fragmented coordination, limited budgets, weak data integration, rigid regulations, overlapping authority, political discontinuity, and limited citizen participation, mirror the implementation barriers described by Sabatier and Mazmanian (1980). Also, from Chandharasorn's (2011) perspective, these reflect weaknesses in organizational competency and political-environmental management. This coexistence of enabling mechanisms and structural barriers reveals a gap between policy intention and operational coherence. McConnell's 2010 framework, extended by McConnell et al. (2020), assists in explaining this tension by distinguishing between administrative outputs and broader stakeholder perceptions. While policymakers may view smart city initiatives as successful due to visible projects and strategic plans, citizens and frontline actors may experience limited participation and coordination challenges. In Chandharasorn's (2011) terms, outputs do not automatically translate into outcomes or long-term societal benefits.

The comparison with Cork City Council in Ireland further illustrates how institutionalized governance structures, clearer authority, stable funding, and integrated data systems contribute to more consistent implementation. Extending the insights of Pressman and Wildavsky (1984) and Sabatier and Mazmanian (1980) the analysis demonstrates that national policy coherence alone cannot ensure effective municipal implementation when local fiscal autonomy and administrative discretion are constrained. Smart City development should therefore be understood as a context-dependent governance process shaped by institutional design, fiscal structure, and administrative capacity rather than as a universal model of digital modernization. Although the

findings are broadly consistent with the implementation conditions proposed by Sabatier and Mazmanian (1980), particularly goal clarity and institutional support, the findings reveal important departures from the original framework. In the Thai context, implementation success is not determined solely by structural design or top-down control, but also by emergent conditions such as trust-building, collaborative networks, and informal coordination within a highly centralized administrative system. While the framework explains institutional dimensions effectively, it requires refinement to account for network dynamics and hierarchical administrative culture.

The study illustrates that structural centralization constrains municipal discretion, limiting adaptive capacity despite formal policy support. Smart city implementation is therefore reconceptualized as an institutionally embedded process shaped by the configuration of state authority and the distribution of administrative discretion. Comparative analysis of Songkhla City Municipality, Hat Yai City Municipality, and Cork City Council further demonstrates how variations in multi-level governance arrangements produce different implementation trajectories. By integrating structural implementation theory with governance and street-level perspectives, this research advances a structurally grounded explanation of policy effectiveness in urban digital transformation.

Recommendations

1. For Policymakers

1) Set clear strategic priorities – Focus on key areas where the municipality is most prepared, such as Smart Environment, Smart Living, and Smart Governance, to ensure effective and achievable smart city development.

2) Provide adequate budget and resources – Allocate sufficient funding and resources to support project implementation, ensuring that departments can execute initiatives aligned with the municipality's smart city goals.

3) Facilitate supportive policies and coordination – Implement flexible regulatory frameworks, promote inter-agency collaboration, and engage stakeholders to create an enabling environment for sustainable and integrated smart city development.

2. For Policy Implementers:

1) Enhance coordination and collaboration – Promote teamwork among municipal departments, private sector partners, residents, and government agencies to ensure integrated and unified smart city initiatives.

2) Develop monitoring and evaluation systems – Establish KPIs-based systems and use frameworks like Plan-Do-Check-Act (PDCA) to track progress, assess project effectiveness, and address gaps in implementation.

3) Prioritize resource allocation and project focus – Allocate sufficient budgets and focus initial efforts on feasible priority areas, Smart Environment, Smart Living, and Smart Governance before expanding to other domains.

3. For Researchers

1) Conduct comparative studies – Examine other successful smart cities with similar contexts, such as Phuket and Yala Smart cities, to identify best practices and key success factors.

2) Analyze implementation mechanisms – Investigate the effectiveness of organizational competency, leadership, planning, and collaboration in driving smart city policy implementation.

3) Evaluate community engagement – Study the role of public awareness, participation, and private sector involvement in supporting smart city development and overcoming implementation challenges.

References

- 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>
- Chaiseeha, P. (2020). Model of Khon Kaen province administration according to the smart city guidelines (รูปแบบการบริหารจัดการจังหวัดขอนแก่นตามแนวทาง Smart City). *Journal of Modern Learning Development*, 5(6), 48-59. <https://so06.tci-thaijo.org/index.php/jomld/article/view/245981> (in Thai)
- Chandharasorn, W. (2011). *An integrated theory of public implementation* (ทฤษฎีการนำนโยบายสาธารณะไปปฏิบัติ). Thai University Researchers Association. (in Thai)
- Chen, S., Zhang, X., Wang, W., Liang, Y., He, W., & Tan, Z. (2024). The effect of smart city policies on city innovation—A quasi-natural experiment from the smart city pilot cities in China. *Sustainability*, 16(18), 8007. <https://doi.org/10.3390/su16188007>
- Chittmitrapap, P., Kerdwichai, R., Suksod, P., & Chantararatmanee, D. (2022). The driving factors to the success of smart city development in Phuket province (ปัจจัยขับเคลื่อนความสำเร็จในการพัฒนาเมืองอัจฉริยะ จังหวัดภูเก็ต). *Panyapiwat Journal*, 14(1), 188-202. <https://so05.tci-thaijo.org/index.php/pimjournal/article/view/250198> (in Thai)

- Cork City Council. (n.d.). *EU climate-neutral & smart cities mission – Cork City Council*. Cork City Council. Retrieved February 9, 2026, from <https://www.corkcity.ie/en/climate-action/eu-climate-neutral-and-smart-cities-mission/>
- Cork Smart Gateway. (n.d.). *Cork Smart Gateway*. Cork City Council. Retrieved February 9, 2026, from <https://www.corkcity.ie/en/doing-business-in-cork/research-and-development/smart-city/cork-smart-gateway/>
- Department of International Law. (2021). *Smart cities through the smart concept* (เมืองอัจฉริยะ Smart cities through the smart concept). Office of the Council of State. <https://lawforasean.ocs.go.th/File/files/Smart%20City.pdf> (in Thai)
- Digital Economy Promotion Agency. (2025). *Announcement of the digital economy promotion agency on the recipients of the Smart City Solutions Awards 2025* (ประกาศสำนักงานส่งเสริมเศรษฐกิจดิจิทัล เรื่อง ผู้ได้รับรางวัลการประกวด Smart City Solutions Awards 2025). Digital Economy Promotion Agency. (in Thai)
- Dye, T. R. (2021). *Understanding public policy* (15th ed.). Pearson.
- FitzGerald, C., O'Malley, E., & Ó Broin, D. (2019). Policy success/policy failure: A framework for understanding policy choices. *Administration*, 67(2), 1-24. <https://doi.org/10.2478/admin-2019-0011>
- Government of Ireland. (2025). *EU climate-neutral and smart cities mission*. Department of Climate, Energy and the Environment. <https://www.gov.ie/en/department-of-climate-energy-and-the-environment/campaigns/eu-climate-neutral-and-smart-cities-mission/>
- Haque, M. N., Beckers, D., Costales, E., Aad, S., Sharifi, A., & Mora, L. (2025). A systematic review of research on just, equitable, responsible, and inclusive smart cities. *Technology in Society*, 83, Article 103050. <https://doi.org/10.1016/j.techsoc.2025.103050>
- Jumnong, P., & Lowatcharin, G. (2022). The implementation of the smart city policy of Phuket Province (การศึกษากำหนดนโยบายการพัฒนาเมืองอัจฉริยะไปปฏิบัติของจังหวัดภูเก็ต). *Political Science and Public Administration Journal*, 13(2), 215-242. <https://so05.tci-thaijo.org/index.php/polscicmujournal/article/view/256069> (in Thai)
- Lian, H., Min, B., & Oh, J. (2025). State-led smart city policy changes and impacts on urban growth and management: A study of 118 Chinese smart cities. *Journal of Asian Architecture and Building Engineering*, 24(6), 5601-5620. <https://doi.org/10.1080/13467581.2024.2407588>

- Lipsky, M. (1980). *Street-level bureaucracy: Dilemmas of the individual in public services*. Russell Sage Foundation.
- Lipsky, M. (2010). *Street-level bureaucracy: Dilemmas of the individual in public services* (30th anniversary ed.). Russell Sage Foundation.
- McConnell, A. (2010). Policy success, policy failure and grey areas in-between. *Journal of Public Policy*, 30(3), 345-362. <https://www.jstor.org/stable/40925891>
- McConnell, A., Greal L., & Lea T. (2020). Policy success for whom? A framework for analysis. *Policy Sciences*, 53(4), 589-608. <https://doi.org/10.1007/s11077-020-09406-y>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Sage.
- Nimpanich, J. (2011). *Policy implementation: Perspectives in political science, politics, public administration, management, and Thai case studies (การนำนโยบายไปสู่การปฏิบัติ: มุมมองในทัศนะทางรัฐศาสตร์ การเมือง และรัฐประศาสนศาสตร์ การบริหาร และกรณีศึกษาของไทย)*. Chulalongkorn University Press. (in Thai)
- OECD. (2023). *Smart city data governance: Challenges and the way forward*. OECD Urban Studies, OECD Publishing. <https://doi.org/10.1787/e57ce301-en>
- Office of the National Economic and Social Development Council. (2022). *The Thirteenth National Economic and Social Development Plan (2023–2027)*. Office of the National Economic and Social Development Council.
- Prakash, D., & Karvonen, A. (2026). *Institutional logics of the smart city and the emergence of new configurations of local governance*. *Cities*, 171, Article 106727. <https://doi.org/10.1016/j.cities.2025.106727>
- Prateepornnarong, D. (2025). Cities and sustainability: Exploring contributions, opportunities and challenges of smart city implementation towards social sustainability. *Urban Governance*, 5(2025), 69-78. <https://doi.org/10.1016/j.ugj.2025.02.005>
- Prawanne, C. (2020). The process of transformation into a smart city: A case study of Khon Kaen Municipality (กระบวนการเปลี่ยนแปลงสู่ความเป็นเมืองอัจฉริยะ: กรณีศึกษาเทศบาลนครขอนแก่น). *Local Administration Journal*, 13(3), 268-272. <https://so04.tci-thaijo.org/index.php/colakujournals/article/view/240248> (in Thai)
- Pressman, J. L., & Wildavsky, A. (1984). *Implementation: How great expectations in Washington are dashed in Oakland* (3rd ed.). University of California Press.

- Public Relations Department. (2023). *The government has announced 36 Smart Cities in 25 provinces and plans to add another 15 cities* (รัฐบาลประกาศ Smart City เมืองอัจฉริยะแล้ว 36 พื้นที่ 25 จังหวัด วางแผนตั้งเป้าเพิ่มอีก 15 เมือง). Office of the Prime Minister. <https://www.prd.go.th/th/content/category/detail/id/39/iid/207447> (in Thai)
- Rhodes, R. A. W. (1997). *Understanding governance: Policy networks, governance, reflexivity and accountability*. Open University Press.
- Sabatier, P. A., & Mazmanian, D. A. (1980). The implementation of public policy: A framework of analysis. *Policy Studies Journal*, 8(4), 538-560. <https://doi.org/10.1111/j.1541-0072.1980.tb01266.x>
- Smart City Office. (2021). *Smart city development* (การพัฒนาเมืองอัจฉริยะ). Office of Digital Economy Promotion, Ministry of Digital Economy and Society. <https://www.depa.or.th/th/smart-city-plan/smart-city-office> (in Thai)
- Smitananda, P., & Akahat, N. (2024). Digital technology policy initiation of local administrative organizations: The lessons of smart city development in Thailand. *Asian Administration and Management Review*, 7(1), 64-76. <https://doi.org/10.14456/aamr.2024.7>
- Songkhla City Municipality. (2023). *Strategic plan: Strategy 5 – Development of infrastructure and information network toward Smart City* (แผนยุทธศาสตร์: ยุทธศาสตร์ที่ 5 – การพัฒนาโครงสร้างพื้นฐานและเครือข่ายสารสนเทศสู่การเป็นเมืองอัจฉริยะ). Songkhla City Municipality. (in Thai)
- Songkhla City Municipality. (2021). *Local development plan (2023-2027) revised and amended edition No. 1/2023 Songkhla Municipality* (แผนพัฒนาท้องถิ่น (พ.ศ. 2566-2570) ฉบับทบทวนเพิ่มเติมและเปลี่ยนแปลง ครั้งที่ 1/2566 เทศบาลนครสงขลา). Songkhla Municipality. https://www.songkhla-city.go.th/2020/files/com_strategy/202308_8fdd4beb7c0cede.pdf (in Thai)
- Songkhla City Municipality. (2023). *Songkhla Municipality has been announced as a smart city promotion area* (เทศบาลนครสงขลาได้รับการประกาศรับรองเป็นเขตส่งเสริมเมืองอัจฉริยะ). Songkhla Municipality. (in Thai)
- Songkhla Provincial Public Relations Office. (2022). *Songkhla Province held a meeting of the committee driving the Songkhla Smart City project, which aims to create competitive advantages and opportunities to develop the province's potential to cover all dimensions* (จังหวัดสงขลาประชุมคณะกรรมการขับเคลื่อนสงขลาเมืองอัจฉริยะ Songkhla Smart City เพื่อสร้างรายได้เปรียบในเชิงการแข่งขันและโอกาสในการพัฒนาศักยภาพของจังหวัดให้ครอบคลุมทุกมิติ). Songkhla Province. <https://www.songkhla.go.th/news/detail/7776> (in Thai)
- Sørensen, E., & Torfing, J. (2007). *Theories of democratic network governance*. Palgrave Macmillan.

- Sricharumedhiyan, C., Kenaphoom, S., & Phrakrupalat Amnat Jitman. (2023). The relationship between public policy advocacy and public policy making (ความสัมพันธ์ระหว่างการผลิตนโยบายสาธารณะและการกำหนดนโยบายสาธารณะ). *Journal of Mani Chettha Ram Wat Chommani*, 6(6), 327-345. <https://so07.tci-thaijo.org/index.php/JMCR/article/view/3961/2762> (in Thai)
- Strategy and Budget Division. (2024). *Local development plan (2023-2027) (แผนพัฒนาท้องถิ่น (พ.ศ. 2566–2570) ฉบับทบทวนเพิ่มเติมครั้งที่ 2/2567)*. Songkhla Municipality. https://www.songkhla.go.th/2020/files/com_strategy/2023-05_f317778f2d9593c.pdf (in Thai)
- Sulistyaningsih, T., Purnama, R. A., & Kulsum, U. (2023). Smart city policy: Strategy and implementation to realize smart urban governance in Indonesia. *Journal of Governance and Public Policy*, 10(2), 105-117. <https://doi.org/10.18196/jgpp.v10i1.13840>
- Tempoemphoon, S., Wongpreedee, A., & Charoen, D. (2020). Drivers influencing the development of smart city in China: Case study of Shanghai city (ปัจจัยความสำเร็จที่ส่งผลต่อการพัฒนาเมืองอัจฉริยะของสาธารณรัฐประชาชนจีน: กรณีศึกษา นครเซี่ยงไฮ้). *Journal of Graduate Studies Valaya Alongkorn Rajabhat University*, 14(3), 165-177. <https://so02.tci-thaijo.org/index.php/journalgradvru/article/view/241760> (in Thai)
- Thamrongthanyawong, S. (2019). *Public policy: Concept, analysis and process (นโยบายสาธารณะ: แนวความคิด การวิเคราะห์และกระบวนการ)*. Sema Tham Publishing. (in Thai)
- Wongkittipat, P. (2022). *Hatyai smart city policy implementation: A study of administrative mechanism, progress and challenges (การขับเคลื่อนนโยบาย “หาดใหญ่เมืองอัจฉริยะ” ของเทศบาลนครหาดใหญ่: การศึกษากลไก ความสำเร็จ และอุปสรรค ในการนำนโยบายไปปฏิบัติ)* (Master's thesis of Public Administration). Prince of Songkla University. (in Thai)
- Worrakittmalee, T., Pienwisetkaew, T., & Naruetharadhol, P. (2024). The role of smart governance in ensuring the success of smart cities: A case of Thailand. *Cogent Social Sciences*, 10(1), Article 2388827. <https://doi.org/10.1080/23311886.2024.2388827>