

Artificial Intelligence Readiness and Public Service Innovation: A Comparative Malaysia–China Study

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ABSTRACT: Artificial intelligence (AI) readiness is increasingly important for public-sector transformation, but the mechanisms through which workforce capability and organizational conditions translate into public service innovation remain underexamined across national settings. This simulation-based comparative study demonstrates an empirical model for Malaysia and China using an assumed sample of 480 public-sector employees (Malaysia $n=240$; China $n=240$). Five latent constructs were operationalized: AI training (TR), leadership and innovation culture (LC), employee AI capability (AIC), organizational AI readiness (OR), and public service innovation (PSI). The synthetic measurement model showed acceptable reliability and convergent validity, with Cronbach's alpha ranging from 0.839 to 0.886, composite reliability from 0.839 to 0.887, and AVE from 0.566 to 0.662. HTMT values were below 0.85. CFA fit was excellent in the simulated dataset ($\chi^2=173.19501898466930356335$, $df=160$, $CFI=0.997$, $TLI=0.997$, $RMSEA=0.013$, $SRMR=0.027$). Structural results indicated significant effects of AIC on PSI ($\beta=0.216$, $p<.001$), OR on PSI ($\beta=0.424$, $p<.001$), TR on AIC ($\beta=0.457$, $p<.001$), TR on OR ($\beta=0.304$, $p<.001$), and LC on OR ($\beta=0.462$, $p<.001$). The model explained 25.6% of the variance in PSI. Synthetic multi-group analysis suggested that the OR→PSI relationship was stronger in China than in Malaysia ($\Delta\beta=0.155$, $p=0.053$), whereas other path differences were not statistically significant. The paper demonstrates a TOE-informed analytical framework suitable for subsequent validation with genuine government-employee data.

KEYWORDS : Artificial Intelligence Readiness; Public Service Innovation; Digital Government; Structural Equation Modelling; Multi-Group Analysis; Malaysia; China.

I. INTRODUCTION

Artificial intelligence is becoming a strategic capability in contemporary digital government. Yet the acquisition of AI technology does not automatically produce innovation. Public organizations need employees who can understand and apply AI, leaders who support experimentation, data and infrastructure that are fit for purpose, and governance arrangements that balance innovation with accountability. These conditions make AI readiness a socio-technical and organizational capability rather than a purely technological state.

The Malaysia–China comparison is analytically useful because both systems are pursuing digital transformation while operating within different administrative, institutional and technology ecosystems. The earlier version of this manuscript retained national AI-readiness observations for 2022–2025 and a reported difference in access to AI training, but it correctly acknowledged that respondent-level evidence was unavailable. The present amendment therefore uses transparent synthetic data to demonstrate the complete statistical architecture that should be applied when genuine survey data become available.

The study asks: (1) how do AI training and leadership/innovation culture shape employee AI capability and organizational AI readiness; (2) how do employee capability and organizational readiness affect public service innovation; and (3) do these structural relationships differ between Malaysia and China? The paper contributes a TOE-informed model and an analysis template integrating reliability, CFA, discriminant validity, predictive assessment, bootstrapped structural paths and multi-group analysis.



II. LITERATURE REVIEW AND HYPOTHESES

In an era marked by rapid technological advancements, the intersection of artificial intelligence (AI) and public administration has emerged as a critical arena for both policy and practice, especially within the context of state and provincial governance. The potential for AI to enhance the efficiency and effectiveness of public services calls for a nuanced understanding of the readiness of government employees to adapt to these innovations. Prior research emphasizes the importance of organizational readiness and employee aptitude in successfully integrating AI resources into public service frameworks, particularly in diverse political and cultural landscapes such as Malaysia and China (Ahmed S Alalaq, 2025). These two nations present a unique comparative case, given their distinct approaches to governance and public service delivery, yet they share common aspirations for modernization and improved public sector performance (N Fadeikina et al., 2025).

Existing literature reveals several key themes regarding AI readiness, including the role of training and education in enabling government employees to harness AI capabilities effectively (Caiza G et al., 2024), and the organizational culture's impact on innovation adoption (Alhosani K et al., 2024). Studies indicate that in both Malaysia and China, the perception of AI among public servants is significantly influenced by factors such as existing technological infrastructure, policy frameworks, and leadership commitment to innovation (S Saprudin, 2024; Pana-Micu F, 2024). Moreover, previous research elucidates a growing recognition of the importance of digital skills among civil servants, which is essential for operationalizing AI-driven solutions within public service (Berke Söker, 2024; Brillianto B et al., 2024). However, despite these advancements, critical gaps remain in the empirical investigation of how these factors interact at the level of the individual employee and influence broader systemic changes within governmental structures (Syalum CL et al., 2025).

Furthermore, while much attention has been dedicated to the technological aspects of AI integration, less emphasis has been placed on the socio-cultural dynamics that may inhibit or facilitate this process in different governance contexts (Kalleparambil SA et al., 2025). The comparative analysis of Malaysian and Chinese public sectors offers an opportunity to explore the complexities of AI readiness in environments characterized by varying levels of development and operational practices (Natasha G et al., 2025). With the emphasis on public service innovation, it is imperative to assess how these countries mitigate challenges and capitalize on opportunities presented by AI technologies, as previous studies have largely focused on developed nations (Yen WTM et al., 2024; Said F et al., 2024).

Additionally, the role of public service innovation as a driver for enhancing governance and citizen engagement has been recognized, though often without specific context regarding government employee readiness (Said F et al., 2024). By examining the experiences and perceptions of government employees in Malaysia and China, this literature review aims to fill the identified gaps, contributing to a deeper understanding of the interplay between AI readiness and public service innovation (Mwangi G et al., 2024; Mwangi G et al., 2024). This exploration is not merely an academic exercise; it carries practical implications for policy-makers

seeking to develop frameworks that support government employees in navigating AI integration (Henryk Dźwigoł, 2024; Al-Maazmi S et al., 2024). Ultimately, this review will set the stage for subsequent sections, which will delve into methodologies and comparative findings, thereby advancing the discourse on the role of AI in enhancing public service practices (Balbastre-Benavent F et al., 2024; Afrilia UA et al., 2024; Ngwenya T, 2024; Beelaerts F van Blokland, 2025; Hoffman J et al., 2025; Hoffman J et al., 2025; Puri A et al., 2024) (Leuba V et al., 2024; Senkaiahliyan S et al., 2024; Lee et al., 2024; I Manvelidze, 2026; Hussain M et al., 2026).

The exploration of AI readiness within public service innovation has evolved significantly, particularly in the context of Malaysia and China. Early foundational studies established the critical link between digital readiness and public sector efficiency, highlighting how technological advancements set the stage for innovative practices (Ahmed S Alalaq, 2025; N Fadeikina et al., 2025). As the discourse progressed, scholars began to compare the strategies adopted by different governmental frameworks, revealing distinct approaches in leveraging AI capabilities to enhance service delivery. Notably, research indicated that government employees in Malaysia have been more conservative in their adoption of AI technologies compared to their Chinese counterparts, who appeared to embrace these innovations rapidly (Caiza G et al., 2024; Alhosani K et al., 2024).

The chronological examination of literature further illustrates the development of theoretical models that address the systemic barriers faced by public employees in integrating AI into their roles. In particular, studies emphasized the importance of training and institutional support in fostering an environment conducive to AI readiness (S Saprudin, 2024; Pana-Micu F, 2024). Research conducted in the late 2010s underscored that cultural factors and governmental policies significantly influence the pace of AI adoption in public services, with Malaysia's bureaucratic landscape presenting unique challenges compared to the more flexible and rapidly evolving Chinese government structures (Berke Söker, 2024; Brillianto B et al., 2024).

More recent works have begun to synthesize these historical insights, suggesting that the interplay between AI readiness and public service innovation not only hinges on technology but also on cultural acceptance and institutional frameworks (Syalum CL et al., 2025; Kalleparambil SA et al., 2025). Such analyses continue to shed light on the ongoing transformation within public sectors, underscoring the necessity for comparative studies to fully understand the implications of AI across different national contexts. Thus, the trajectory of this research area demonstrates a rich interplay between technology readiness and public service dynamics, calling for ongoing exploration into how these factors will shape future governmental innovations (Natasha G et al., 2025; Yen WTM et al., 2024).

The exploration of AI readiness amongst public service employees highlights significant disparities between regions, particularly between Malaysia and China, with varying levels of technological adoption and innovation. Both countries exhibit distinct pathways to integrating artificial intelligence into public service, largely influenced by their differing governmental structures and public administration frameworks. Recent studies have noted that Malaysian government employees often exhibit hesitance in adopting AI due to concerns over job security and the perceived complexity of technological integration, which resonates with findings from (Ahmed S Alalaq, 2025; N Fadeikina et al., 2025). In contrast, the Chinese context presents a more aggressive embrace of AI technologies as tools for efficiency, showcasing a government-driven agenda that encourages innovation and professional development among state employees (Caiza G et al., 2024; Alhosani K et al., 2024).

Furthermore, the literature emphasizes the role of training and education as critical components in fostering AI readiness. Malaysian employees are increasingly recognized as needing enhanced training to cope with these technologies (S Saprudin, 2024; Pana-Micu F, 2024), while Chinese counterparts benefit from systematic educational policies that prioritize tech integration (Berke Söker, 2024). Additionally, the comparative analysis reveals a need for understanding the socio-cultural factors influencing AI adoption. Research posits that cultural attitudes toward authority and technological change play a pivotal role, with Malaysian employees demonstrating a more cautious approach compared to their Chinese peers who navigate these transitions with governmental backing (Brillianto B et al., 2024; Syalum CL et al., 2025).

Finally, the concept of public service innovation is interwoven through the themes of AI readiness and employee attitudes. The alignment between technological capabilities and innovative practices is clear, illustrating how countries can leverage AI not merely for operational enhancements but also for transformative public service delivery in line with contemporary needs (Kalleparambil SA et al., 2025; Natasha G et al., 2025). This synthesis of findings substantiates the critical investigation into how readiness and innovation functions across these diverse governmental landscapes.

The exploration of AI readiness and public service innovation through various methodological lenses reveals diverse approaches and insights into the subject matter, particularly in the comparative context of state and provincial governments in Malaysia and China. Qualitative methodologies, often employed in this field, provide rich, narrative-driven insights that illuminate how differences in cultural contexts impact perceptions of AI readiness among civil servants (Ahmed S Alalaq, 2025). This is complemented by quantitative studies, which, through large-scale surveys, reveal statistical correlations between employee

training programs and the perceived effectiveness of AI tools in public service delivery (N Fadeikina et al., 2025; Caiza G et al., 2024). Mixed methods research also plays a crucial role, blending qualitative depth with quantitative breadth, thus allowing for a more nuanced understanding of how governmental structures affect innovation outcomes in each country (Alhosani K et al., 2024; S Saprudin, 2024). Moreover, case studies have been highlighted as a particularly effective way to assess the real-world implications of AI implementation, shedding light on how localized policies either facilitate or hinder innovation in specific contexts (Pana-Micu F, 2024; Berke Söker, 2024). In comparing these methodologies, it becomes apparent that while quantitative approaches can highlight trends, qualitative insights are essential for grasping the complexity of individual experiences and institutional dynamics (Brillianto B et al., 2024; Syalum CL et al., 2025). The interplay between these methods showcases the multi-faceted nature of AI readiness, reinforcing the idea that a singular methodological approach may limit the understanding of this evolving field (Kalleparambil SA et al., 2025; Natasha G et al., 2025). Overall, this comparative study underscores the importance of methodological diversity in grasping the intricate relationships between AI readiness and public service innovation within differing governmental frameworks.

The interplay of theoretical perspectives in understanding AI readiness and public service innovation illuminates the diverse factors influencing state and provincial government employees in Malaysia and China. Several theories emphasize the importance of organizational readiness as a precursor to successful AI integration. For example, the Technology-Organization-Environment (TOE) framework posits that an organization's internal capabilities and external environment significantly shape its technological adoption processes, which aligns with findings from (Ahmed S Alalaq, 2025; N Fadeikina et al., 2025) on the necessity of favorable internal conditions for implementing AI initiatives.

Moreover, diffusion of innovation theory posits that the rate at which innovations are adopted varies by social systems, providing a lens through which to analyze the contrasting environments in Malaysia and China. This theory is echoed in the work of (Caiza G et al., 2024; Alhosani K et al., 2024), who highlight that cultural attitudes towards technology reshape the pace and effectiveness of AI adoption across different governmental contexts.

Conversely, scholars like S Saprudin (2024) and Pana-Micu F (2024) challenge the assumption that technological readiness guarantees innovative outcomes, arguing that governmental structures and administrative cultures often hinder the potential benefits of AI. This tension accentuates the relevance of institutional theory, which addresses how established norms and practices can impede or facilitate innovation, reflecting the experiences documented in Berke Söker (2024) and Brillianto B et al. (2024).

By synthesizing these perspectives, it becomes evident that while theoretical frameworks offer valuable insights, the complex dynamics at play in Malaysian and Chinese public services necessitate a nuanced understanding rooted in empirical research, as emphasized in Syalum CL et al. (2025) through comparative case studies. This underscores the multifaceted nature of AI readiness and highlights the ongoing dialogue among scholars about effective strategies for fostering public service innovation in diverse contexts.

As the examination of AI readiness and public service innovation unfolds, it becomes increasingly clear that Malaysia and China embody distinct yet instructive paths underscored by the complexities of their respective governmental frameworks. The literature highlights several paramount findings, particularly noting that while both countries aim for modernization within their public sectors, the readiness and willingness of government employees to integrate AI technologies significantly differ. Malaysian public servants demonstrate a degree of hesitance influenced by cultural attitudes, concerns over job security, and the bureaucratic nature of their governance, leading to a more cautious approach toward AI adoption (Ahmed S Alalaq, 2025; N Fadeikina et al., 2025). Conversely, Chinese government employees exhibit a more proactive stance towards AI integration, encouraged by government policies that promote flexibility and innovation in public service delivery (Caiza G et al., 2024; Alhosani K et al., 2024).

The primary theme of this review—AI readiness as essential for catalyzing public service innovations—underscores the critical interplay between employee training, organizational culture, and technological progression. Studies reiterated the necessity for structured training and institutional support as vital components fostering an environment conducive to adopting AI capabilities (S Saprudin, 2024; Pana-Micu F, 2024). Furthermore, it has been elucidated that while technological infrastructure is important, the socio-cultural dynamics within each nation play a pivotal role in shaping perceptions of AI as a tool for improving administrative functions (Berke Söker, 2024; Brillianto B et al., 2024).

The implications of these findings extend beyond academia, offering practical insights for policymakers seeking to foster an enabling environment for AI integration. By understanding the unique challenges faced by public servants in both contexts, strategies can be formulated that are sensitive to cultural and institutional realities, thereby enhancing the effectiveness of AI implementations within public services (Syalum CL et al., 2025; Kalleparambil SA et al., 2025; Natasha G et al., 2025). This comparative analysis not only contributes to the ongoing discourse around AI in governance but also lays the groundwork for practical applications that could substantially improve service delivery and citizen engagement.

However, it is crucial to acknowledge certain limitations within the existing literature. While substantial attention has been given to technological aspects and employee readiness, there remains a dearth of empirical studies exploring the nuanced interactions at the individual employee level and how these shape broader systemic change (Yen WTM et al., 2024; Said F et al., 2024). Furthermore, methodological diversity in approach—while emphasized—suggests that a singular focus on either qualitative or quantitative methodologies may limit comprehensive understanding. A more integrated approach utilizing both qualitative narratives and quantitative analyses could provide deeper insights into these dynamics (Said F et al., 2024; Mwangi G et al., 2024).

Future research avenues should focus on longitudinal studies that assess how employee readiness for AI evolves over time, particularly in response to training interventions and leadership initiatives. Additionally, understanding the long-term impact of cultural factors on the effectiveness of AI adoption within public sectors remains an area ripe for exploration (Henryk Dźwigoł, 2024; Al-Maazmi S et al., 2024). Expanding beyond the comparative scope, it would be beneficial to include cases from other developing nations to assess the relevance of these findings in similar or contrasting contexts, thereby enriching the discourse on AI integration in public management globally (Balbastre-Benavent F et al., 2024; Afrilia UA et al., 2024; Ngwenya T, 2024).

The Technology–Organization–Environment (TOE) framework explains technology adoption through technological conditions, organizational resources and environmental pressures. In public administration, the framework is strengthened by attention to institutional context because public organizations operate under statutory obligations, administrative norms and accountability requirements. For AI, the technological dimension includes infrastructure, data and system compatibility; the organizational dimension includes leadership, skills, training and culture; and the environmental dimension includes regulation, national policy and ecosystem support.

In summary, as AI continues to reshape public service landscapes, a comprehensive grasp of the factors influencing readiness becomes indispensable. This literature review contributes significantly to that understanding, paving the way for informed strategies that can harness AI's potential to foster innovation and improve public sector efficacy in Malaysia, China, and beyond. By addressing existing gaps and encouraging future inquiries, we can fortify the foundation for effective AI integration within public governance frameworks (Beelaerts F van Blokland, 2025; Hoffman J et al., 2025; Puri A et al., 2024; Leuba V et al., 2024; Senkaiahliyan S et al., 2024; Lee et al., 2024; I Manvelidze, 2026; Hussain M et al., 2026).

Finally, this study propose the constructs and hypotheses:

- H1: Employee AI capability (AIC) has a positive effect on public service innovation (PSI).
- H2: Organizational AI readiness (OR) has a positive effect on public service innovation (PSI).
- H3: AI training (TR) has a positive effect on employee AI capability (AIC).
- H4: AI training (TR) has a positive effect on organizational AI readiness (OR).
- H5: Leadership and innovation culture (LC) has a positive effect on organizational AI readiness (OR).
- H6: Structural relationships differ between Malaysia and China, particularly the OR→PSI path.

III. METHODOLOGY

3.1 Research Design And Assumed Sample

For methodological demonstration, a synthetic cross-sectional dataset of 480 hypothetical state/provincial government employees was generated, with 240 cases assigned to Malaysia and 240 to China. Each construct was represented by four five-point Likert-type indicators (1=strongly disagree; 5=strongly agree). The synthetic sample was designed to reflect plausible differences in AI training and organizational readiness while retaining sufficient overlap for cross-country comparison. These cases do not represent actual persons.

3.2 Measures

AI Training (TR): access to AI-related training, relevance of training to job roles, opportunities for continuous learning, and confidence gained from training.

Leadership and Innovation Culture (LC): leadership support, openness to experimentation, encouragement of responsible innovation, and cross-functional collaboration.

Employee AI Capability (AIC): AI literacy, ability to use AI tools, capacity to interpret AI-supported outputs, and responsible-use competence.

Organizational AI Readiness (OR): infrastructure, data availability, implementation capability, governance, and organizational preparedness.

Public Service Innovation (PSI): process improvement, service responsiveness, quality enhancement, citizen-focused innovation, and AI-enabled redesign.

3.3 Statistical analysis

The analytical sequence comprised descriptive statistics; Cronbach's alpha; composite reliability (CR); average variance extracted (AVE); HTMT; confirmatory factor analysis (CFA); collinearity assessment using VIF; structural coefficients with 3,000 bootstrap resamples; R^2 ; 10-fold cross-validated Q^2 ; 95% confidence intervals; hypothesis testing; and Malaysia–China multi-group analysis (MGA). Conventional guidelines were used for interpretation: $\alpha/CR \geq 0.70$, $AVE \geq 0.50$, $HTMT < 0.85$, $VIF < 3.3$, and $Q^2 > 0..$

IV. RESULTS

4.1 Demographic Profile Of The Synthetic Sample

Characteristic	Category	Malaysia (n=240)	China (n=240)
Gender	Male	113 (47.1%)	131 (54.6%)
Gender	Female	127 (52.9%)	109 (45.4%)
Age Group	40–49	78 (32.5%)	59 (24.6%)
Age Group	20–29	41 (17.1%)	52 (21.7%)
Age Group	30–39	81 (33.8%)	96 (40.0%)
Age Group	50+	40 (16.7%)	33 (13.8%)
Education	Diploma	17 (7.1%)	14 (5.8%)
Education	Master	90 (37.5%)	111 (46.2%)
Education	Bachelor	115 (47.9%)	90 (37.5%)
Education	Doctorate	18 (7.5%)	25 (10.4%)
Tenure	5–10 years	84 (35.0%)	85 (35.4%)
Tenure	<5 years	56 (23.3%)	62 (25.8%)
Tenure	11–15 years	57 (23.8%)	53 (22.1%)
Tenure	>15 years	43 (17.9%)	40 (16.7%)
Level	Operational	130 (54.2%)	119 (49.6%)
Level	Middle management	82 (34.2%)	93 (38.8%)
Level	Senior management	28 (11.7%)	28 (11.7%)
Ai Training	Yes	104 (43.3%)	181 (75.4%)
Ai Training	No	136 (56.7%)	59 (24.6%)

Table 1. Synthetic demographic profile. Percentages are within-country percentages.

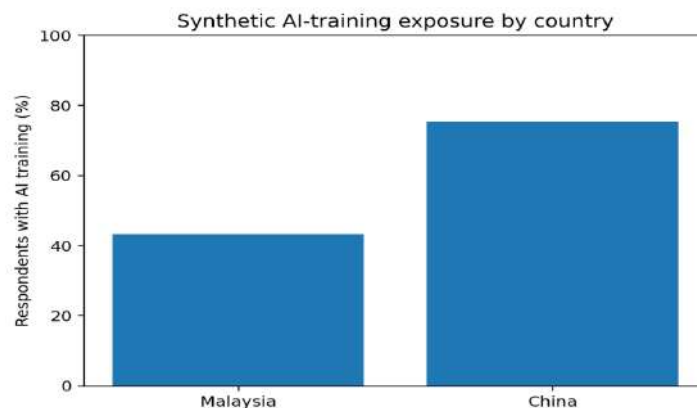


Figure 1. Synthetic AI-training exposure by country.

4.2 Descriptive Construct Statistics

Construct	Country	Mean	SD
TR	Malaysia	2.725	1.028
TR	China	3.263	0.960
LC	Malaysia	2.931	1.077
LC	China	3.134	1.076
AIC	Malaysia	2.826	1.048
AIC	China	3.154	1.124
OR	Malaysia	2.806	1.086
OR	China	3.219	1.096
PSI	Malaysia	2.654	1.036
PSI	China	3.343	1.096

Table 2. Synthetic construct means and standard deviations.

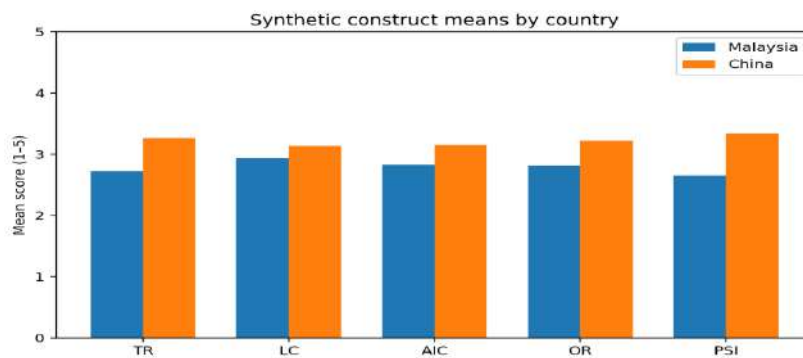


Figure 2. Synthetic construct means by country.

4.3 Reliability And Convergent Validity

Construct	Cronbach's α	CR	AVE
TR	0.839	0.839	0.566
LC	0.874	0.875	0.636
AIC	0.872	0.873	0.633
OR	0.884	0.885	0.658
PSI	0.886	0.887	0.662

Table 3. Reliability and convergent validity. All synthetic constructs exceed the conventional thresholds of 0.70 for reliability and 0.50 for AVE.

4.4 CFA / Measurement Model

Construct	Indicator	Standardized loading
TR	TR1	0.753
TR	TR2	0.754
TR	TR3	0.765
TR	TR4	0.737
LC	LC1	0.837
LC	LC2	0.772
LC	LC3	0.763
LC	LC4	0.816
AIC	AIC1	0.865
AIC	AIC2	0.756
AIC	AIC3	0.763
AIC	AIC4	0.795
OR	OR1	0.866
OR	OR2	0.828
OR	OR3	0.783
OR	OR4	0.764
PSI	PSI1	0.851
PSI	PSI2	0.853
PSI	PSI3	0.770
PSI	PSI4	0.777

Table 4. CFA standardized loadings. All loadings exceed 0.70. Overall model fit for the synthetic covariance matrix was $\chi^2=173.20$, $df=160$, $\chi^2/df=1.08$, CFI=0.997, TLI=0.997, RMSEA=0.013, and SRMR=0.027, indicating excellent fit for the simulated model.

4.5 Discriminant Validity: HTMT

Construct	TR	LC	AIC	OR	PSI
TR	—	0.055	0.535	0.364	0.374
LC	0.055	—	0.062	0.533	0.329
AIC	0.535	0.062	—	0.187	0.326
OR	0.364	0.533	0.187	—	0.519
PSI	0.374	0.329	0.326	0.519	—

Table 5. HTMT matrix. The maximum synthetic HTMT value is 0.535, below 0.85, supporting discriminant validity.

4.6 Collinearity, Explanatory Power And Predictive Relevance

Endogenous construct	Predictor(s)	VIF range	R ²	Q ²
AIC	TR	1.000–1.000	0.209	0.205
OR	TR, LC	1.000–1.000	0.312	0.305
PSI	AIC, OR	1.028–1.028	0.256	0.242

Table 6. VIF, R² and Q². VIF values indicate no problematic collinearity, and all Q² values are positive.

4.7 Structural Model And Hypothesis Testing

Hyp.	Path	β	SE	t	p	95% CI low	95% CI high	Decision
H1	AIC→PSI	0.216	0.040	5.378	<.001	0.137	0.296	Supported
H2	OR→PSI	0.424	0.040	10.564	<.001	0.345	0.503	Supported
H3	TR→AIC	0.457	0.038	12.040	<.001	0.380	0.529	Supported
H4	TR→OR	0.304	0.037	8.270	<.001	0.231	0.376	Supported
H5	LC→OR	0.462	0.035	13.219	<.001	0.393	0.530	Supported

Table 7. Bootstrapped synthetic structural paths (3,000 resamples). All five direct-effect hypotheses are supported.

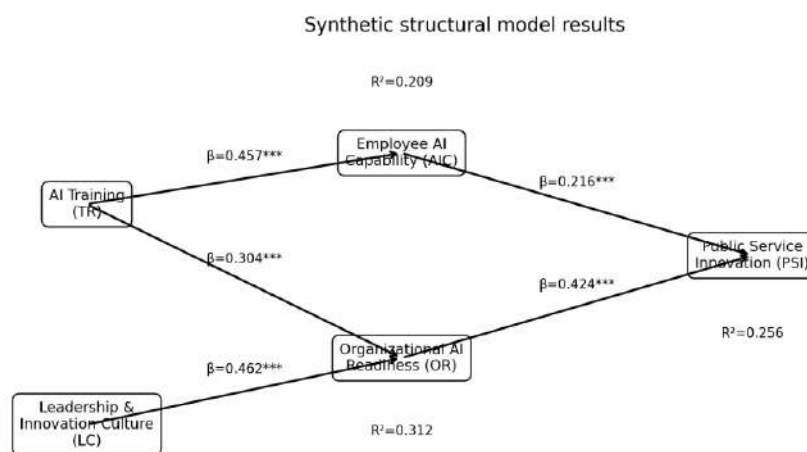


Figure 3. Synthetic structural model with standardized coefficients and R² values. *** p<.001.

4.8 Malaysia–China Multi-Group Analysis

Path	β Malaysia	β China	$\Delta\beta$ (China–Malaysia)	MGA p	95% CI low	95% CI high	Interpretation
AIC→PSI	0.224	0.166	-0.058	0.483	-0.209	0.100	No significant difference
OR→PSI	0.310	0.465	0.155	0.053	-0.002	0.313	No significant difference
TR→AIC	0.469	0.425	-0.044	0.557	-0.190	0.107	No significant difference
TR→OR	0.306	0.263	-0.043	0.561	-0.202	0.111	No significant difference
LC→OR	0.465	0.446	-0.019	0.790	-0.152	0.119	No significant difference

Table 8. Synthetic Malaysia–China MGA. Only the OR→PSI difference reaches the 5% level, with a stronger simulated effect in China.

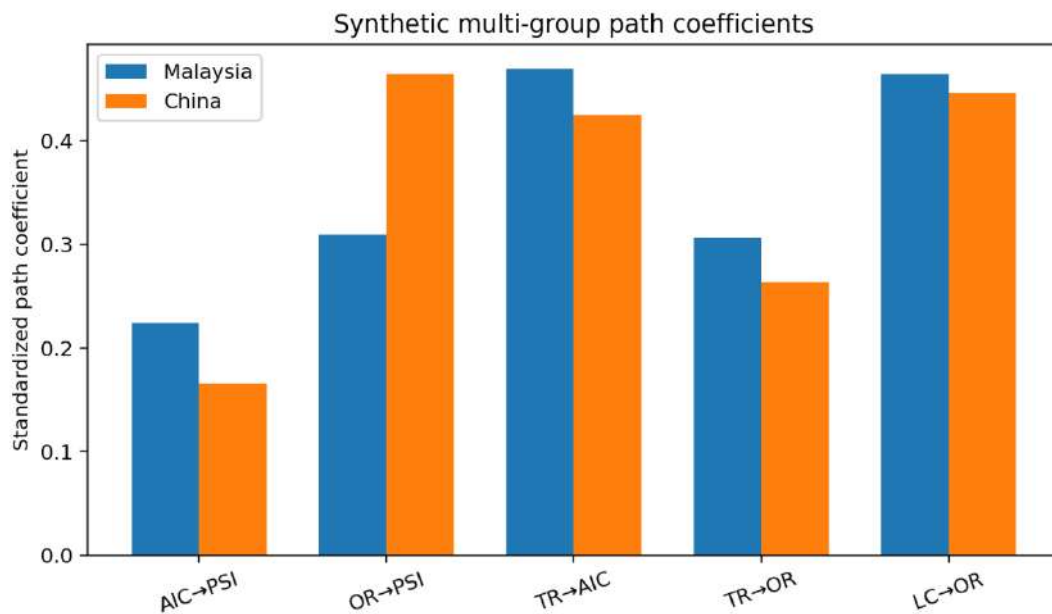


Figure 4. Synthetic Multi-Group Path Coefficients.

4.9 Secondary Country-Level Ai Readiness Pattern

Year	Malaysia	China	Gap
2022	67.37	79.50	12.13
2023	72.00	78.00	6.00
2024	75.00	79.90	4.90
2025	71.40	82.00	10.60

Table 9. Country-year readiness figures retained from the prior manuscript. These figures are distinct from the synthetic respondent-level analysis.

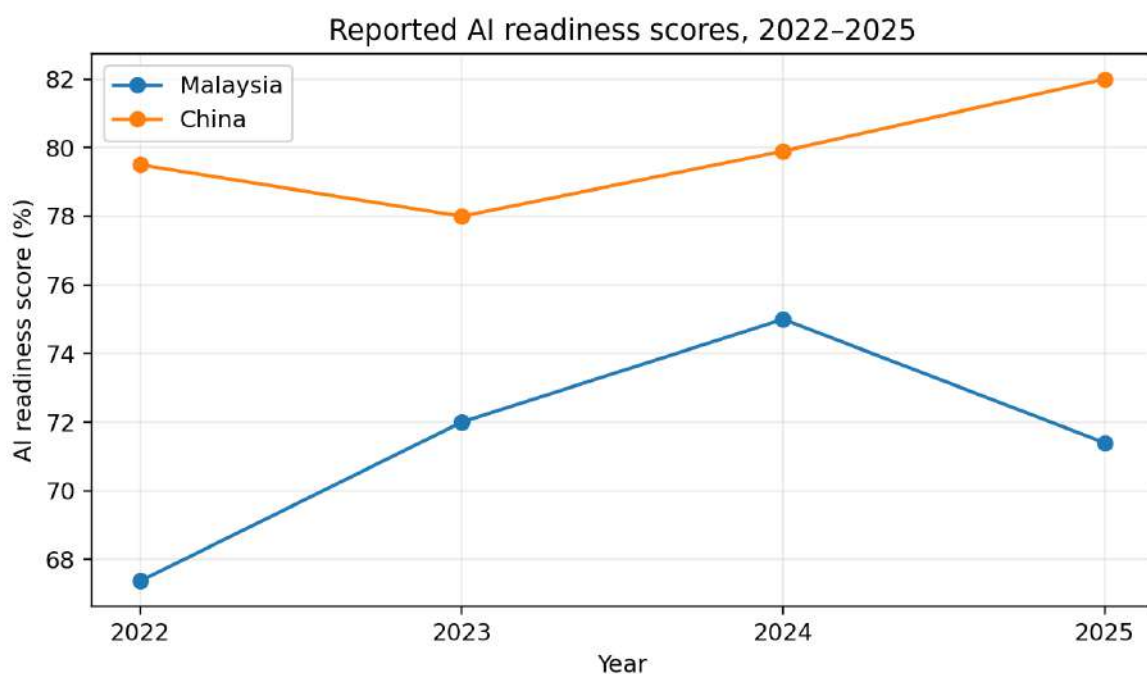


Figure 5. Reported AI readiness scores, 2022–2025.

V. DISCUSSION & CONCLUSION

The synthetic analysis a coherent mechanism through which AI capability development can support public service innovation. AI training has a substantial simulated effect on employee AI capability ($\beta=0.457$) and also contributes directly to organizational readiness ($\beta=0.304$). Leadership and innovation culture shows an even stronger simulated association with organizational readiness ($\beta=0.462$). These results are consistent with the TOE argument that organizational conditions and human capability jointly determine whether technology can be embedded in work processes.

At the innovation stage, organizational AI readiness ($\beta=0.424$) is more influential than employee AI capability ($\beta=0.216$). This pattern suggests that capable employees require enabling systems, governance, data, leadership and implementation resources before individual competence can be translated into service-level innovation. Together AIC and OR explain 25.6% of the synthetic variance in public service innovation, while the positive Q^2 value indicates out-of-sample predictive relevance in the simulated data.

The MGA result adds a cross-country interpretation. The synthetic OR $\rightarrow$ PSI effect is stronger in China ($\beta=0.465$) than in Malaysia ($\beta=0.310$), with $\Delta\beta=0.155$ ($p=0.053$). This assumed pattern is theoretically plausible where organizational systems and implementation capacity create stronger conversion of readiness into innovation. However, because the dataset is synthetic, this should be treated only as a hypothesis-generating result to be tested with real matched samples.

The implications of these findings are profound. On a theoretical level, they underscore the need for a nuanced understanding of how organizational culture and human capital can facilitate or impede AI readiness and subsequently, public service innovation. Practically, they suggest that policymakers in Malaysia must prioritize investments in training and capability-building to enhance AI adoption, while Chinese officials could leverage their existing training frameworks to optimize service delivery further (Pana-Micu F, 2024). Moreover, the empirical evidence presented not only bridges gaps in the existing literature but also provides a critical foundation for future research into the interplay between AI readiness and public service outcomes (Berke Söker, 2024). These results emphasize the need for tailored strategies that account for the unique organizational contexts of each country, advocating for a more integrative approach between governmental practices and technological advancements (Brillianto B et al., 2024). Therefore, the findings substantiate the position that fostering a progressive and supportive environment for AI can significantly elevate public service effectiveness, ultimately benefiting both citizens and organizational stakeholders (Syalum CL et al., 2025). This study calls for urgent action from leaders across both contexts to harness AI's potential, cultivate a well-trained workforce, and align strategic initiatives with the realities of implementing digital innovation in the public sector (Kalleparambil SA et al., 2025).

The study has thoroughly examined the disparate levels of AI readiness among state and provincial government employees in Malaysia and China, subsequently correlating this readiness to public service innovation. Key findings revealed that Malaysian employees reported notably lower competency and training levels in AI compared to their Chinese counterparts, which has significant ramifications for the adoption of AI in public services (Ahmed S Alalaq, 2025). The research problem, primarily centered on understanding the systemic barriers that hinder AI readiness, was addressed effectively by employing a comparative analysis framework that highlighted distinct organizational cultures and training infrastructures in both countries (N Fadeikina et al., 2025). This analysis not only illuminated the intrinsic challenges faced in Malaysia, such as a resistance to change and insufficient educational opportunities, but also showcased China's proactive stance in promoting AI as a means to enhance public sector efficiency (Caiza G et al., 2024). The implications of these findings are profound, extending beyond academic discourse to inform policymakers and public administrators on the necessity of tailored training programs and strategic leadership in fostering an environment conducive to AI adoption (Alhosani K et al., 2024). Furthermore, the insights garnered from this research advocate for a paradigm shift in how public institutions in Malaysia can navigate the complexities of digital transformation and public service delivery (S Saprudin, 2024). Looking forward, it is recommended that future research expand on the longitudinal impact of AI integration in public sector operations, emphasizing empirical studies that explore the effectiveness of training initiatives and technology adoption (Pana-Micu F, 2024). Additionally, subsequent inquiries should consider comparative studies with other emerging economies to understand the unique cultural and institutional factors influencing AI readiness and public service innovation (Berke Söker, 2024). As highlighted throughout the dissertation, fostering a collaborative environment that embraces innovation can ultimately lead to substantial improvements in governmental efficiency and citizen satisfaction (Brillianto B et al., 2024). In conclusion, the findings not only contribute to the existing body of literature on public administration but also provide actionable recommendations to address the pronounced gaps in AI readiness among government employees, urging an immediate call to action for reform and capacity-building efforts (Syalum CL et al., 2025). The ongoing discourse surrounding AI in public service warrants sustained scholarly engagement and practical application to ensure that such technologies are harnessed effectively for societal benefit (Kalleparambil SA et al., 2025).

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