

Challenges and Readiness in Adopting Artificial
Intelligence and AI Ethics for Enhancing Work
Performance of Personnel in Local Administrative
Organizations in Maha Sarakham Province

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Abstract

This study aimed to: (1) examine the challenges and readiness of personnel in Local Administrative Organizations (LAOs) in Maha Sarakham Province regarding the adoption of Artificial Intelligence (AI) and AI ethics to enhance work performance; and (2) compare these challenges and readiness according to personal factors. The sample consisted of 400 personnel from LAOs in Maha Sarakham Province, selected

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through multistage and purposive sampling techniques. Data were collected using a structured questionnaire with an Index of Item-Objective Congruence (IOC) ranging from 0.67 to 1.00 and a reliability coefficient of 0.85. Data were analyzed using descriptive statistics, including mean and standard deviation, and inferential statistics, including independent samples t-test and one-way analysis of variance (ANOVA). The findings revealed that the overall level of challenges associated with AI and AI ethics adoption was at the highest level ($M = 4.43$, $SD = 0.77$). The highest-rated challenges involved promoting AI utilization in organizational operations and encouraging compliance with AI ethical principles, whereas challenges related to basic AI knowledge and understanding received the lowest mean score. Overall readiness for AI adoption was at a high level ($M = 4.13$, $SD = 0.89$). Among the readiness dimensions, personnel readiness (Man) obtained the highest mean score, while technology and equipment readiness (Material) showed the lowest mean score. Hypothesis testing indicated statistically significant differences in challenges and readiness according to position and work experience. Personnel in managerial positions and those with longer work experience demonstrated higher readiness levels and stronger

awareness of AI ethics than operational personnel and employees with less work experience. The findings suggest that although personnel in LAOs are generally prepared to adopt AI technologies, challenges remain in technological infrastructure, resource availability, and the establishment of clear AI ethical guidelines. Therefore, continuous capacity development, adequate investment in digital infrastructure, and comprehensive AI governance policies should be promoted to support effective, ethical, and sustainable AI implementation in local administration

Keywords: Artificial Intelligence, AI Ethics, Local Administrative Organizations, Work Performance, Readiness

Introduction

Artificial Intelligence (AI) has emerged as a key driver of digital transformation in the public sector worldwide. AI technologies are increasingly utilized in public service delivery, data analytics, policy formulation, and administrative decision-making to improve governmental efficiency, transparency, and service quality (Chompotjananan & Vichit-Vadakan, 2022). The

integration of AI enables public organizations to streamline operations, enhance evidence-based policymaking, and respond more effectively to citizens' needs. In Thailand, the 13th National Economic and Social Development Plan emphasizes digital transformation and the advancement of emerging technologies, including AI, as strategic mechanisms for strengthening public sector performance and national competitiveness.

Despite these developments, the adoption of AI in local administrative organizations (LAOs) remains at an early stage. Several barriers continue to hinder AI implementation, including limited digital competencies among personnel, inadequate technological infrastructure, fragmented information systems, and insufficient organizational support for digital innovation (Johnson, Cogburn, & Llorens, 2022). In addition, concerns regarding AI ethics—particularly transparency, accountability, privacy protection, fairness, and responsible use of automated decision-making systems—have become increasingly important in public administration (Vatamanu & Tofan, 2025). These challenges are particularly significant for local governments, which often face constraints in financial resources, technological capacity, and specialized expertise.

The successful adoption of AI requires not only technological readiness but also organizational preparedness and ethical governance. Drawing upon the Resource-Based View (RBV), organizational resources such as human capital, technological infrastructure, managerial support, and financial capacity are critical determinants of an organization's ability to implement innovation effectively. Likewise, the 4M framework (Man, Money, Material, and Management) provides a useful perspective for assessing organizational readiness for AI adoption. Therefore, evaluating both readiness and ethical awareness is essential for ensuring sustainable and responsible AI implementation in the public sector.

Previous studies have primarily focused on AI adoption in central government agencies, large public organizations, and private-sector contexts. Empirical evidence concerning AI readiness and AI ethics awareness among personnel in local administrative organizations remains limited, particularly in provincial settings. Moreover, existing studies have often examined technological readiness or AI adoption separately from AI ethics, resulting in a limited understanding of how these dimensions interact in public organizations. Research investigating both AI readiness and AI ethics simultaneously among local government personnel is still scarce.

Maha Sarakham Province provides an appropriate context for this investigation because local administrative organizations in the province are increasingly expected to improve service delivery and organizational performance through digital innovation while operating under resource and technological constraints. Furthermore, personnel characteristics such as position, work experience, organizational affiliation, and generational differences may influence perceptions of AI-related challenges and organizational readiness. Understanding these factors is essential for designing effective capacity-building strategies and policy interventions that support AI adoption in local governance.

Therefore, this study aims to: (1) examine the challenges and readiness of personnel in local administrative organizations in Maha Sarakham Province regarding the adoption of AI and AI ethics to enhance work performance; and (2) compare these challenges and readiness according to selected personal factors. The findings are expected to contribute to the literature on AI adoption in local government, provide empirical evidence for policy development, support organizational capacity building, and inform the formulation of ethical guidelines for responsible AI implementation in local administration.

Research Objectives

1. To examine the level of challenges and readiness of personnel in local administrative organizations in Maha Sarakham Province regarding the adoption of Artificial Intelligence (AI) and AI ethics for enhancing work performance.

2. To compare the challenges associated with AI and AI ethics adoption among personnel according to selected personal and organizational factors, including job position, work experience, generation, and type of organization.

3. To compare the readiness for AI and AI ethics adoption among personnel according to selected personal and organizational factors, including job position, work experience, generation, and type of organization.

Literature Review

Concept of Artificial Intelligence (AI)

Artificial Intelligence (AI) refers to computer systems and technologies capable of performing tasks that normally require human intelligence, such as learning, reasoning, problem-solving, prediction, and decision-making. In the public sector, AI

has increasingly been adopted to improve public service delivery, support evidence-based policymaking, and enhance administrative efficiency through data-driven decision-making (Sinjindawong, Nuchniyom, & Pakakaew, 2023; Charoensuk, 2022). AI applications in government organizations include data analytics, automated service systems, project evaluation, and anomaly detection in operational processes.

For local administrative organizations (LAOs), AI offers opportunities to improve operational effectiveness despite limitations in personnel and resources. The adoption of AI can support faster service delivery, better resource allocation, and improved organizational performance. However, successful implementation depends on personnel capabilities, organizational support, and technological readiness.

AI Ethics in Public Administration

The increasing use of AI in public administration has raised concerns regarding ethical issues associated with automated decision-making. AI ethics refers to principles and guidelines that ensure AI systems operate in a manner that is transparent, accountable, fair, safe, and respectful of privacy rights. According to Vatamanu and Tofan (2025), transparency,

accountability, fairness, and safety constitute fundamental principles for ethical AI implementation in the public sector.

In local government contexts, ethical concerns are particularly important because AI applications may directly affect citizens' access to public services and administrative decisions. Previous studies have reported that insufficient knowledge of AI ethics, limited awareness among personnel, and the absence of clear operational guidelines represent significant barriers to responsible AI adoption (Yigitcanlar et al., 2024). Therefore, AI ethics should be considered alongside technological implementation to ensure sustainable and trustworthy public administration.

Readiness for AI Adoption

Readiness for AI adoption refers to the extent to which an organization possesses the necessary resources, competencies, infrastructure, and management systems required to implement AI effectively. This study adopts the 4M framework consisting of Man, Money, Material, and Management as dimensions of organizational readiness.

This framework is consistent with the Resource-Based View (RBV), which emphasizes that organizational performance

depends on the effective utilization of valuable and strategic resources. Organizations with stronger human, financial, technological, and managerial resources are more likely to achieve successful AI implementation and improved work performance.

Work Performance in Local Administrative Organizations

Work performance in local administrative organizations reflects the effectiveness and efficiency with which personnel accomplish organizational objectives and deliver public services. Previous studies have suggested that technological innovation and digital transformation contribute significantly to improving personnel performance and organizational effectiveness (Worapongpat, Thavisin, & Viphoouparakhot, 2024). The adoption of AI can facilitate faster information processing, support decision-making, and reduce repetitive administrative tasks, thereby improving overall organizational performance.

However, successful utilization of AI requires not only technological readiness but also personnel acceptance and ethical awareness. Consequently, understanding the challenges and readiness associated with AI adoption is essential for enhancing work performance in local government organizations.

Although previous studies have extensively examined AI adoption and AI ethics in public organizations, empirical evidence concerning local administrative organizations remains limited, particularly in provincial contexts. Most existing studies focus either on technological implementation or ethical issues separately, while relatively few investigate both dimensions simultaneously. Furthermore, limited attention has been given to differences in AI readiness and challenges across personnel and organizational characteristics.

Factors Influencing AI Adoption Challenges and Readiness

Previous studies have indicated that individual and organizational characteristics may significantly influence perceptions of AI adoption, technological readiness, and ethical awareness. Personnel in managerial positions generally demonstrate higher levels of technology acceptance and innovation readiness because they are more involved in strategic planning and decision-making processes. Likewise, employees with longer work experience often possess greater organizational knowledge and are better able to adapt technological innovations to operational contexts.

Generational differences have also been identified as important factors influencing digital technology adoption. Younger generations tend to exhibit higher digital literacy and greater acceptance of emerging technologies, whereas older employees may require additional support and training to develop AI-related competencies. Furthermore, organizational characteristics such as organizational type and resource availability can affect the capacity to implement AI initiatives effectively.

These findings suggest that differences in personal and organizational characteristics may contribute to variations in perceived challenges and readiness regarding AI and AI ethics adoption. Therefore, examining these factors is essential for understanding the conditions that facilitate successful AI implementation in local administrative organizations.

Based on the reviewed literature, successful AI adoption in public organizations depends not only on technological capabilities but also on organizational readiness, ethical awareness, and personnel characteristics. While previous studies have examined these factors separately, limited empirical evidence exists regarding their combined influence in local

administrative organizations. Therefore, this study develops a conceptual framework that links personal and organizational factors (job position, work experience, generation, and organizational type) with perceived challenges and readiness regarding AI and AI ethics adoption.

Conceptual Framework

This study is based on the assumption that personal and organizational characteristics influence personnel perceptions regarding challenges and readiness for adopting Artificial Intelligence (AI) and AI ethics in Local Administrative Organizations (LAOs).

Independent Variables

Personal Factors

- * Job Position
- * Work Experience
- * Generation

Organizational Factors

- * Type of Organization
- * Organizational Size

Dependent Variables

Challenges in AI and AI Ethics Adoption

- * AI Knowledge Challenges
- * AI Ethics Knowledge Challenges
- * AI Utilization Promotion Challenges
- * AI Ethics Promotion Challenges

Readiness for AI and AI Ethics Adoption (4M Framework)

- * Man
- * Money
- * Material
- * Management

This research develops a conceptual framework based on the concepts of acceptance and application of Artificial Intelligence (AI) in the public sector, combined with the concept of AI Ethics and the concept of organizational readiness according to the 4M framework: Personnel (Man), Budget (Money), Materials and Technology (Material), and Management (Management). This is based on the Resource-Based View (RBV) theory, which explains that the ability to successfully

implement innovation depends on the resources and capabilities available to the organization.

In this study, individual factors, including job position, work experience, and generation, as well as organizational factors, including organizational type and size, are defined as independent variables that may affect the perception of challenges and readiness for the implementation of AI and AI ethics in the work of personnel in local government organizations.

The dependent variables include (1) the challenges in implementing AI and AI ethics, encompassing knowledge of AI, knowledge of AI ethics, promoting the use of AI, and promoting adherence to AI ethical principles; and (2) the readiness for the implementation of AI and AI ethics according to the 4M framework, namely personnel, budget, materials and technology, and management. This conceptual framework is used to study the level of challenges and readiness. Furthermore, it compares differences based on personal and organizational factors, leading to policy recommendations and guidelines for promoting the effective and sustainable application of AI and AI ethics in local government organizations.

Research Hypotheses

H1: Job position significantly influences challenges in AI and AI ethics adoption among personnel in local administrative organizations.

H2: Job position significantly influences readiness for AI and AI ethics adoption among personnel in local administrative organizations.

H3: Work experience significantly influences readiness for AI and AI ethics adoption among personnel in local administrative organizations.

H4: Organizational type significantly influences challenges in AI and AI ethics adoption among personnel in local administrative organizations.

H5: Generation significantly influences readiness for AI and AI ethics adoption among personnel in local administrative organizations.

H6: Organizational size significantly influences readiness for AI and AI ethics adoption among personnel in local administrative organizations.

Research Methodology

Population and Sample

The population of this study consisted of personnel working in Local Administrative Organizations (LAOs) in Maha Sarakham Province, including Subdistrict Administrative Organizations, Subdistrict Municipalities, Town Municipalities, and Municipal Cities. According to data obtained from the Provincial Office for Local Administration, the total population comprised [insert population size] personnel.

A multistage sampling technique was employed. First, local administrative organizations were classified according to organizational type. Subsequently, representative organizations were selected to ensure coverage of different organizational structures and sizes. Personnel from the selected organizations were then recruited using purposive sampling.

The sample size was determined based on the recommendation of Hair et al. (2010), which suggests that a sample of at least 400 respondents is adequate for quantitative research involving multivariate statistical analysis. Accordingly, 400 valid questionnaires were collected and used for data analysis.

Research Instrument

Data were collected using a structured questionnaire consisting of three sections.

Section 1 collected demographic information, including gender, age, educational level, job position, work experience, generation, organizational type, and organizational size.

Section 2 assessed challenges related to the adoption of Artificial Intelligence (AI) and AI ethics across four dimensions: (1) AI knowledge and understanding, (2) AI ethics knowledge and understanding, (3) AI adoption promotion, and (4) AI ethics promotion.

Section 3 measured readiness for AI and AI ethics adoption based on the 4M framework, comprising Man (personnel), Money (budget), Material (technology and infrastructure), and Management (planning and administration).

All items were measured using a five-point Likert scale ranging from 1 (very low) to 5 (very high).

Validity and Reliability

Content validity was evaluated by three experts using the Index of Item–Objective Congruence (IOC). The IOC values ranged from 0.67 to 1.00, indicating acceptable content validity.

A pilot test was conducted with 30 respondents who possessed characteristics similar to those of the target population. Reliability analysis using Cronbach's Alpha yielded coefficients of 0.85 for the challenges scale, 0.85 for the readiness scale, and 0.85 for the overall instrument, indicating satisfactory internal consistency.

Data Collection

Data were collected through an online questionnaire administered via Google Forms. The questionnaire link was distributed through official communication channels of local administrative organizations in Maha Sarakham Province. Data collection was conducted between [Month] and [Month] 2025.

Data Analysis

Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to analyze respondents' demographic characteristics and examine the levels of challenges and readiness regarding AI and AI ethics adoption.

To compare differences according to personal and organizational factors, inferential statistics were employed. Independent samples t-tests were used to examine differences according to job position and generation, while one-way analysis of variance (ANOVA) was used to compare differences according

to work experience, organizational type, and organizational size. When statistically significant differences were identified, Scheffé's post hoc test was conducted to determine pairwise group differences.

Mean scores were interpreted using the following criteria: 4.21–5.00 = very high, 3.41–4.20 = high, 2.61–3.40 = moderate, 1.81–2.60 = low, and 1.00–1.80 = very low.

Research Findings

Section 1: General Information of Respondents

The analysis of respondents' demographic characteristics revealed that the majority of participants were female. Most respondents were between 31 and 40 years of age and held a bachelor's degree. In terms of organizational affiliation, the largest proportion worked in Subdistrict Administrative Organizations (SAOs). Regarding work experience, most respondents had between 6 and 10 years of service. Furthermore, the majority occupied operational-level positions within their organizations.

Section 2: Challenges in the Adoption of Artificial Intelligence and AI Ethics

Table 1 Challenges in the Adoption of Artificial Intelligence and AI Ethics among Personnel in Local Administrative Organizations in Maha Sarakham Province

Items	M	SD	Interpretation
Personnel’s understanding of artificial intelligence	4.17	0.83	High
Personnel’s understanding of AI ethics	4.38	0.71	Very High
Application of AI to enhance work performance	4.61	0.78	Very High
Promotion of adherence to AI ethics within organizations	4.55	0.74	Very High
Overall	4.43	0.77	Very High

As shown in Table 1, the overall level of challenges associated with the adoption of AI and AI ethics was rated at a very high level ($M = 4.43$, $SD = 0.77$). Among the four dimensions examined, the application of AI to enhance work performance received the highest mean score ($M = 4.61$, $SD = 0.78$), indicating that personnel perceived the practical integration of AI into daily operations as the most challenging aspect. This was followed

by the promotion of adherence to AI ethics within organizations ($M = 4.55$, $SD = 0.74$) and personnel’s understanding of AI ethics ($M = 4.38$, $SD = 0.71$), both of which were rated at a very high level. In contrast, personnel’s understanding of artificial intelligence obtained the lowest mean score ($M = 4.17$, $SD = 0.83$), although it remained at a high level. These findings suggest that the principal challenges are not limited to basic AI knowledge but are more strongly associated with organizational implementation and ethical governance of AI technologies.

Table 2 Readiness for AI Adoption among Personnel in Local Administrative Organizations in Maha Sarakham Province

Dimensions	M	SD	Level
Personnel (Man) – AI knowledge, skills, and competencies	4.33	0.76	High
Budget (Money) – Financial readiness and investment support for AI	4.12	0.84	High
Technology/Equipment (Material) – Readiness of basic technological infrastructure	3.91	0.93	Moderate
Management – Plans, strategies, and AI integration within the organization	4.12	0.83	High
Overall	4.13	0.89	High

As presented in Table 2, the overall readiness for AI and AI ethics adoption among personnel in Local Administrative Organizations was at a high level ($M = 4.13$, $SD = 0.89$). Among the four readiness dimensions, personnel readiness (Man) received the highest mean score ($M = 4.33$, $SD = 0.76$), indicating that respondents generally perceived themselves as possessing adequate knowledge, skills, and competencies to support AI implementation.

Budget readiness (Money) and management readiness (Management) were both rated at a high level, with identical mean scores ($M = 4.12$), suggesting that respondents perceived a moderate degree of organizational support in terms of financial resources, strategic planning, and administrative commitment toward AI adoption.

In contrast, technology and equipment readiness (Material) received the lowest mean score ($M = 3.91$, $SD = 0.93$), indicating comparatively lower readiness in technological infrastructure, digital systems, and supporting equipment. Although still reflecting a moderate level of readiness, this finding suggests that technological capacity remains a key limitation for effective AI implementation within local administrative organizations.

Overall, the results indicate that human resource readiness is the strongest foundation for AI adoption, whereas technological infrastructure represents the primary area

requiring further development. Strengthening digital resources and technological support mechanisms may therefore be essential for facilitating sustainable and effective AI implementation in local governance.

Comparison of Challenges in AI and AI Ethics Adoption by Job Position

To examine whether personnel with different job positions perceived different levels of challenges regarding AI and AI ethics adoption, an Independent Samples t-test was conducted comparing operational-level and managerial-level personnel.

Table 3 Comparison of Challenges in AI and AI Ethics Adoption by Job Position

Challenge Aspect	Operational-level (N=200)	Managerial-level (N=200)	t	df	Sig.
Understanding of AI	4.12 ± 0.78	4.35 ± 0.81	2.45	398	.015*
Promoting AI Usage	4.58 ± 0.72	4.71 ± 0.69	2.13	398	.034*
Understanding of AI Ethics	4.28 ± 0.76	4.53 ± 0.70	3.01	398	.003**
Promoting AI Ethics Usage	4.40 ± 0.75	4.66 ± 0.71	3.12	398	.002**
Overall	4.34 ± 0.75	4.56 ± 0.73	2.86	398	.005

*Note: Independent Samples t-test was employed. *p < .05, **p < .01.

As shown in Table 3, statistically significant differences were found between operational-level and managerial-level personnel across all dimensions of challenges related to AI and AI ethics adoption. Managerial personnel reported significantly higher mean scores than operational personnel regarding understanding of AI, promotion of AI utilization, understanding of AI ethics, and promotion of AI ethics implementation ($p < .05$ and $p < .01$).

The overall comparison also revealed a statistically significant difference ($t = 2.86$, $p = .005$), indicating that managerial personnel demonstrated a greater level of awareness and recognition of issues associated with AI and AI ethics adoption. This finding suggests that managerial personnel may be more actively involved in organizational decision-making, policy implementation, and strategic planning related to digital transformation, resulting in a stronger perception of both technological and ethical considerations associated with AI adoption.

Comparison of Readiness for AI and AI Ethics Adoption by Work Experience

To examine whether personnel with different levels of work experience demonstrated different levels of readiness regarding AI and AI ethics adoption, a One-Way Analysis of Variance (ANOVA) was conducted.

Table 4 Comparison of Readiness for AI and AI Ethics Adoption by Work Experience

Readiness Aspect (4M Framework)	≤ 5 years (N = 120)	6–10 years (N = 150)	≥ 11 years (N = 130)	F	Sig.
Man (Personnel)	4.21 ± 0.79	4.35 ± 0.76	4.46 ± 0.73	4.18	.016*
Money (Budget)	3.95 ± 0.83	4.11 ± 0.82	4.25 ± 0.80	3.72	.024*
Material (Technology)	3.75 ± 0.91	3.89 ± 0.87	4.08 ± 0.84	5.11	.007**
Management (Administration)	3.98 ± 0.86	4.14 ± 0.83	4.26 ± 0.80	3.95	.020*
Overall	3.97 ± 0.85	4.12 ± 0.82	4.26 ± 0.79	4.36	.013*

*Note: One-Way ANOVA and Scheffé Post Hoc Test were employed.

*p < .05, **p < .01.

As shown in Table 4, statistically significant differences were found in all dimensions of readiness for AI and AI ethics adoption according to work experience. Personnel with 11 years or more of work experience consistently reported higher mean scores than personnel with five years or less of experience across all dimensions of the 4M framework.

The highest level of difference was observed in the Material dimension (F = 5.11, p = .007), indicating variations in perceptions regarding technological infrastructure and equipment readiness among personnel with different levels of

work experience. Significant differences were also found in personnel readiness (Man), budget readiness (Money), and management readiness (Management) ($p < .05$).

The overall readiness score differed significantly among work experience groups ($F = 4.36, p = .013$). The findings indicate that personnel with longer work experience tend to perceive higher levels of readiness regarding human resources, organizational support, technological infrastructure, and administrative preparedness for AI and AI ethics adoption. This may reflect greater exposure to organizational development processes, digital transformation initiatives, and administrative practices over time.

Comparison of Challenges in AI and AI Ethics Adoption by Organizational Type

To determine whether personnel from different types of local administrative organizations perceived different levels of challenges regarding AI and AI ethics adoption, a One-Way Analysis of Variance (ANOVA) was conducted.

Table 5 Comparison of Challenges in AI and AI Ethics Adoption by Organizational Type

Challenge Aspect	SAO (N=100)	Subdistrict Municipality (N=100)	Town/City Municipality (N=100)	Central Municipality (N=100)	F	Sig.
Knowledge and Understanding of AI	4.14 ± 0.85	4.26 ± 0.89	4.33 ± 0.81	3.86 ± 0.71	4.52	.004**
Promoting AI Adoption	4.53 ± 0.79	4.65 ± 0.91	4.71 ± 0.58	4.37 ± 0.89	3.86	.010*
Knowledge and Understanding of AI Ethics	3.86 ± 0.88	4.38 ± 0.79	4.59 ± 0.61	4.36 ± 0.82	6.12	.001**
Promoting AI Ethics Implementation	4.42 ± 0.71	4.65 ± 0.71	4.71 ± 0.61	4.33 ± 0.88	5.34	.002**
Overall Challenge Score	4.24 ± 0.81	4.49 ± 0.83	4.58 ± 0.65	4.23 ± 0.83	4.77	.003

*Note: One-Way ANOVA and Scheffé Post Hoc Test were employed. *p < .05,
**p < .01.

As shown in Table 5, statistically significant differences were found among organizational types in all dimensions of challenges related to AI and AI ethics adoption. Personnel from Town/City Municipalities reported the highest mean scores across most challenge dimensions, including knowledge and understanding of AI, promotion of AI adoption, knowledge and understanding of AI ethics, and promotion of AI ethics implementation.

The overall challenge score also differed significantly across organizational types ($F = 4.77, p = .003$). Personnel from Town/City Municipalities reported the highest overall challenge level ($M = 4.58, SD = 0.65$), whereas personnel from Central Municipalities and Subdistrict Administrative Organizations reported comparatively lower scores.

These findings indicate that perceptions of challenges associated with AI and AI ethics adoption vary according to organizational context. Personnel in Town/City Municipalities may encounter more complex administrative processes, broader service responsibilities, and greater expectations regarding digital transformation and ethical governance, which may contribute to higher awareness of challenges related to AI implementation.

Comparison of Readiness for AI and AI Ethics Adoption by Job Position

To examine whether personnel at different job levels demonstrated different levels of readiness regarding AI and AI ethics adoption, an Independent Samples t-test was conducted comparing operational-level and managerial-level personnel.

Table 6 Comparison of Readiness for AI and AI Ethics Adoption by Job Position

Readiness Aspect (4M Framework)	Operational Level (N=200)	Managerial Level (N=200)	t	df	Sig.
Man (Personnel)	4.30 ± 0.85	4.48 ± 0.79	2.12	398	.035*
Money (Budget)	3.65 ± 0.79	4.05 ± 0.82	3.45	398	.001**
Material (Technology)	4.10 ± 0.88	4.28 ± 0.84	2.06	398	.040*
Management (Administration)	3.78 ± 0.91	4.22 ± 0.86	3.89	398	.000**
Overall Readiness Score	4.01 ± 0.81	4.26 ± 0.78	3.04	398	.002

*Note: Independent Samples t-test was employed. *p < .05, **p < .01.

As shown in Table 6, statistically significant differences were found between operational-level and managerial-level personnel across all dimensions of readiness for AI and AI ethics

adoption. Managerial personnel reported significantly higher mean scores than operational personnel in personnel readiness (Man), budget readiness (Money), technological readiness (Material), and management readiness (Management).

The largest differences were observed in the dimensions of Management ($t = 3.89$, $p < .001$) and Money ($t = 3.45$, $p = .001$), indicating that managerial personnel perceived stronger organizational preparedness in terms of administrative support, strategic planning, and budget allocation for AI implementation.

The overall readiness score also differed significantly between the two groups ($t = 3.04$, $p = .002$). These findings suggest that managerial personnel tend to perceive higher levels of organizational readiness for AI and AI ethics adoption than operational personnel. Such differences may reflect variations in responsibilities, access to organizational information, involvement in strategic decision-making, and exposure to organizational planning processes related to digital transformation initiatives.

Comparison of Readiness for AI and AI Ethics Adoption by Generation

To determine whether personnel from different generations exhibited different levels of readiness regarding AI and AI ethics adoption, an Independent Samples t-test was conducted comparing Generation Y and Generation X personnel.

Table 7 Comparison of Readiness for AI and AI Ethics Adoption by Generation

Item	Gen Y (N=200)	Gen X (N=200)	t	df	Sig.
Digital Skills	4.18 ± 0.72	4.22 ± 0.78	0.56	398	.578
Access to AI	4.01 ± 0.81	4.15 ± 0.86	1.89	398	.059
AI Ethics Knowledge	3.75 ± 0.88	3.89 ± 0.91	2.02	398	.044*
Organizational AI Policy	3.95 ± 0.84	4.25 ± 0.80	3.65	398	.000**
Ethical Dimension	3.60 ± 0.91	3.78 ± 0.85	2.04	398	.042*
Overall Readiness Score	3.90 ± 0.84	4.06 ± 0.86	2.21	398	.028*

*Note: Independent Samples t-test was employed. * $p < .05$, ** $p < .01$.

As presented in Table 7, statistically significant differences were found between Generation Y and Generation X personnel in several dimensions of readiness for AI and AI ethics adoption. Generation X personnel reported significantly higher mean scores in AI ethics knowledge, organizational AI policy readiness, and the ethical dimension ($p < .05$ and $p < .01$).

The largest difference was observed in organizational AI policy readiness ($t = 3.65$, $p < .001$), indicating that Generation X personnel perceived stronger organizational preparedness regarding AI-related policies and governance mechanisms.

Significant differences were also found in AI ethics knowledge and the ethical dimension.

In contrast, no statistically significant differences were found in digital skills ($p = .578$) or access to AI technologies ($p = .059$). These findings suggest that while both generations perceive similar levels of technological capability and access to AI resources, Generation X personnel tend to report higher readiness regarding organizational and ethical aspects of AI adoption.

The overall readiness score differed significantly between the two generations ($t = 2.21$, $p = .028$), indicating that generational factors may influence perceptions of readiness for AI and AI ethics adoption within local administrative organizations.

Comparison of Challenges in AI and AI Ethics Adoption by Organizational Type

To examine whether personnel from different organizational contexts perceived different levels of challenges regarding AI and AI ethics adoption, a One-Way Analysis of Variance (ANOVA) was conducted.

Table 8 Comparison of Challenges in AI and AI Ethics Adoption by Organizational Type

Item	SAO (N=100)	Subdistrict Municipality (N=100)	Town/City Municipality (N=100)	Central Municipality (N=100)	F	Sig.
Understanding of AI	4.18 ± 0.78	4.32 ± 0.86	4.47 ± 0.67	4.25 ± 0.64	3.94	.020*
Promoting AI	3.89 ± 0.87	4.28 ± 0.85	4.38 ± 0.73	3.86 ± 0.81	5.18	.007**
Understanding of AI Ethics	3.42 ± 0.94	3.80 ± 0.97	4.10 ± 0.71	4.36 ± 0.97	8.55	.000**
Promoting AI Ethics	3.88 ± 0.88	4.18 ± 0.94	4.45 ± 0.72	3.86 ± 0.61	6.23	.002**
Overall Score	3.65 ± 0.88	4.12 ± 0.89	4.45 ± 0.72	3.88 ± 0.78	7.01	.001

*Note: One-Way ANOVA and Scheffé Post Hoc Test were employed.

*p < .05, **p < .01.

As shown in Table 8, statistically significant differences were found among organizational groups across all dimensions related to AI and AI ethics adoption. The highest overall mean score was reported by personnel from Town/City Municipalities (M = 4.45, SD = 0.72), followed by Subdistrict Municipalities

($M = 4.12$, $SD = 0.89$), Central Municipalities ($M = 3.88$, $SD = 0.78$), and Subdistrict Administrative Organizations ($M = 3.65$, $SD = 0.88$).

The most substantial differences were observed in understanding of AI ethics ($F = 8.55$, $p < .001$) and promoting AI ethics implementation ($F = 6.23$, $p = .002$). These findings indicate that personnel from different organizational contexts perceive AI- and ethics-related issues differently. Personnel working in Town/City Municipalities tended to report higher levels of awareness and engagement regarding AI and AI ethics adoption than personnel from other organizational groups.

The overall comparison also revealed a statistically significant difference ($F = 7.01$, $p = .001$), suggesting that organizational context is associated with variations in perceptions of AI and AI ethics adoption.

Discussion

Objective 1: Challenges and Readiness for AI and AI Ethics Adoption

The findings revealed that personnel in Local Administrative Organizations (LAOs) in Maha Sarakham Province perceived challenges related to AI and AI ethics adoption at a very high level. The greatest challenges were associated with

promoting AI utilization and ensuring compliance with AI ethics, whereas basic AI knowledge received the lowest challenge score. This finding suggests that organizational implementation mechanisms and ethical governance structures constitute more substantial barriers than individual knowledge deficits. The result is consistent with previous studies indicating that public organizations frequently encounter difficulties in developing governance frameworks, accountability mechanisms, and ethical guidelines necessary for responsible AI implementation (Budhwar et al., 2022). The finding also reinforces the growing importance of AI ethics as a critical component of public-sector digital transformation.

Regarding readiness, the overall level was high. Personnel readiness (Man) received the highest mean score, while technological readiness (Material) received the lowest. This finding suggests that although personnel are generally willing to adopt and learn AI technologies, limitations in technological infrastructure, digital systems, and supporting resources remain important constraints. The result supports the Resource-Based View (RBV), which emphasizes that successful innovation adoption depends on the availability and strategic utilization of organizational resources.

Objective 2: Differences in Challenges and Readiness
According to Personal and Organizational Factors

The findings generally supported the proposed research hypotheses.

First, significant differences were found according to job position. Managerial personnel reported significantly higher levels of both challenges and readiness than operational personnel, supporting H1 and H2. This finding may be explained by managers' greater involvement in policy development, strategic planning, resource allocation, and organizational decision-making regarding digital transformation initiatives. The result is consistent with Diffusion of Innovation Theory, which highlights the role of leaders and change agents in promoting innovation adoption. Second, personnel with more than ten years of work experience demonstrated significantly higher readiness levels than those with less experience, supporting H3.

This finding suggests that accumulated professional experience enhances understanding of organizational processes, resource management, and adaptation to technological change. Similar findings have been reported in studies examining readiness for digital transformation and AI implementation (Campion et al., 2022).

Third, significant generational differences were identified in several dimensions of AI readiness, supporting H5. Generation X personnel reported higher levels of readiness regarding AI ethics knowledge, organizational policy awareness, and ethical governance than Generation Y personnel. This finding indicates that readiness for AI adoption extends beyond technological competence and includes organizational experience and ethical awareness.

Finally, organizational context significantly influenced perceptions regarding AI adoption. Personnel in Town and City Municipalities reported higher levels of challenges than personnel in other organizational categories, supporting H4. Furthermore, organizational size significantly influenced readiness levels, supporting H6. Larger organizations generally demonstrated greater readiness due to stronger resource availability, broader administrative responsibilities, and more advanced technological infrastructure. These findings are consistent with the Resource-Based View, which suggests that organizations possessing greater strategic resources are more capable of adopting technological innovations successfully.

Overall, the findings indicate that both personal characteristics and organizational resources significantly shape

perceptions of AI challenges and readiness. Consequently, successful AI implementation in local administrative organizations requires not only technological investment but also leadership support, personnel development, ethical governance mechanisms, and adequate organizational resources.

New Knowledge from the Research

From the study entitled “Challenges and Readiness for Artificial Intelligence and AI Ethics Adoption to Enhance Work Performance among Personnel in Local Administrative Organizations in Maha Sarakham Province,” new knowledge was generated and synthesized into the “AI Readiness and Ethical Governance Model for Local Administrative Organizations,” as illustrated in Figure 2.

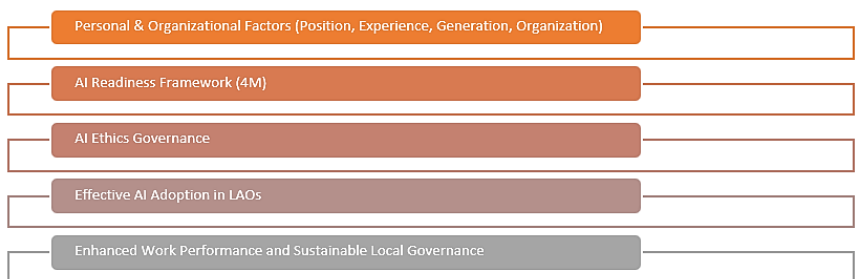


Figure 2 AI Readiness and Ethical Governance Model for Local Administrative Organizations

Figure 2 illustrates that the successful adoption of Artificial Intelligence (AI) and AI ethics in Local Administrative Organizations (LAOs) depends on the integration of organizational readiness based on the 4M framework namely Man (personnel), Money (budget), Material (technology and infrastructure), and Management (administration and strategic planning) together with effective AI ethical governance. AI ethical governance encompasses key principles such as transparency, accountability, fairness, and responsible use of AI.

The model further indicates that both personal and organizational factors influence the level of readiness for AI adoption. When organizations possess adequate readiness across the 4M dimensions and establish appropriate ethical governance mechanisms, they are more likely to implement AI effectively and responsibly. Ultimately, this leads to enhanced work performance, improved public service delivery, and the sustainable development of local governance.

Summary

The comparative analysis further demonstrated statistically significant differences in both challenges and readiness according to job position, work experience,

generation, and organizational characteristics. Managerial personnel and employees with longer work experience reported higher levels of readiness and greater awareness of AI ethics than their counterparts. Additionally, personnel from larger municipal organizations tended to report higher levels of awareness regarding AI-related challenges and ethical considerations. These findings indicate that organizational leadership, professional experience, and institutional context play important roles in shaping AI readiness and ethical awareness within local government organizations.

Recommendations

1. Practical Recommendations

1. Local Administrative Organizations (LAOs) should provide continuous training programs on Artificial Intelligence (AI), AI ethics, and digital competencies to strengthen personnel knowledge and enhance organizational readiness. Special attention should be given to operational-level personnel and employees with limited work experience, who demonstrated comparatively lower levels of readiness.

2. Since technological readiness (Material) received the lowest score among the 4M dimensions, LAOs should allocate sufficient budgets to improve digital infrastructure, information systems, AI-related technologies, and internet connectivity to support effective AI implementation.

3. Local governments should establish clear AI governance frameworks, including policies and operational guidelines that promote transparency, accountability, fairness, privacy protection, and ethical AI use. Such measures would help address the challenges associated with AI ethics and responsible AI adoption identified in this study.

4. Organizational leaders should play an active role in promoting AI adoption by encouraging innovation, supporting digital transformation initiatives, and creating an organizational culture that embraces technological change. Leadership support is particularly important because managerial personnel demonstrated higher levels of AI awareness and readiness than operational personnel.

5. Provincial and national government agencies responsible for local administration should develop coordinated policies and support mechanisms to reduce disparities in AI readiness among different types and sizes of local administrative organizations.

2. Recommendations for Future Research

1. Future studies should employ longitudinal research designs to examine changes in AI readiness, AI ethics awareness, and AI adoption outcomes over time.

2. Qualitative or mixed-methods approaches should be conducted to gain deeper insights into organizational, cultural, and behavioral factors influencing AI adoption and ethical AI implementation in local government settings.

3. Comparative studies should be undertaken across different provinces, regions, or levels of local government to investigate contextual differences in AI readiness and challenges.

4. Future research should develop and validate comprehensive AI readiness and AI governance models for public-sector organizations by incorporating additional variables such as leadership support, organizational culture, digital literacy, and technology acceptance.

5. Further studies may examine the relationship between AI readiness, AI ethics governance, and organizational performance to better understand how AI adoption contributes to public service effectiveness and administrative efficiency.

Disclosure of Artificial Intelligence (AI) Use

The author used ChatGPT (GPT-5.5, OpenAI) as an AI-powered translation tool during the preparation and editing of this manuscript. The AI tool was used solely to support language editing, improve expressive clarity, enhance academic writing style, and assist in structuring the manuscript.

The AI tool was not used for data collection, data analysis, interpretation of results, drawing conclusions, or making conclusions. All research design, data analysis, interpretation, and academic judgment were performed solely by the author.

The author has carefully reviewed, verified, and edited the AI-assisted content and assumes full responsibility for the accuracy, completeness, and originality of the manuscript.

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