GUIDELINES FOR DEVELOPING THE DIGITAL COMPETENCY OF LOCAL GOVERNMENT PERSONNEL IN MAHA SARAKHAM PROVINCE

Ntapat Worapongpat[1*]

[1*]Eastern Institute of Technology Suvarnabhumi (EIT), Thailand

*E-mail: dr.thiwat@gmail.com

ABSTRACT

This research aimed to (1) examine the current digital competency of local government personnel in Maha Sarakham Province (2) develop and propose practical guidelines for enhancing digital competency (3) compare levels of digital competency among personnel with different demographic characteristics and (4) analyze the relationship between the proposed development guidelines and the actual level of digital competency. A mixed-methods approach was employed, integrating both quantitative and qualitative data. Quantitative data were collected through a questionnaire (reliability coefficient = 0.960) administered to local government personnel, while qualitative data were obtained through in-depth interviews with administrators and experts in digital transformation. Data analysis used descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (one-way ANOVA, LSD pairwise comparison, and Pearson correlation).The results indicated that (1) personnel with different personal characteristics demonstrated significantly different levels of digital competency ($p < 0.05$) (2) the proposed guidelines were positively correlated with overall digital competency; and (3) among the guidelines, digital literacy training, digital mindset development, and digital infrastructure support had the greatest influence, while on-the-job knowledge transfer showed minimal effect. Qualitative findings supported these results by highlighting the need for continuous digital learning and management support for sustainable competency development.

Keywords: Digital Competency Development, Mixed-methods Research, Local Government Personnel, Maha Sarakham Province

Introduction

In the 21st century, Thailand's national strategies particularly the Thailand 4.0 policy and the 20-Year National Strategy have prioritized digital government reform as a critical driver of efficiency and innovation in public administration. Local government organizations (LGOs) must therefore accelerate digital transformation to deliver effective, transparent, and citizen-centered services. Recent studies (Worapongpat, 2025e, 2025f) found that senior administrators in Mueang Maha Sarakham District exhibit low to moderate levels of digital competency, which directly correlates with staff performance and overall organizational effectiveness. In addition, Gqamane and Taylor (2013) proposed a framework comprising 18 knowledge, 28 skill, and 20 attribute indicators that define a comprehensive digital competency profile for public personnel.

Despite valuable contributions from previous research, a clear gap remains: few studies have explored the development of context-specific digital competency guidelines tailored to the social, cultural, and organizational characteristics of Maha Sarakham Province. Johnson, Coggburn, and Llorens (2022) noted that most existing studies have concentrated on national-level frameworks or urban contexts, leaving rural and provincial realities underexamined. Addressing this gap is essential to ensure that digital competency initiatives are both relevant and sustainable within the local ecosystem.

Maha Sarakham, a key province in Thailand's northeastern region, plays a vital role in community-based socioeconomic development rooted in local wisdom and participatory governance (Khaenamkhaew, Onjun, Damrongwattana, & Prathum, 2023). However, personnel in local government organizations (LGOs) continue to face digital challenges that constrain their ability to deliver efficient and responsive public services. Studies conducted in other provinces, such as Ratchaburi and Nonthaburi, have similarly reported moderate levels of digital readiness, as well as persistent barriers related to digital literacy, training accessibility, and system usability (Kinder, Stenvall, Koskimies, Webb, & Janenova, 2023). These findings highlight the need for localized strategies to strengthen digital capabilities among public servants.

Building upon previous observations and stakeholder engagement in local municipalities, this research seeks to fill the provincial gap by designing practical and evidence-based guidelines for developing digital competency among LGO personnel in Maha Sarakham Province. Specifically, this study aims to: examine the current level of

digital competency among local government personnel; investigate the personal and organizational factors influencing digital competency; develop and propose guidelines for enhancing digital competency suited to the local context; and analyze the relationship between digital competency development guidelines and personnel competency levels.

To achieve these aims, a mixed-methods approach is employed, combining quantitative survey data with in-depth interviews from administrators and experts at sub-district and municipal levels. This integrated methodology enables the triangulation of findings, ensuring both empirical validity and contextual insight, and ultimately aims to produce actionable recommendations for advancing local digital governance in Thailand.

Objectives

1.Examine the current level of digital competency among local government personnel in Maha Sarakham Province.

2.Analyze the relationship between personal characteristics and the digital competency of local government personnel

3.Develop and validate guidelines for enhancing digital competency within the local government context.

4.Formulate policy recommendations for implementing digital competency development in local government organizations in Maha Sarakham Province.

Revised Literature Review

1. Concept and Definition of Digital Competency

Digital competency refers to the knowledge, skills, attitudes, and behaviors required to effectively use digital technologies for work, communication, and problem-solving (Murire, 2024). It extends beyond basic computer literacy to include the ability to evaluate digital content, manage information securely, and create new knowledge through digital tools (Worapongpat, 2025d).

According to Nua-amnat, Brahmakappa, Pumturian, and Soonthondachar (2021), digital competency encompasses five key dimensions: (1) information and data literacy, (2) communication and collaboration, (3) digital content creation, (4) safety, and (5) problem-solving. These components constitute the foundation of the Digital Competence

Framework (DigComp), which is widely applied in public-sector training programs across Europe and Asia.

In Thailand, digital competency is defined as the ability of personnel to access, use, and innovate with digital technology to improve productivity and service quality (Parycek, Schmid, & Novak, 2024). Public officers must continuously adapt to technological changes, developing capabilities in areas such as digital communication, cybersecurity awareness, and data-driven decision-making (Sirisawat & Chaiya, 2025).

2. Digital Competency in the Public Sector and Local Government Organizations

In the public sector, digital competency has become a core element of administrative modernization and an essential driver of digital government transformation (Worapongpat, 2025c). Local government personnel are increasingly expected to deliver public services through digital platforms that ensure efficiency, transparency, and accountability (Sinjindawong, Nuchniyom, & Pakakaew, 2023).

Several empirical studies emphasize that digital skills development improves not only individual performance but also organizational innovation. For example, Saman Siri Charoensuk (2022) found that local administrators with higher digital literacy levels were more effective in strategic planning and public participation initiatives. Similarly, Thirawan (2025) demonstrated that digital competency is positively associated with employee adaptability and the success of e-government projects.

Within Thailand's local government context, digital competency remains unevenly developed. Studies by Yigitcanlar, Agdas, and Degirmenci (2023) revealed that personnel in well-resourced municipalities tend to perform better in digital service delivery than those in smaller sub-district organizations. Limited access to training, insufficient infrastructure, and lack of digital confidence continue to hinder the effective implementation of digital policies.

Consequently, there is a growing need for localized digital competency development guidelines that account for the unique organizational, cultural, and social characteristics of each province. Developing such tailored frameworks is crucial to achieving Thailand's vision for Smart Local Government under the Thailand 4.0 strategy.

Conceptual Framework

This study employed a mixed-methods research design, integrating both quantitative and qualitative approaches to examine and develop guidelines for enhancing the digital competency of local government personnel in Maha Sarakham Province. The conceptual framework was developed by synthesizing the European Commission's Digital Competence Framework (DigComp), the OECD Digital Government Framework, and contextual adaptations from Vatamanu and Tofan (2025) and Worapongpat (2025b). It was further refined through prior local studies on digital competency in Thailand (Yigitcanlar, David, Li, Fookes, Bibri, & Ye, 2024; Worapongpat, 2025a).
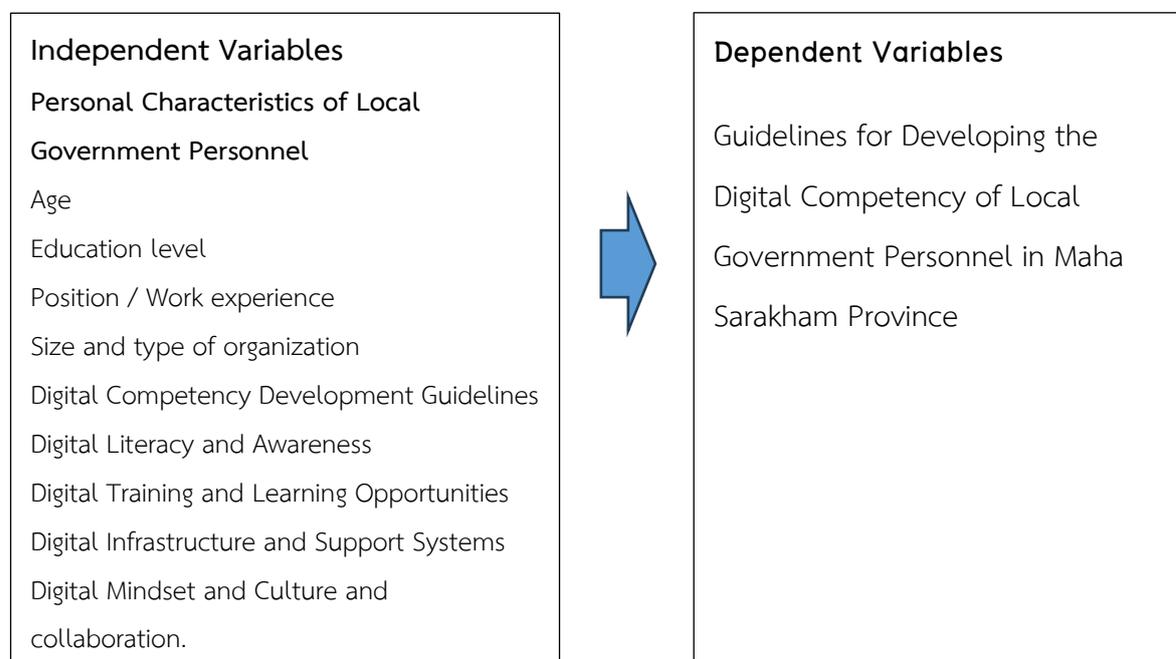

Independent Variables

Personal Characteristics of Local Government Personnel

Age

Education level

Position / Work experience

Size and type of organization

Digital Competency Development Guidelines

Digital Literacy and Awareness

Digital Training and Learning Opportunities

Digital Infrastructure and Support Systems

Digital Mindset and Culture and collaboration.

Dependent Variables

Guidelines for Developing the Digital Competency of Local Government Personnel in Maha Sarakham Province

Figure 1 Conceptual Framework for Developing Digital Competency of Local Government Personnel in Maha Sarakham Province

Methods

Research Design

This study adopted a mixed-methods research design, integrating both quantitative and qualitative approaches to comprehensively examine and develop guidelines for enhancing the digital competency of local government personnel in Maha Sarakham Province. The integration occurred at two levels:

Design Level: Qualitative findings were used to refine the questionnaire items and to interpret the quantitative results.

Interpretation Level: Quantitative outcomes were triangulated with qualitative insights to formulate context-specific guidelines and policy recommendations.

Qualitative Component

An in-depth interview method was employed to collect detailed information regarding the current state, challenges, and potential guidelines for digital competency development.

A total of 16 key informants were selected through purposive sampling, comprising: Local government administrators (e.g., mayors and presidents of sub-district administrative organizations),

Heads of divisions within LGOs, and Operational-level staff.

Data were collected using semi-structured interviews guided by open-ended questions covering digital readiness, training needs, barriers, and best practices.

All interviews were transcribed and analyzed through content analysis, leading to the identification of recurring themes that informed the design of the quantitative instrument and the formulation of the final guidelines. Quantitative Component

A structured questionnaire served as the main data collection instrument. It comprised three sections:

Part 1: General information about respondents (gender, age, education level, job position, work experience, income, and family size).

Part 2: Digital competency development guidelines, covering four aspects:(1) self-development through work,(2) formal training participation,(3) learning from online and media resources, and(4) on-the-job training and mentoring.

Part 3: Digital competency, assessed across four dimensions:(1) access to and use of digital technology,(2) knowledge of digital law and ethics,(3) use of digital tools in daily work, and(4) application of digital programs for local administration.

All items were measured on a 5-point Likert scale ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree").

Population and Sample

The study population consisted of all local government personnel in Maha Sarakham Province, including administrators, division heads, and operational staff.

A sample of 433 respondents was determined using Cochran's formula at a 95% confidence level with a ±5% margin of error, and stratified sampling was applied to ensure proportional representation across different organization types and positions.

Instrument Validation and Reliability

Content validity was verified by three experts in public administration and digital governance, resulting in an average IOC (Index of Item-Objective Congruence) of 0.96, indicating strong content validity.

Reliability was tested using Cronbach's Alpha from a pilot study of 43 participants. The coefficients were:

Digital competency development guidelines = 0.91

Digital competency = 0.93

Overall reliability = 0.96

These values exceed the 0.80 threshold, indicating high internal consistency.

Data Analysis

Qualitative Data: Analyzed through content analysis, involving coding, categorization, and thematic synthesis to identify recurring patterns and policy implications.

Quantitative Data:

Descriptive statistics: frequency, percentage, mean, and standard deviation (SD).

Inferential statistics:

t-test for two-group mean comparison,

One-way ANOVA and LSD post hoc test for multi-group comparisons,

Pearson's correlation to assess relationships among variables, and

Multiple regression analysis to determine the predictive influence of development guidelines on digital competency levels.

Multicollinearity was assessed using the Variance Inflation Factor (VIF), ensuring all values were below 5.0, indicating no multicollinearity problems.

Results

Objective 1: Digital Competency Development Guidelines

The average level of digital competency development guidelines for local government personnel in Maha Sarakham Province was found to be high (M = 3.81, SD = 0.72).

- The area with the highest mean score was self-development through on-the-job practice (M = 4.15, SD = 0.72).

- The area with the lowest mean score was self-learning from online and other media (M = 3.63, SD = 0.79).

Table 1 Mean and Standard Deviation of Digital Competency Development Guidelines for Local Government Personnel in Maha Sarakham Province

Development Guidelines	Mean (M)	Standard Deviation (SD)	Opinion Level
1. Access to Digital Technology	4.15	0.72	High
2. Use of Digital Tools in the Workplace	3.78	0.89	High
3. Application of Digital Programs for Work	3.69	0.95	High
4. Understanding of Digital Laws and Ethics	3.63	0.79	High
Overall	3.81	0.72	High

*Note: The interpretation criteria for the mean scores are as follows: 4.21–5.00 = Highest, 3.41–4.20 = High, 2.61–3.40 = Moderate, 1.81–2.60 = Low, 1.00–1.80 = Lowest.

Objective 2: Digital Competency Level

The digital competency of local government personnel in Maha Sarakham Province was found to be high (M = 4.12, SD = 0.78).

- The areas with the highest mean scores were access to digital technology (M = 4.36, SD = 0.78) and use of digital tools in the workplace (M = 4.36, SD = 0.72), both rated as highest.

- The area with the lowest mean score was the application of digital programs for work (M = 3.83, SD = 0.89), rated as high.

Table 2 Mean and Standard Deviation of Digital Competency of Local Government Personnel in Maha Sarakham Province

Digital Competency	Mean (M)	Standard Deviation (SD)	Opinion Level
Digital Competency of Local Government Personnel	4.36	0.78	Highest
Ability to Access and Use Digital Technology	3.96	0.77	High
Knowledge and Understanding of Digital Laws and Ethics	4.36	0.72	Highest
Ability to Use Digital Tools for Work	3.83	0.89	High
Overall	4.12	0.78	High

Comparison of Digital Competency by Personal Characteristics

The comparison of mean digital competency scores of local government personnel in Maha Sarakham Province, categorized by personal characteristics, revealed the following:

1. Personnel with different genders and ages showed a statistically significant difference in their opinions ($p < .05$).

2. All other factors, including education level, job type, work experience, current position, and average monthly income, showed no statistically significant differences ($p > .05$).

Table 3 Comparison of Mean Digital Competency Scores by Personal Characteristics of Local Government Personnel in Maha Sarakham Province

Personal Characteristic	Statistic (t/F)	p-value	Difference in Opinion	Hypothesis Supported
Gender	$t(431) = 3.078$	.003	Different	Supported
Age	$F(3,429) = 3.923$	.008	Different	Supported

Personal Characteristic	Statistic (t/F)	p-value	Difference in Opinion	Hypothesis Supported
Education Level	$F(4,428) = 1.246$	.293	No Difference	Not Supported
Job Type	$F(2,430) = 0.215$	.895	No Difference	Not Supported
Work Experience	$F(3,429) = 1.655$	.181	No Difference	Not Supported
Current Position	$t(431) = 1.921$	.067	No Difference	Not Supported
Average Monthly Income	$F(3,429) = 0.818$	.532	No Difference	Not Supported

*Note: $p < .05$ indicates statistical significance.

Objective 4: Influence of Digital Competency Development on Digital Competency

The multiple regression analysis examining the relationship and influence of digital competency development variables on the digital competency of local government personnel in Maha Sarakham Province found the following:

- The variable self-development through on-the-job practice had a significant positive influence on digital competency ($\beta = .478$, $p < .001$).
- The variable development through training had a significant positive influence ($\beta = .175$, $p = .015$).
- The variable development through on-the-job training had no significant influence ($\beta = .080$, $p = .165$).
- The variable self-learning from online and other media had a significant positive influence ($\beta = .226$, $p < .001$).

The model explained 57.9% of the variance in digital competency ($R^2 = .579$, $F(4,428) = 140.936$, $p < .001$). The resulting linear regression equation is: $Y=1.148+0.414X_1+0.112X_2+0.055X_3+0.168X_4$ where:

Table 4 Results of Multiple Regression Analysis of Digital Competency Development Variables Influencing Digital Competency

Variable	B	SE	Beta	t	p-value	Result
Constant	1.161	0.146		9.280	< .001	Significant
1. Self-development through on-the-job practice (X_1)	0.436	0.051	0.478	10.984	< .001	Significant
2. Development through training (X_2)	0.134	0.067	0.175	2.494	0.015	Significant
3. Development through on-the-job training (X_3)	0.077	0.052	0.080	1.397	0.165	Not Significant
4. Self-learning from online and other media (X_4)	0.181	0.055	0.226	5.182	< .001	Significant
$R^2 = 0.579$	$F(4,428) = 140.936$	$p < .001$				

The original table mistakenly listed aspects of digital competency (e.g., "Access to Digital Technology") as independent variables. The corrected table now lists the Digital Competency Development Variables (X_1, X_2, X_3, X_4) as the independent variables influencing the dependent variable, Digital Competency (Y), as defined in Objective 4.

Hypothesis 1: Different personal characteristics lead to different opinions on digital competency.

- o Result: The test found that gender and age were statistically significant factors (p < 0.05), thus this hypothesis is partially supported. However, education level, job type, work experience, and current position were not significant (p > 0.05), leading to their rejection within the hypothesis.

Hypothesis 2: Digital competency development is related to digital competency.

- o Result: The correlation analysis showed a strong relationship between digital competency development and digital competency, with a coefficient

of 0.716 (r = 0.716, p < 0.01). When examined by aspect, self-development showed the highest correlation (r = 0.697), followed by training (r = 0.595), on-the-job training (r = 0.544), and self-learning via online and other media (r = 0.566). This hypothesis is supported.

Hypothesis 3: Digital competency development through self-development and self-learning influences digital competency.

- o Result: The multiple regression analysis indicated that self-development through on-the-job practice (β = 0.436, p < 0.001) and self-learning via online media (β = 0.181, p < 0.001) had a significant influence on digital competency. Development through training had a much smaller influence (β = 0.134, p = 0.015), while on-the-job training had no significant influence (β = 0.077, p = 0.165). Therefore, this hypothesis is partially supported.

Discussion

1. Digital Competency Development Guidelines Findings from Objective 1 revealed that the primary approaches to developing digital competency among personnel in local administrative organizations in Maha Sarakham Province were self-directed learning through practical experience and internal training programs. This indicates that "on-the-job practice" is viewed as the most effective method for digital competency development, as it enables employees to gain real-world experience and apply digital skills directly to their work context. This result aligns with Budhwar, Malik, De Silva, and Thevisuthan (2022), who emphasized that self-learning and experiential approaches are crucial for enhancing employees' digital capabilities. internal capacity building are key drivers of digital skill advancement. Qualitative insights from interviews further revealed that many personnel preferred hands-on learning because it reduced anxiety in using technology and fostered confidence in applying digital tools to daily administrative tasks. Participants noted that learning by doing was more practical and relevant than theoretical or lecture-based training.

2. Levels of Digital Competency In relation to Objective 2, the study found that the overall level of digital competency among local government personnel was high, especially in the areas of access to digital technology and the use of digital tools. This high

competency level may be attributed to sufficient provision of digital devices and supporting infrastructure within their organizations. This finding is consistent with Butt (2023), who found that access to digital technology is a crucial determinant of digital competency development among employees. competence among public sector employees. However, qualitative data indicated that while personnel could effectively use digital tools, some still lacked confidence in applying technology for complex analytical or decision-making tasks, such as data analysis or AI-assisted systems. This suggests that future development should not only focus on operational proficiency but also on achieving digital fluency—the ability to think critically and creatively with digital tools.

3．Influence of Personal Characteristics The analysis for Objective 3 showed that gender and age were statistically significant predictors of digital competency. Younger and male personnel tended to possess higher levels of digital skills, possibly due to greater exposure to technology and more frequent opportunities for training. This result supports the findings of Butsara Phon Phuangpanya (2024), who highlighted that personal characteristics such as age and gender contribute to digital inequality and unequal access to technology.Qualitative interviews further revealed that older personnel often felt less confident in adopting new technologies and frequently relied on younger colleagues for technical assistance. This highlights the need for mentoring systems or peer learning programs to help close the digital skill gap across generations within the organization.

4．Policy Recommendations for Digital Competency Development Results from Objective 4 provide several key policy recommendations for enhancing digital competency in local government contexts. The study emphasizes the importance of encouraging self-directed learning, delivering high-quality and practical training programs, and ensuring equitable access to technology across all departments. This finding aligns with Campion, Gasco-Hernandez, Jankin Mikhaylov, and Esteve (2022), who proposed that a blended approach—combining self-directed learning and structured training—offers the most effective method for developing digital competency. pathway to improving digital skills. Qualitative findings also underscored that training programs should adopt a hands-on format with follow-up sessions to ensure that participants can apply what they have learned to real work situations. Such strategies not only enhance skill retention but also foster a culture of continuous digital learning and adaptation.

Conclusion

This study examined the digital competency of local government personnel in Maha Sarakham Province and proposed guidelines to strengthen their digital capability through an integrated mixed-methods approach. Quantitative results revealed that the overall levels of both digital competency and competency development guidelines were high, with self-development through on-the-job practice emerging as the most influential factor. In contrast, on-the-job training had no significant effect, suggesting that existing training formats are insufficiently aligned with real workplace contexts.

Qualitative findings complemented these results by highlighting that personnel primarily acquire digital skills through hands-on experience, peer support, and informal learning during daily work. Limited infrastructure, inadequate budget allocation, and the absence of systematic post-training follow-up were identified as major barriers to sustainable digital skill enhancement. The analysis also confirmed that age and gender differences significantly affected digital competency levels, while education and work experience did not.

New Body of Knowledge from the Research

This study revealed four key findings regarding the approaches to developing digital competence and the levels of digital competence among personnel in local administrative organizations in Maha Sarakham Province, as follows:

Approaches to developing digital competence

Levels of digital competence

Comparison of digital competence based on personal characteristics

The influence of development approaches on digital competence

Figure 2 digital competence

From the figure 2 it can be seen that This research contributes new knowledge in the following aspects: It provides a systematic framework for developing digital competence among personnel in local administrative organizations, which can be applied to enhance digital transformation in the public sector. It identifies key factors influencing different levels of digital competence, offering insights into how personal characteristics affect digital skill development. It establishes the relationship between development approaches and digital competence, emphasizing the importance of continuous learning and organizational support. It offers practical guidelines that local administrative organizations can use to design training programs and policies to strengthen digital capabilities and improve service efficiency.

Recommendations

1. Enhance Experiential Learning Programs

Promote structured learning-by-doing initiatives such as digital projects, peer mentoring, and cross-department collaboration.

Encourage personnel to apply new digital skills immediately after training through real administrative tasks.

2. Redesign Training and Development Strategies

Shift from theoretical classroom-based training to practical, scenario-driven modules that reflect local administrative realities.

Implement follow-up evaluations and feedback systems to ensure knowledge retention and continuous improvement.

3. Strengthen Digital Infrastructure and Resources

Invest in reliable internet connectivity, shared digital platforms, and up-to-date software tools across all sub-districts.

Provide access to open online learning resources and digital literacy modules that staff can use independently.

4. Foster a Digital Mindset and Organizational Culture

Encourage leadership within LGOs to act as digital role models, promoting innovation and adaptability among their teams.

Recognize and reward digital innovation to motivate staff engagement and sustain digital transformation.

5. Policy Implications for Local Government and National Agencies

The Ministry of Digital Economy and Society, together with provincial administrations, should adopt localized digital competency frameworks tailored to community contexts.

Policies should integrate competency development into long-term human resource plans, ensuring alignment with the Thailand 4.0 strategy and the 20-Year National Digital Government Master Plan.

Future Research Directions

Future studies could expand to other provinces to compare digital competency development across regional contexts. Longitudinal research should also explore how sustained interventions—such as continuous training and mentorship—affect long-term digital capability and service quality within local government organizations.

REFERENCES

Budhwar, P., Malik, A., De Silva, M. T., & Thevisuthan, P. (2022). Artificial intelligence–challenges and opportunities for international HRM: A review and research agenda. *The International Journal of Human Resource Management, 33(6),* 1065–1097. https://doi.org/10.1080/09585192.2021.xxxxx

Butt, J. S. (2023). The impact of artificial intelligence (AI) on the efficiency of administrative decision making including ethical & legal considerations and comparative study about countries already incorporated AI for administrative decisions. *Acta Universitatis Danubius. Juridica, 19(3),* 7–25.

Campion, A., Gasco-Hernandez, M., Jankin M. S., & Esteve, M. (2022). Overcoming the challenges of collaboratively adopting artificial intelligence in the public sector. *Social Science Computer Review, 40(2),* 462–477. https://doi.org/10.1177/089443932110xxxx

Chompotjananan, B., & Vichit-Vadakan, J. (2022). Transforming villages into "wisdom" villages: A descriptive analysis. *Journal of Public and Private Management, 29(1),* 5–5.

Chantarasombat, C. (2021). Collaboration for relieving poverty, social development and community well-being in Maha Sarakham Province, Thailand. *Multicultural Education, 7(7).*

Gqamane, Z., & Taylor, J. D. (2013). Capacity building for effective local government leadership and governance. *Journal of Public Administration, 48(SI-1),* 824–842.

Johnson, B. A., Coggburn, J. D., & Llorens, J. J. (2022). Artificial intelligence and public human resource management: Questions for research and practice. *Public Personnel Management, 51(4),* 538–562. https://doi.org/10.1177/009102602210xxxx

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activity. *Educational and Psychological Measurement, 30(3),* 607–610. https://doi.org/10.1177/001316447003000308

Khaenamkhaew, D., Onjun, P., Damrongwattana, J., & Prathum, B. (2023). The participation of community leaders for sustainable tourism development: A case study in Phipun District, Nakhon Si Thammarat Province, Thailand. *Cogent Social Sciences, 9(1),* 2229172. https://doi.org/10.1080/23311886.2023.2229172

Kinder, T., Stenvall, J., Koskimies, E., Webb, H., & Janenova, S. (2023). Local public services and the ethical deployment of artificial intelligence. *Government Information Quarterly, 40(4),* 101865. https://doi.org/10.1016/j.giq.2023.101865

Murire, O. T. (2024). Artificial intelligence and its role in shaping organizational work practices and culture. Administrative Sciences, 14(12), 316. https://doi.org/10.3390/admsci14120316

Nua-amnat, R., Brahmakappa, A., Pumturian, S., & Soonthondachar, J. (2021). The development of knowledge and elements of creative community "smart community" of communities in Thai society. *Journal of Arts Management, 5(3),* 559–573.

Parycek, P., Schmid, V., & Novak, A. S. (2024). Artificial intelligence (AI) and automation in administrative procedures: Potentials, limitations, and framework conditions. *Journal of the Knowledge Economy, 15(2),* 8390–8415. https://doi.org/10.1007/s13132-024-010xx-5

Phon Phuangpanya, B. (2024). Relational leadership of local administrators in the 21st century. *Journal of Interdisciplinary Social Development, 2(5),* 30–43.

Sirisawat, K., & Chaiya, C. (2025). Sustainable smart cities through collaborative governance: The role of transformative leadership. *Journal of Public Administration, Public Affairs, and Management, 23(1),* 137–178.

Sinjindawong, S., Nuchniyom, R., & Pakakaew, K. (2023). Proposed policy for developing social innovations to create value for the aging. *Kasetsart Journal of Social Sciences, 44(2),* 615–622. https://doi.org/10.34044/kjss.xxxx

Siri Charoensuk, S. (2022). Leadership and conflict management. *Journal of Academic Research, 5(6),* 301–316.

Thirawan, R. (2025). The management of innovation in the public sector to enhance effective and sustainable public services. *Journal of Public and Private Issues, 2(3),* 185–196.

Vatamanu, A. F., & Tofan, M. (2025). Integrating artificial intelligence into public administration: Challenges and vulnerabilities. *Administrative Sciences, 15(4),* 149. https://doi.org/10.3390/admsci15040149

Worapongpat, N. (2025a). Digital skills of administrators in the 21st century and their relationship with the performance of local government employees in Mueang District, Maha Sarakham Province. *Journal of Humanities and Social Sciences, University of Phayao, 13(1),* 96–108.

Worapongpat, N. (2025b). The desired leadership qualities of administrators influencing the development of a learning innovation organization for the development of local personnel in Mueang District, Maha Sarakham Province. *Kasetsart Journal of Political Science and Public Administration, 3(1),* 1–32.

Worapongpat, N. (2025c). The role of leadership based on the ESG framework in influencing the performance efficiency of local employees: A case study of Mueang District, Maha Sarakham Province. *Journal of Public and Private Issues, 2(3),* 147–158.

Worapongpat, N. (2025d). Reducing the digital divide and promoting access to public services for the elderly in local administrative organizations of Mueang District, Maha Sarakham Province. *Journal of Public and Private Issues, 2(4),* 232–241.

Worapongpat, N. (2025f). Integrating interdisciplinary workshop design to advance life skills and leadership among graduate students at private universities in Thailand. *Liberal Arts and Social Studies International Journal (LAASSIJ), 1(2),* 55–71.

Worapongpat, N. (2025e). Mindfulness in the use of artificial intelligence for learning among graduate students in private universities in Bangkok, Thailand. *Asian Education and Learning Review, 3(2),* 1–11. https://doi.org/10.14456/aelr.2025.6

Yigitcanlar, T., David, A., Li, W., Fookes, C., Bibri, S. E., & Ye, X. (2024). Unlocking artificial intelligence adoption in local governments: Best practice lessons from real-world implementations. *Smart Cities, 7(4),* 1576–1625. https://doi.org/10.3390/smartcities704xxxx

Yigitcanlar, T., Agdas, D., & Degirmenci, K. (2023). Artificial intelligence in local governments: Perceptions of city managers on prospects, constraints and choices. *AI & Society, 38(3),* 1135–1150. https://doi.org/10.1007/s00146-023-017xx-x