AI Adoption in Taiwan's Industries

2025 Survey Findings and Implementation Guide

Research Institution 財團法人人工智慧科技基金會 Artificial Intelligence Foundation

Collaborative Partner Qualcomm

Survey Implementation 時勢 TREND SIGHT RESEARCH

Bridging the Knowledge Gap: Building a Practical Pathway for AI Adoption

Artificial Intelligence (AI) has become one of the core technologies driving global industrial upgrades and organizational innovation. However, implementing AI is far more than introducing new tools or deploying models — it entails a deep transformation across data, workflows, organizational structures, and governance.

To better understand the real needs and challenges Taiwan's industries facing in the era of AI, the Artificial Intelligence Foundation (AIF) has conducted the "Survey on AI Adoption in Taiwan's Industries" annually since 2022. This long-term research initiative, driven by industry stakeholders and executed by an independent non-profit, aims to provide a reflective lens for industries to assess their AI maturity, while serving as a reference for policymaking and technical deployment.

The 2025 survey focuses on "Key factors for Enterprise AI Implementation", and was conducted from January to February 2025. Findings reveal that while enterprises are increasingly aware of and interested in AI, a significant implementation gap remains between "knowing AI" and "using AI."

By analyzing trends across survey years, combining with AIF's own coaching experience and domain knowledge of industry experts, several recurring barriers have been identified. Despite government's policy supports and talent development efforts in 2025, enterprises have been struggling with crossing the gaps from "heard of AI", "Knowing AI", to "Use AI" and full implementation of AI. The gaps include:

- Misunderstanding AI as just another plug-and-play software tool, expecting immediate results once installed and operated;
- Lack of clarity on what constitutes real AI talent and uncertainty about their actual roles once onboarded;
- Inadequate understanding of key domain knowledge such as model training, inference, on-device AI, and cloud AI;
- Attempting to deploy AI applications without integrating or managing internal data properly;
- Overemphasizing external tools while neglecting the need to build internal capabilities and strategic alignment.

Even amid the recent surge of interest driven by generative AI, many companies continue to struggle with these bottlenecks. In response, AIF has consolidated years of field experience and expert insights to launch, for the first time, the AI Implementation Guide for Enterprises, designed to provide actionable roadmaps and structured frameworks to guide AI implementation.

Purpose

This guide is grounded in multi-year survey data and practical enterprise engagement. It aims to support companies and decision-makers in:

1. Acquiring a solid knowledge foundation,
2. Building a step-by-step application roadmap,
3. Enhancing risk awareness,
4. Promoting cross-functional integration,

Key Features

To make this guide applicable across various enterprise sizes and industries, it is designed with three distinctive features:

- Phase Navigator
  Through a self-assessment tool, companies can identify their AI maturity level (Unknowing, Conscious, Ready, Scaling), and focus on the most relevant challenges and risks.

- Cross-functional Integrator
  The guide spans multiple perspectives, from strategy, technology, operations, talent, to governance, enabling enterprises to align AI strategy with business operations. It starts with clear, feasible steps to build knowledge, experience, and confidence of enterprises.

- Implementation-driven Recommendations
  Each chapter includes practical steps, real-world examples, and common pitfalls to avoid vague planning and enable tangible outcomes, helping companies move from “interest in AI” to “use AI.”

At this pivotal moment for AI, industries need technologies with clear and actionable roadmaps. We hope this guide helps companies mitigate the knowledge gaps, strengthen governance, accelerate talent development, and ensure AI adoption in Taiwan is grounded, resilient, and continuously value-generating under safe and controllable conditions

Artificial Intelligence Foundation CEO 溫怡菸

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CHAPTER 01

2025 Survey Findings

From Awareness to Execution: Key Barriers to AI Adoption

Framework for Assessing AI Maturity

To evaluate AI maturity within Taiwan's industries, the Survey assesses enterprises across three core dimensions:

- Business
- Talent
- Technical

Based on a composite scoring system, enterprises are classified into four stages of AI Adoption, reflecting varying degrees of AI awareness and implementation:

- Unknowing AI — Limited or no understanding of AI concepts and applications
- Conscious AI — Basic awareness of AI, currently in the evaluation or planning phase
- Ready AI — Initial stages of AI deployment with early use cases underway
- Scaling AI — Mature implementation, with AI being systematically expanded and integrated across functions

This framework provides a structured perspective on how enterprises progress from basic AI awareness to full-scale adoption.

Awareness Is Rising, But the Adoption Gap Persists

Over the past two years, survey results show significant improvement in AI awareness:

The enterprises classified as Unknowing AI decreased from 45.5% in 2023 to 39.4% in 2025, while the proportion of Conscious AI increased to 31.7%, suggesting widespread of AI knowledge across the corporate sector.

However, the number of enterprises classified as Ready AI and Scaling AI have barely grown. Approximately 70% of enterprises remain stuck at the awareness stage, struggling to translate AI interest into practical implementation.

AI Is Not Just a Tech Upgrade — It Requires Digital transformation

While many enterprises aim to leverage AI for operational improvements, decision-making optimization, or innovation, they often struggle with the key barriers, such as insufficient resources on technical supports, fragmented or underdeveloped data infrastructure, and lack of a coherent AI application strategy. These challenges are often rooted in the level of their digital transformation initiatives. AI implementation is not an isolated upgrade of software, it depends on robust data infrastructure, organizational readiness, and a culture of digital literacy and crossfunctional collaboration. Without these foundational elements, AI cannot deliver real values.

Figure 1. Average AI Capability by years, Scores by Dimension

Unit: Average score

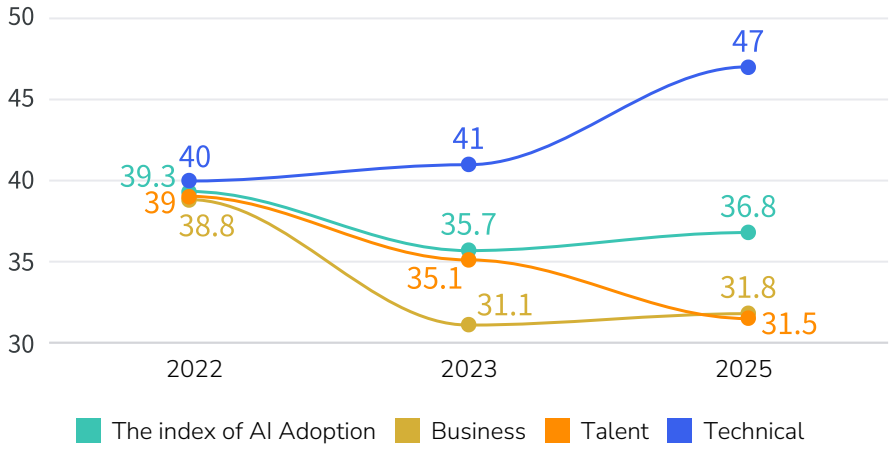
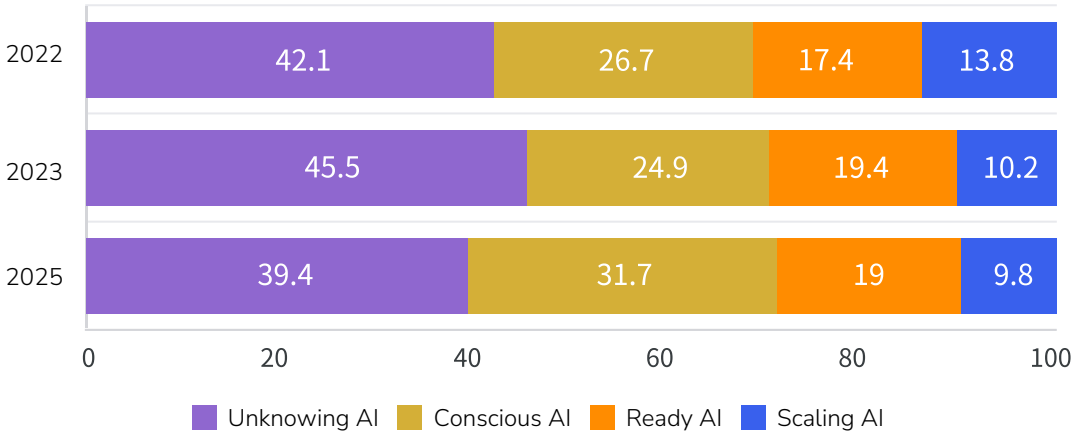


Figure 2. Distribution of Enterprises by four stages of AI Adoption (2025)

Unit: Percentage (%)



Industrial AI Adoption Index

AI Awareness of Enterprises has Improved, with Manufacturing, Public Sectors & Others Sector Showing the Most Progress

ICT Sector: From Optimism to Realism

Survey results show a decline in the index of AI Adoption of Information and Communications Technology (ICT) sector, falling from 44.7 to 41.7. This decline is attributed to shifts in self-assessment methodology: In the past, many ICT enterprises overestimated their AI maturity before conducting internal assessments. Now, upon deeper implementation, enterprises recognized the missing gaps, such as inadequate internal data readiness, weak data governance frameworks, and the need for business process optimization. Thus, self-assessments became more grounded, reflecting a growing understanding of the gap between concept of AI and real-world implementation of AI.

Manufacturing, Public Sectors & Others Sector: The Most Significant Progress

Industries previously lagging in AI Adoption, the manufacturing, public sectors & others sector, demonstrated notable growth in 2025. The index of AI Adoption for these sectors increased from 24.4 to 33.1, driven largely by the widespread use of generative AI tools over the past two years. Manufacturing, Public sectors & others sectors showed the most substantial improvement in AI awareness and readiness. However, most of them remain at the exploration stage, primarily experimenting with generative AI tools without broader business integration.

Persistent Challenge: Lack of Digital Transformation Readiness

Despite improvements of several sectors, enterprises continue to face challenges when moving beyond experimentation. Key obstacles include, lack of robust data governance frameworks, fragmented and disorganized digital workflows, and shortages of AI-skilled internal talent. Without foundational digital transformation, enterprises will keep struggling with effectively scaling AI adoption.

Figure 1. Yearly Average AI Capability Scores by Dimension

Unit: Average score

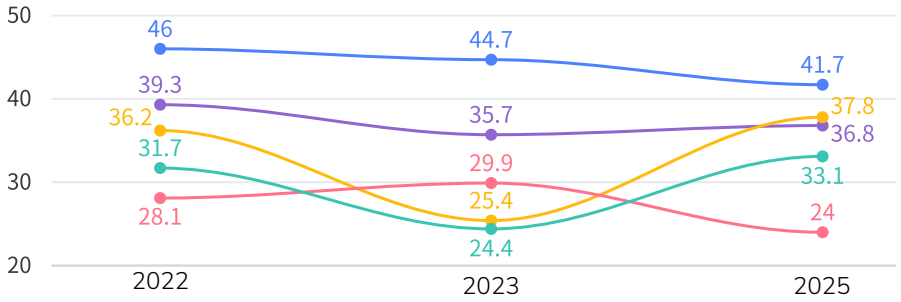
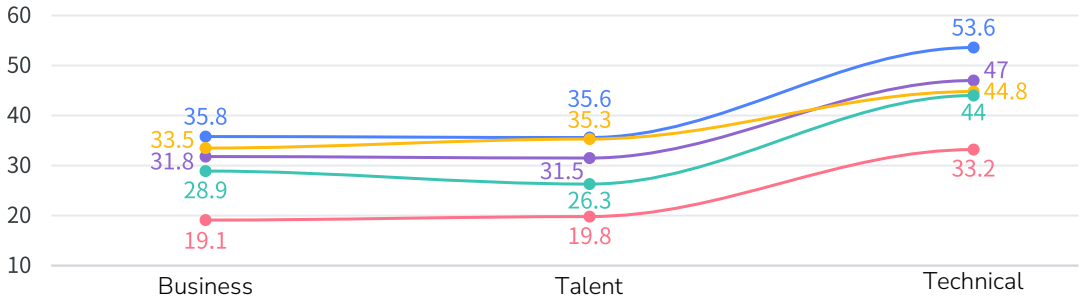


Figure 2. Distribution of Enterprises by AI Maturity Stage (2025)

Unit: Percentage (%)



Overall | Information and Communications Technology (ICT) | Professional Services | Retail, Trade & Services | Manufacturing, Public Sectors & Others

Business

Current Situation: Absence of Long-Term Strategy, AI Usage Remains Tool-Oriented

Comparing the results of 2025 and 2023, the average index score of AI Adoption at the Business dimension remained at 32 points, showing no significant improvement. Since 2022, the importance of incorporating AI into enterprise strategies has been recognized by enterprises, yet the score of AI strategic planning remains low. While a growing number of companies now consider AI within their strategic planning, nearly 50% have yet to announce formal AI development strategies. In 2025, the score for AI strategic planning averaged only 37.6 points, with the retail, trade, and services sector scoring the lowest at 13.7 points.

Most enterprises remain at the tool-level usage stage, lacking a comprehensive AI roadmap, limiting their ability to fully capitalize on AI's operational and competitive advantages.

Data Governance and Adherence to AI Principles Remain underdeveloped

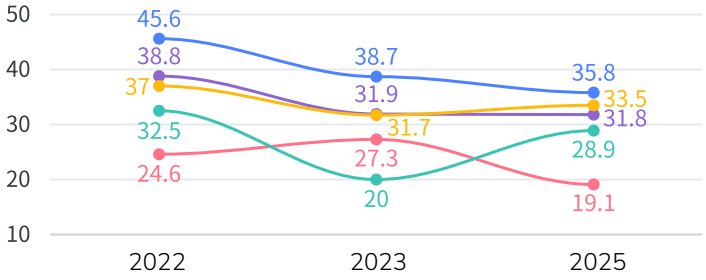
Performance in data governance and trustworthy AI principles adoption remains low across all industries. Over 40% of enterprises have either not adopted or are uncertain about adopting AI governance and trustworthy AI principles. The average score for this area was the lowest among all evaluated indices, at 20.4 points; even the ICT sector scored only 20.3 points.

Overcoming Barriers: Strategic Integration is Key

To unlock AI's long-term value, enterprises must anchor AI initiatives within business objectives and visions, develop and execute clear AI roadmaps. integrate Trustworthy AI principles into every stage of deployment to ensure compliance, ethical, and robust. They must also strengthen risk management systems to align with international standards, as well as develop talent cultivation programs and enhance core data governance practices. In order to drive sustainable digital transformation and maintain a competitive edge, enterprises need comprehensive strategic planning and robust risk management.

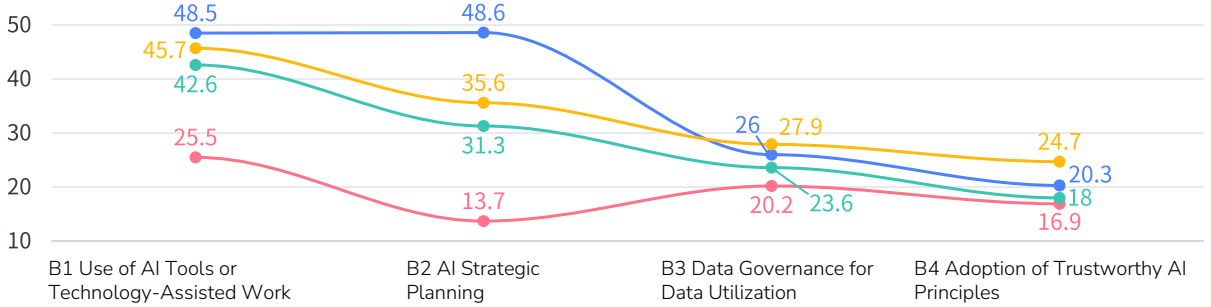
Management-Level Average Score Changes

Unit: Average Score



Management-Level AI Maturity Index Calculation

Unit: Points



Overall | Information and Communications Technology (ICT) | Professional Services | Retail, Trade & Services | Manufacturing, Public Sectors & Others

Business

Beyond Personal Data Protection: Strengthening Data Governance

Survey results highlight the persistent underdevelopment of comprehensive data governance practices. Although average scores in data governance improved from 16.4 (2023) to 25.2 (2025), significant challenges remain. One-third of enterprises have no formal governance frameworks or are unaware of them, and most current efforts of the enterprises are limited to basic domains, such as data privacy protection, cybersecurity, and routine data management

However, true data governance should extend beyond privacy protection and unlock the business value of non-personal data, the new source of 'oil' in the digital economy. To do so, it requires to integrate data strategies across internal operations and external ecosystems(including suppliers, partners, customers) and enhance internal and external data exchange capabilities. Enterprises must strengthen their understanding, and implement comprehensive data governance strategies, from privacy protection toward value creation and ecosystem integration.

Overcoming Narrow Mindsets: Solutions Should Emerge from Business Needs

The survey reveals that enterprise AI implementations remain heavily concentrated in marketing and content creation functions, particularly within the retail, trade & services sectors (68.4%). Meanwhile, the application of AI in product development and innovation is minimal, accounting for only 5.3%.

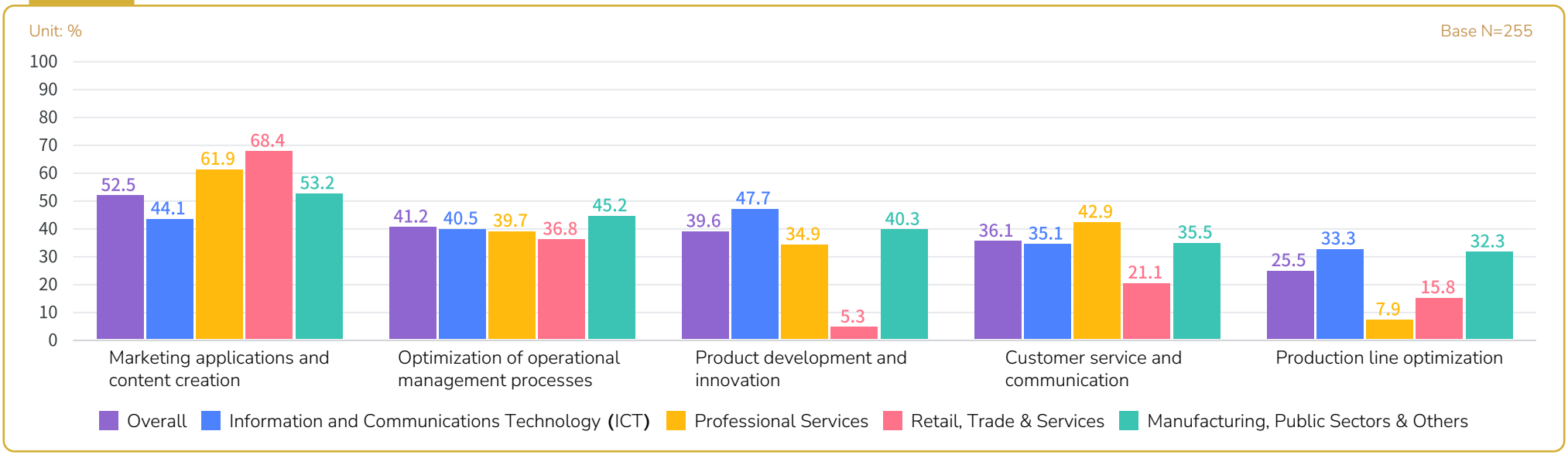
This trend highlights a critical concern: Is the imagination around the applications of AI too narrow, thereby limiting broader development potential? Application of AI is not merely a matter of introducing new technology. In contrast, it fundamentally involves reshaping organizational culture and empowering internal talent. And it also reflects the underlying foundations of an enterprise's digital transformation journey.

Rather than focusing solely on isolated tool, enterprises must begin by reviewing and optimizing internal processes to ensure that AI solutions align with actual business needs.

Furthermore, enterprises must elevate AI literacy across the entire organization, not just among technical departments but also across all business units. All professionals should be empowered to integrate AI with their respective expertise, discover new application opportunities of AI and understand its limitations.

Ultimately, to fully unlock AI's potential, enterprises must simultaneously invest in process reengineering, data governance, and talent development. AI must not be viewed simply as a stand-alone tool; it should be embedded as a key skill that drives decision-making and transforms business models. Through such strategic realignment, enterprises are able to benefit from the long-term value of digital transformation and promote the comprehensive integration of AI across industries.

Business Q5. Which of the following tasks has your company used, or is currently using AI tools and technologies to assist with?(Multiple answers allowed)



Talent

Current Situation: Training Remains Isolated, Lacking Integration with Career Development

Over the past two years, while the ICT sector consistently recorded the highest scores in AI talent development, the average score declined to 35 points in 2025, aligning with the score for the professional services sector. The only area where the ICT sector scored above 40 points was in the numbers of AI models used. Meanwhile, the retail, trade & services sector has experienced a year-on-year decline, particularly in AI talent development strategies. In 2025, manufacturing, public sectors & others sectors showed a slight recovery in the talent dimension, likely driven by government-sponsored AI training programs.

Key Findings on Talent Development and Internal Capacity Building

Across all industries, there remains significant room for improvement in both AI talent development strategies and the internal evaluation of effectiveness of AI adoption.

Survey results reveal that 45.3% of enterprises heavily rely on external vendors or existing tools for AI adoption. In contrast, relatively few enterprises choose to develop their own AI models or customize based on open-source AI models. This indicates that technical autonomy within enterprises remains low, with a heavy dependence on external solutions.

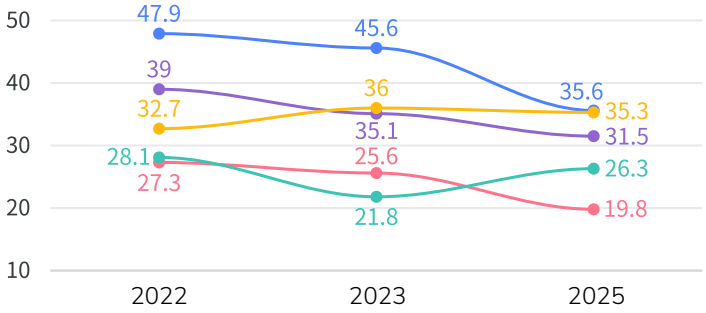
Challenges in AI Talent Strategy

Nearly 50% of enterprises have not established a clear AI talent development strategy. Among companies that do have strategies, initiatives are often limited to offering AI-related training courses, without systematically linking AI skill development to employees' career development paths. Although a majority of enterprises believe that AI adoption has enhanced internal capabilities, the long-term benefits remain uncertain and require further validation.

Enterprises must move beyond isolated training programs and integrate AI skill development with broader career path frameworks. Building internal technical autonomy and embedding AI capabilities into long-term workforce strategies are critical for sustainable AI-driven transformation.

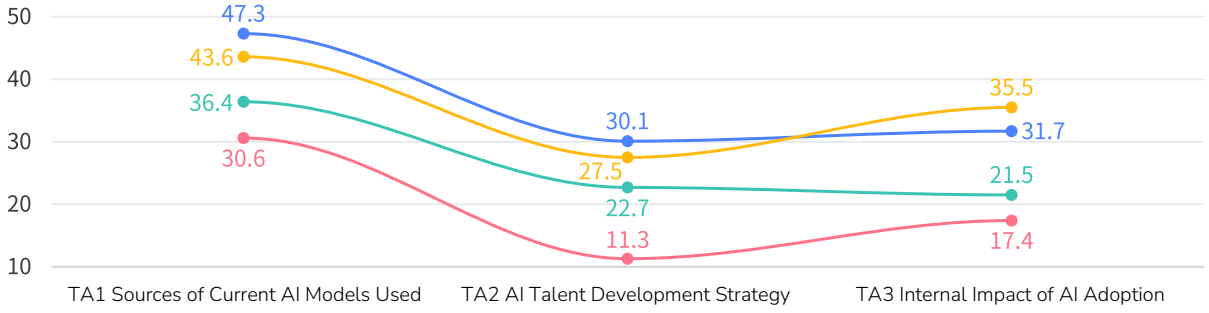
Changes in Overall Average Scores (2022–2025)

Unit: Average Score



Talent Dimension AI Sub-Index Calculation (2025)

Unit: Points



Overall | Information and Communications Technology (ICT) | Professional Services | Retail, Trade & Services | Manufacturing, Public Sectors & Others

Talent

Common Gaps Between AI Terminology and Operational Capabilities

Survey findings reveal that Taiwanese enterprises predominantly rely on system integrators (SIs) or off-the-shelf AI services for AI adoption (45.3%). In contrast, only 12.5% of enterprises develop their own AI models, and 15.1% adjust open-source models, indicating that most companies heavily depend on external vendors, with relatively low internal technical autonomy.

This reliance raises concerns regarding enterprises' long-term AI competitiveness. It also highlights a critical industry dynamic, where the transformation of information service providers will be a key driver of AI adoption in industries. AI solution providers with deep industry expertise (e.g., those specializing in language model, or finance) will have an advantage and opportunity by offering tailored, industry-specific AI solutions. In contrast, traditional general purpose SIs that fail to adapt to AI may struggle to meet the evolving demands and risk obsolescence.

Misalignments Between AI Awareness and Real-World Practice

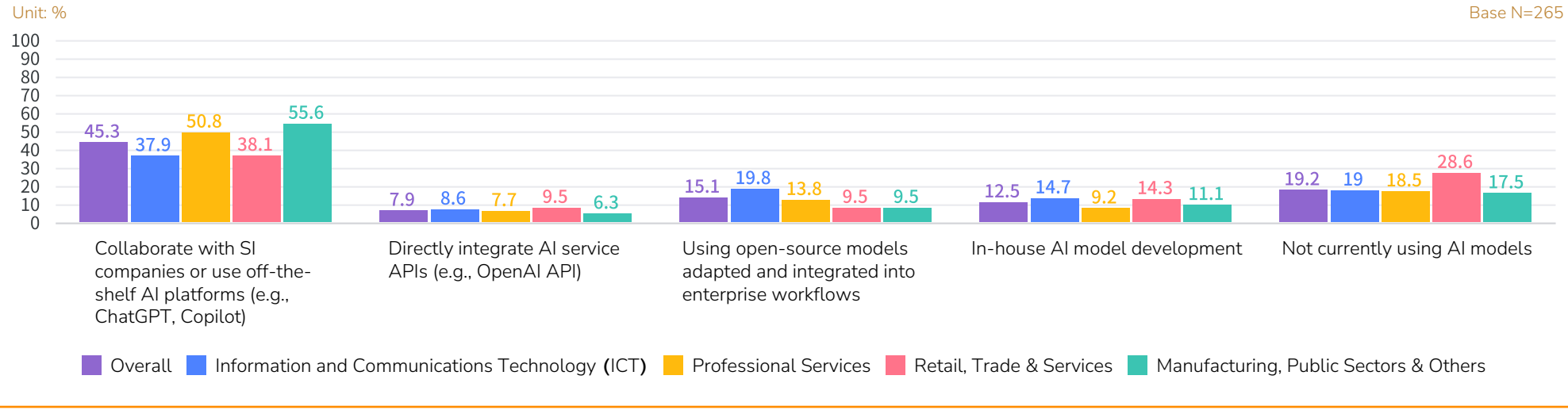
The survey also uncovers a widespread mismatch between enterprises' perceived understanding of AI terminology and their actual operational capabilities. A notable issue is that, in sectors such as retail, trade & services, many companies claim to have developed their own AI capabilities. However, cross analysis reveals that these enterprises often still rely heavily on traditional capital data, with low digitalization. Their AI usage tends to involve adjusting existing AI tools through prompt engineering rather than developing AI models from scratch.

Additionally, some enterprises that claim to "developing AI Model" are, in practice, repackaging open-source models or modifying external APIs rather than engaging in AI model development. Deploying AI without adequate foundational data further undermines AI model performance. Many enterprises lack a clear understanding of the technical prerequisites and development processes required for effective AI deployment, potentially undermining the success rate and return on investment of future AI initiatives.

Strategic Implications for Industry Development

Given the current low internal AI development and maintenance capabilities across enterprises, SIs continue to play a critical role in supporting AI deployment. Thus, if the government seeks to accelerate AI adoption for Taiwan's industries, it should support enterprise-led AI talent development, and strengthen collaboration with SIs, enhancing their AI development and integration capabilities. By doing so, the ecosystem could lower the technological barriers for enterprises and accelerate the broader application of AI technologies across industries

Talent Q8.What is the primary source of AI models currently used by your company?



Talent

Clarify the workflows before AI implementation: Digital Transformation as a Prerequisite

Survey results reveal that enterprise evaluations of internal impacts following AI adoption remain relatively low, with an overall score of just 28.5 points. Moreover, more than one-third of enterprises report no significant observable outcomes to date. Notably, 48.4% of enterprises in the retail, trade & services sector, and 41.7% of enterprises in the manufacturing, public sectors, and others sector express concerns about the lack of tangible outcome of AI implementation.

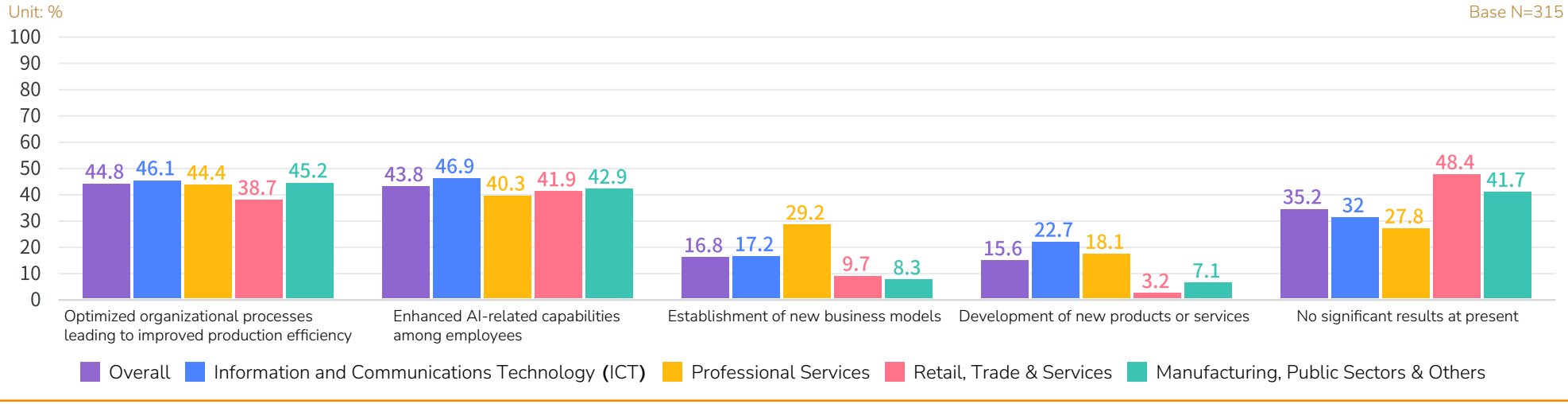
The Importance of Digital Transformation

While many enterprises acknowledge that AI has enhanced internal capabilities and organizational effectiveness, the survey highlights that, without a robust digital transformation, AI adoption could barely deliver any real-world impact. In particular, enterprises with non-digitized workflows, inadequate data infrastructure, or lack of integrated systems will find it difficult to successfully embed AI into business operations. Even if AI solutions are technically deployed, without digital readiness, enterprises are unlikely to realize the expected benefits.

Strategic Alignment between AI Deployment and Business Operations

AI implementation must be deeply integrated with core operational strategies. In other words, enterprises must embed AI directly into core business processes and ensure that technology serves companies goals. By aligning AI implementation with business strategy and operational needs, enterprises could truly enhance efficiency and create value through AI.

Talent Q12. What impacts has AI implementation generated within your company?



Lack of AI Strategy Undermines Talent Development Directions

Survey results indicate that enterprises' expectations for AI talent extend beyond technical skills, emphasizing problem-solving and integration capabilities.

Key findings include:

- 45.4% of enterprises highlight the need for AI talent who can identify problems suitable for AI solutions and assess the appropriateness of AI applications.
- 38.4% prioritize the ability to use off-the-shelf AI tools.
- 35.6% value data collection and analysis skills.
- 35.2% seek the ability to integrate existing AI services and models.

While Taiwanese enterprises recognize the importance of problem-identification skills when evaluating AI capabilities, they often overlook project management competencies. From a project management perspective, successful enterprise AI implementation requires cross-departments collaboration, resource allocation and system maintenance capabilities. Without strong project management frameworks, enterprises struggle to translate AI initiatives into practical outcomes, explaining the sluggish development of AI applications in Taiwan. Instead of building internal capabilities for AI utilization and innovation, many companies remain overly focused on technology integration alone.

Impact of Absent AI Strategies on Talent Development

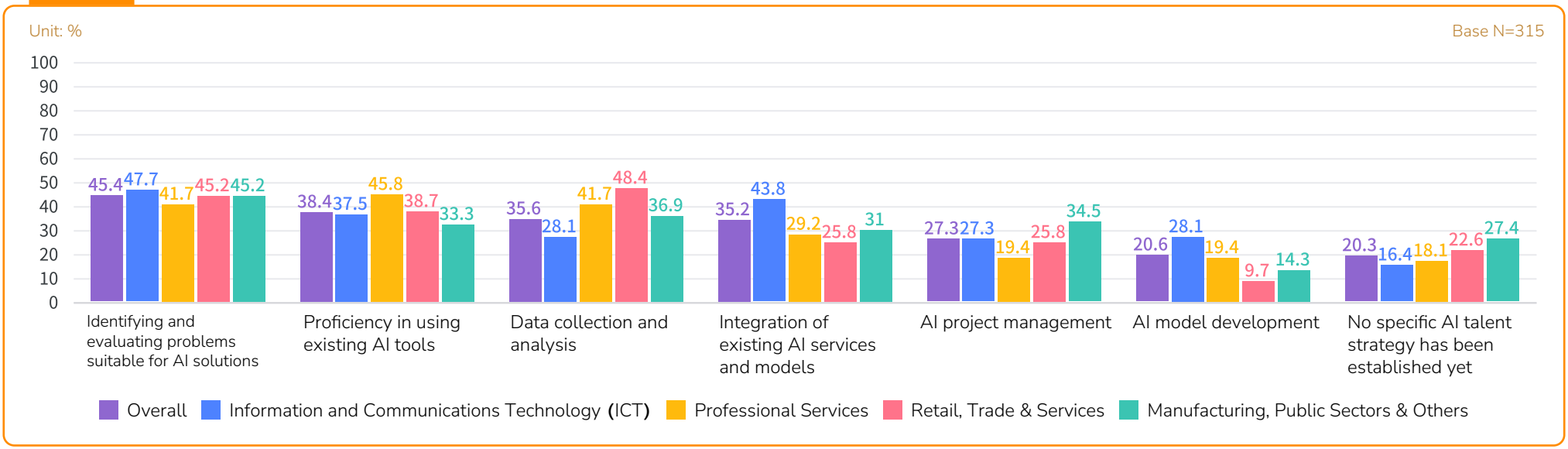
Another major barrier to effective AI adoption is the lack of comprehensive AI talent strategies within enterprises, causing vague talent needs that hinder targeted training and recruitment and ineffective deployment of AI professionals, diminishing the return on AI investments. Therefore, enterprises must first define a clear AI talent development strategy, which will enable them to articulate specific talent needs and build structured internal training mechanisms. This strategic alignment is critical for maximizing AI's practical value in industry.

Rebalancing Focus: From Model Development to Application and Optimization

Currently, Taiwan's AI strategies remain overly focused on model development rather than application and optimization. As a result, many enterprises prematurely allocate resources to AI model development before fully defining business needs. This misalignment creates obstacles for industrial advancement.

Moving forward, emphasis should shift toward integrating existing AI technologies into business workflows and ensuring that AI deployment delivers real operational value, rather than serving merely as a technical showcase.

Talent Q9. What capabilities do you consider most essential for AI talents needed in your company?



Technical

Current Situation: Consistent Improvement in Technical Dimension Performance

For three consecutive years, the Technical dimension has been the only area to show continuous year-on-year improvement, and it consistently achieved the highest scores among the three assessed dimensions. Notably, the manufacturing, public sectors, and others sectors demonstrated significant growth in the use of AI tools and technologies, likely driven by the rapid adoption of generative AI tools that enable faster onboarding. Except for the retail, trade & services sector, all major industries recorded improved Technical dimension scores in 2025.

ICT Sector Reaches New Heights

In 2025, the ICT sector achieved a new peak in the Technical dimension, surpassing 50 points, particularly excelling in internal data utilization and access and AI computational resource deployment. This indicates a gradual maturation of the infrastructures supporting AI adoption within the sector.

Emerging Trends in AI Deployment: Rise of On-Device AI

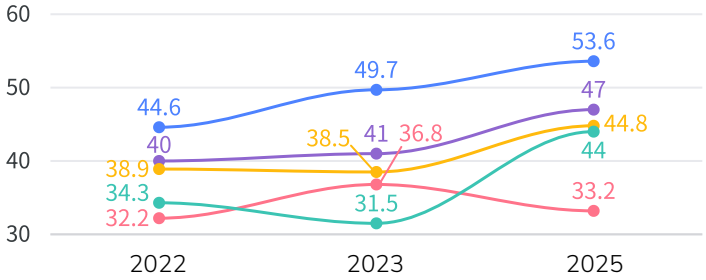
Survey results also show a diversification in AI implementation strategies for technical dimension. Approximately 21.5% of enterprises have adopted AI PCs, AI tablets, or AI smartphones, reflecting a growing trend toward on-device AI. To be clear, true on-device AI should operate independently without relying on cloud inference, ensuring functionality even in offline environments. However, many so-called "on-device AI" devices on the market may still use cloud services. If enterprises fail to clearly differentiate between true on-device AI and cloud-dependent solutions, they may face increased challenges in data flow management and cybersecurity risk control.

Strengthening Awareness and Security Measures

As enterprises accelerate AI adoption, they must educate employees about the differences between on-device AI and cloud-based AI architectures and strengthen internal data security management. Clear understanding of AI implementation architectures and enhanced cybersecurity measures are critical to ensuring that AI applications align with organizational security and operational needs.

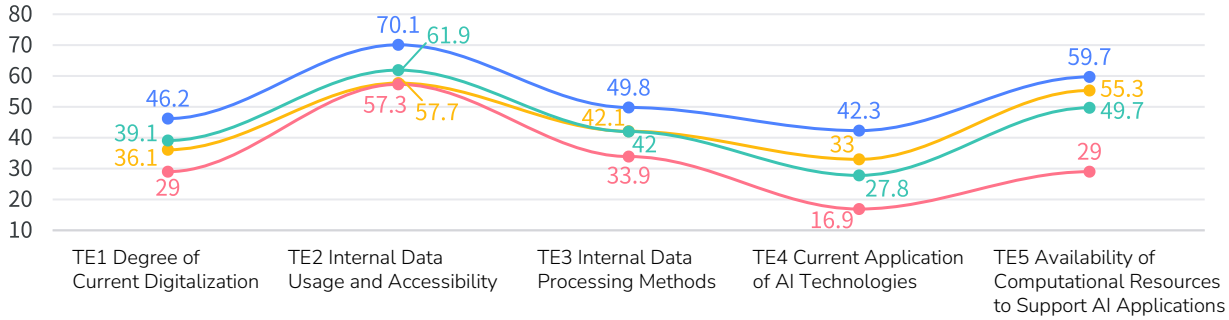
Changes in Overall Technical Dimension Scores (2022–2025)

Unit: Average Score



Technical Dimension AI Sub-Index Calculation (2025)

Unit: Points



Overall | Information and Communications Technology (ICT) | Professional Services | Retail, Trade & Services | Manufacturing, Public Sectors & Others

Technical

Insufficient Awareness of On-Device AI: A Hidden Cybersecurity Risk

Survey findings show that Taiwanese enterprises are adopting diverse AI computational resources.

Key findings include:

- 26.4% of enterprises utilize private clouds for AI operations
- 25.3% use public clouds
- 23.0% adopt hybrid cloud models
- About 21.5% have deployed on-device AI solutions, such as AI PCs, AI tablets, and AI smartphones
- 17.4% have incorporated IoT devices, automotive systems, or industrial control systems for AI-related applications.

Market Trends vs. Practical Usage Gaps

According to a Canalys (now Omdia) report, in Q4 2024, AI PC shipments reached 15.4 million units, accounting for 23% of total PC shipments that quarter. The annual penetration rate of AI PCs reached 17%, demonstrating a rapid market expansion.

However, practical adoption scenarios reveal that, though consumers are purchasing AI-enabled smartphones, most AI applications or functions still require network connectivity,contradicting the concept of true on-device AI, which emphasizes local computation without cloud reliance.

Risks of Misunderstanding On-Device AI

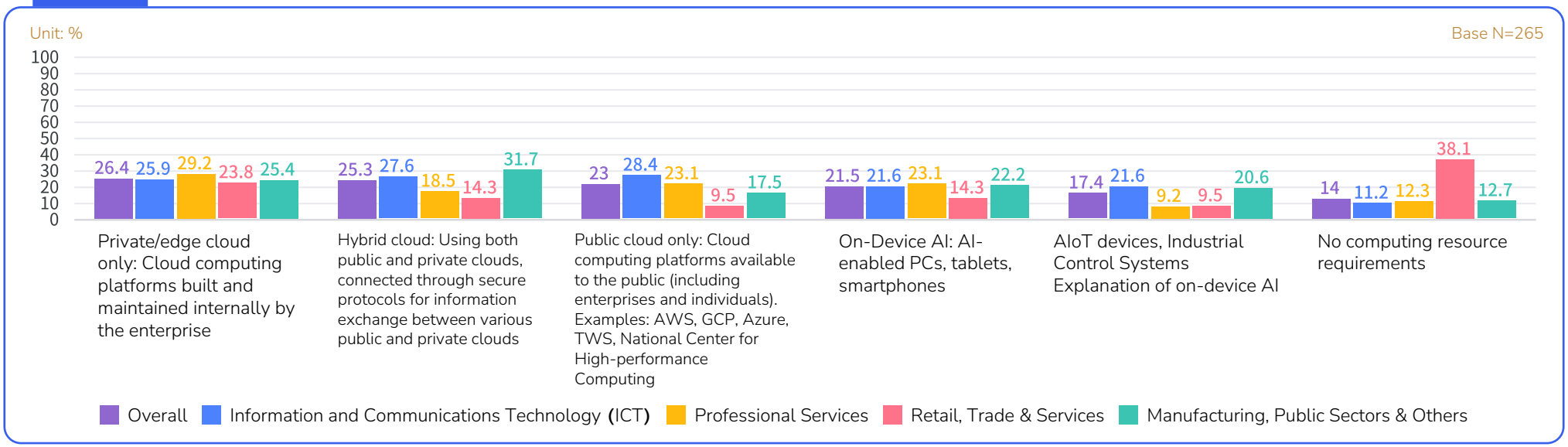
This misperception of on-device AI introduces serious cybersecurity risks. Many consumers and enterprises assume that all AI processing occurs locally simply because devices are labeled as “AI-enabled.” However, most AI applications still rely on cloud inference, with devices merely displaying the results. Consequently, data must still travel to the cloud for processing, often without users being fully aware. Lack of awareness about this dynamic may lead users to underestimate data security and privacy risks associated with cloud transmissions.

Blurred Lines between On-Device and Cloud AI

A significant portion of both enterprise users and consumers lack a clear understanding of the differences between on-device AI and cloud AI. Many are unable to distinguish their operational modes, exposing them to potential vulnerabilities: For example, sensitive data might be unknowingly uploaded to AI chatbots. Users operating in open-network environments face heightened risks of data leakage. True on-device AI should operate independently in offline environments and perform local inference without cloud reliance.

However, many devices marketed as “on-device AI” still require internet connections to function properly. Without clear differentiation between true on-device and cloud-based AI, enterprises face increasing challenges in data flow management and cybersecurity. Strengthening user education and internal security protocols will be critical to ensuring that AI deployments truly meet organizational security requirements.

Technical Q7. Which computing resources does your company primarily rely on for AI applications?(Multiple answers allowed)



The Underestimated Value of Personalization

Cost and Efficiency as Primary Consideration

When evaluating AI computational resources, enterprises prioritize the following factors:

- Cost (62.2%)
- Performance and Efficiency (58.7%)
- Privacy and Security (57.5%)

This demonstrates that Taiwan's enterprises, in their AI adoption journey, remain highly focused on cost control and operational efficiency. However, as AI technologies continue to advance, the value of personalization will gradually become more prominent.

If enterprises can effectively leverage personalized AI, they could tailor AI-assisted decision-making to individual employees' professional backgrounds and experiences. In addition, they could also enhance organizational knowledge management and decision-making quality across departments. Enterprises should reevaluate the potential of personalized AI in internal applications to avoid over-standardization of AI outputs. Unlocking personalized AI's potential will enhance individual value and optimize organizational decision-making.

Current Industry Perceptions and Gaps

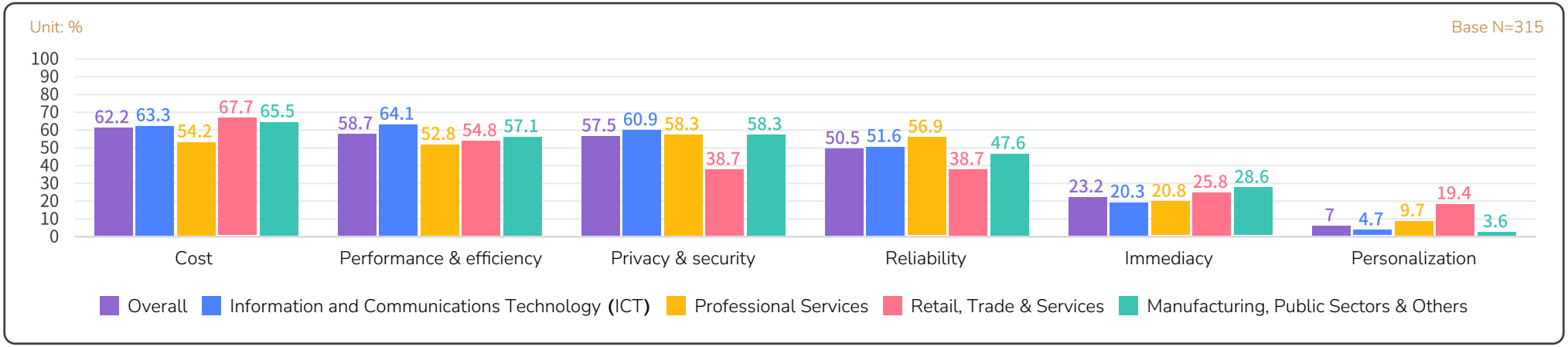
The overall proportion of enterprises considering personalization remains low currently. However, nearly 20% of enterprises in the retail, trade & services sector report factoring personalization into their AI resource evaluations, marked one of the highest among all sectors. This trend likely correlates with the service sector's emphasis on customized customer experiences.

In contrast, many enterprises neglect the personalization dimension when deploying AI, viewing AI tools primarily as means to improve efficiency rather than adapt to individual user needs. In reality, personalized AI could analyze users' historical data (e.g., meeting records, emails, files) and provide more contextually relevant recommendations aligned with individual work styles.

Without personalization, AI outputs across employees become homogenized, reducing individual value and professional insights. Decision-making quality deteriorates, and organizational knowledge management would further lose precision and diversity.

Traditional industries such as manufacturing tend to place less emphasis on personalization. For manufacturing, focus is placed on standardization and process optimization. AI is seen primarily as a tool for productivity enhancement, not as a driver of personalized employee experiences. However, as AI applications deepen within organizations, personalized AI will likely become a critical technology for enhancing employee value and improving decision accuracy.

Q6. What factors does your company consider when selecting AI computing resources?(Multiple answers allowed)



Key Challenges in AI Application and Project Execution

Overall, 45% of enterprises cite "lack of relevant technical talent" as the primary challenge in applying AI, followed by “Data not yet integrated” (37.5%) and “Difficulty in quantifying target benefits” (36.2%)

For the ICT sector, besides the lack of technical talent, enterprises also face challenges in “Difficulty in quantifying AI project outcomes”, and “Concerns over potential data leakage risks”. For the Professional Services Sector, the main challenge is the high cost of AI adoption, which hinders broader deployment.

These challenges are interrelated, reflecting deeper issues such as knowledge gaps, inconsistent technical understanding, poor data quality, lack of evaluation systems,and difficulty measuring long-term value.

A major underlying issue is the divergent perceptions and vague expectations of AI among senior executives and decision-makers. Inconsistent understanding of AI leads to unclear success benchmarks, complicating subsequent performance evaluations and strategic decisions. When leadership lacks clarity on how AI operates, it becomes even harder to accurately measure its contributions to business outcomes.

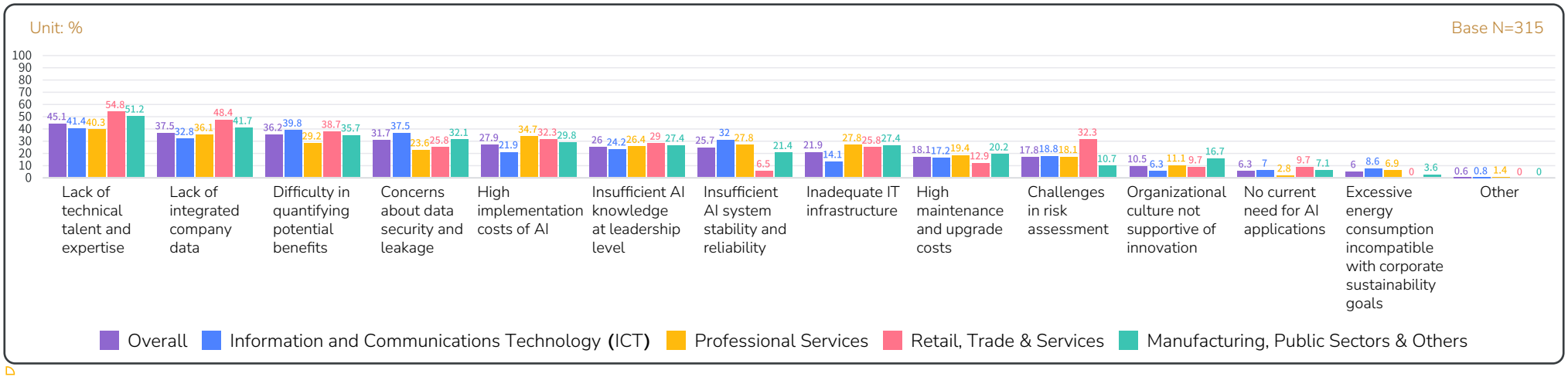
Complexity of AI Performance Measurement

AI applications span a wide variety of use cases, such as customer service automation, supply chain optimization, and personalized recommendations.

Each application demands distinct performance evaluation criteria. Without a clear AI implementation roadmap, enterprises struggle with setting realistic success metrics and aligning AI project outcomes with broader organizational goals.

This disconnect ultimately undermines long-term value assessments and diminishes the strategic impact of AI initiatives. Clearer expectations, structured implementation pathways, and refined evaluation systems are critical for enterprises to realize AI’s full potential and align projects with long-term business objectives.

Q16. Regardless of your current AI implementation progress, what are the main challenges your company faces in AI application or project execution? (Multiple answers allowed, maximum 5 selections)



2025 Key Findings

The survey reveals that industry awareness of AI has significantly increased, yet the real challenge lies in practical implementation. Successful AI deployment is closely tied to the level of an enterprise's digital transformation. Only with robust data infrastructure and well-established Internal digital culture, AI could truly generate meaningful value.

Awareness Gap: Cloud-Based AI vs. On-Device AI

While enterprise awareness of AI has improved, most knowledge remains confined to cloud-based generative AI. There is still a widespread lack of understanding regarding On-Device AI and Edge Computing. This awareness gap impacts enterprises in resource allocation, technology roadmap selection, AI Application scenario expansion, and AI talent development. Moreover, it introduces hidden risks in AI governance and risk management.

Key enterprise concerns—cost, performance and efficiency, and privacy and security—can be directly addressed through On-Device AI solutions. However, insufficient understanding of On-Device AI may lead to new vulnerabilities in cybersecurity.

Transformation of Information Service Providers: A Vital Catalyst

The transformation of information service providers or systems integrators (SIs) will be crucial for driving industrial AI adoption. Industry-specific AI solution providers who can align AI applications with vertical business needs will gain competitive advantages.

Strengthening Supply Chain Resilience Through Distributed Computing

From a supply chain resilience and security perspective, diversified computing deployment strategies are essential. Especially under escalating geopolitical risks, Taiwan must proactively promote distributed computing infrastructures to reduce dependence on centralized cloud systems.

Redefining AI Talent from an Application-Driven Perspective

Finally, the industry must redefine the concept of AI talent from a practical application standpoint, moving beyond narrow technical training and emphasizing capabilities aligned with real-world operational needs.

About AI Adoption in Taiwan's Industries Survey

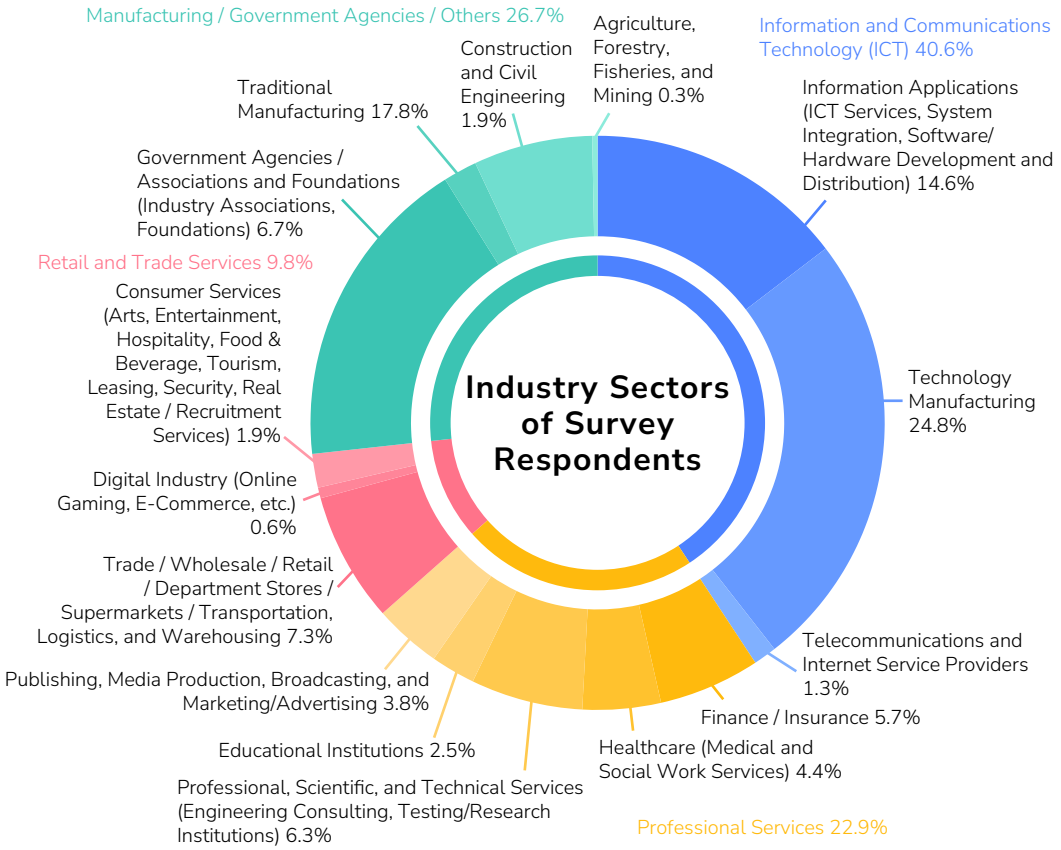
The Taiwan Industry AI Transformation Survey is coordinated by the Artificial Intelligence Foundation and co-organized by Current Affairs Research, conducted annually since 2022 to comprehensively observe the evolution of AI adoption across Taiwan's industries and provide key insights for future AI development.

In 2025, the survey was conducted in collaboration with Qualcomm, inviting participation from senior executives, managers, and AI project leaders across 315 enterprises in Taiwan, covering more than ten sectors, including: technology manufacturing, finance, retail, public sectors, and other key industries. The survey offers an in-depth analysis of challenges faced during AI implementation, Gaps in AI understanding, and Critical actions for future AI adoption.

The survey not only serves as a valuable decision-making reference for industries but also helps enterprises formulate forward-looking AI strategies, driving deeper and more impactful AI application across Taiwan's industrial landscape.

Survey Background and Methodology

Target: Representatives familiar with their company's AI adoption status, such as department heads or professionals in relevant fields.
Survey Method: Online questionnaire.
Survey Period: January 5, 2025 to February 24, 2025.
Sample Size: A total of 315 enterprises participated.



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CHAPTER 02

AI Implementation Guide

Building Core Capabilities for Successful Enterprise AI Transformation

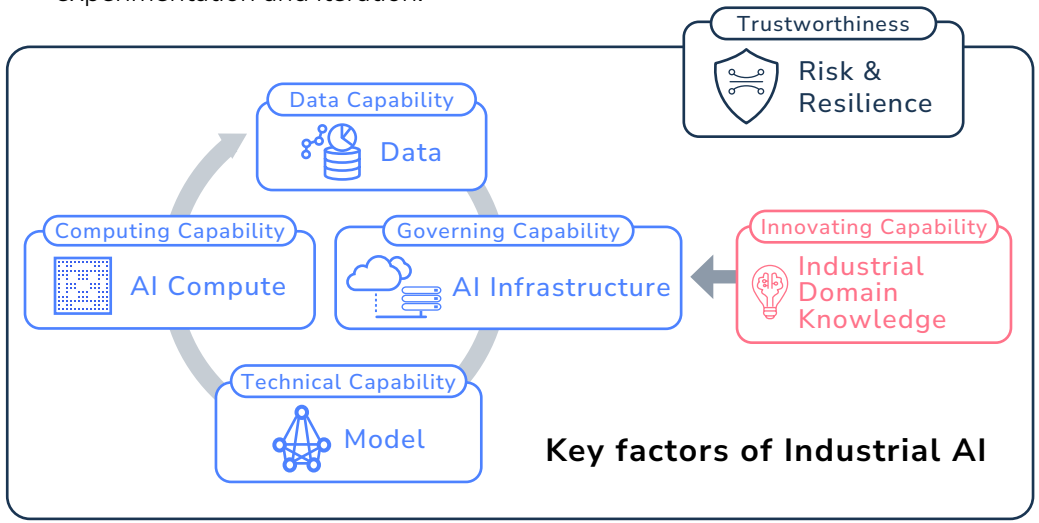
As enterprises navigate in their journey of AI Adoption, many have come to recognize that data, models, and computing power are the foundation of AI development. However, successful real-world AI implementation depends on more than just technical infrastructure — it requires a systematic and strategic capability framework.

Drawing from years of practical experience assisting enterprises in AI adoption, the Artificial Intelligence Foundation has identified five core capabilities essential for enterprise AI integration:

- Data Capability
- Computing Capability
- Technical Capability
- Governing Capability
- Innovating Capability

Atop these five pillars, enterprises must also establish a foundational element that spans all domains — Trustworthiness.

- Data Capability
  The value of AI is built on high-quality, usable data. Data capability reflects whether an enterprise can manage the full data lifecycle, from collection, cleansing, governance, to application and reuse.
- Computing Capability
  Scaling AI applications requires strong computional support. Computing capability goes beyond high-performance computing power and cloud infrastructure. It emphasizes an enterprise's ability to flexibly allocate compute resources and manage cost efficiency.
- Technical Capability
  AI adoption must go beyond using isolated tools. Enterprises need capabilities to integrate technologies across domain. Technical capability is reflected in the ability to build and deploy AI models, select platforms, manage MLOps pipeline, and develop a strong AI talent strategy through both internal training and external recruitment.
- Governing Capability
  For AI to be implemented in the real world, enterprises must strengthen horizontal coordination and vertical oversight. Governing capability is the "central nervous system" connecting all capabilities, ensuring clear accountability, decision-making mechanisms, and risk management frameworks.
- Innovating Capability
  The value of AI lies in solving real business problems and creating differentiated advantages. Innovating capability reflects an enterprise's ability to integrate across domains, translate use cases, and foster a culture of rapid experimentation and iteration.



Taiwan Must Find the Tipping Point for Industrial AI Adoption

Lu Cheng-Hua, Secretary-General of the Chinese National Federation of Industries (CNFI)

As global industrial landscapes shift under geopolitical and economic pressures, AI has become a crucial technology for enhancing competitiveness. However, the 2025 Survey on AI Adoption in Taiwan's Industries shows that nearly 70% of Taiwanese enterprises are still at early stages of AI adoption. According to Lu Cheng-Hua, Secretary-General of the Chinese National Federation of Industries (CNFI), while AI awareness in Taiwan has improved, challenges around application and value realization remain significant.

Growing AI Awareness, Yet Limited Practical Deployment

Findings from the Artificial Intelligence Foundation's (AIF) annual survey indicate that since late 2022, driven by the rise of generative AI, enterprise-level AI awareness has increased substantially. Yet despite this broader understanding, companies continue to struggle with putting AI into practice. For three consecutive years, less than 30% of enterprises have successfully integrated AI into daily operations.

Lu Cheng-hua, who has served in key public roles at the Ministry of Transportation and Communications, the Ministry of Economic Affairs, and the Ministry of Digital Affairs, has been a driving force behind the government's efforts to promote AI adoption across industries. Over the past few years, he has worked closely with a wide range of sectors in Taiwan.

Lu observes that enterprises today have reached a more mature stage of AI awareness. "We've moved from 'not knowing what we don't know' to 'knowing what we know,'" Lu says. Compared to a few years ago, when many companies had only a vague understanding of AI, most senior executives now grasp the fundamentals and recognize its potential. As a result, they are actively exploring ways to apply it.

However, a wide gap persists between understanding AI and applying AI in the real world effectively. According to AIF's survey, the barriers Taiwanese enterprises face in AI adoption have remained almost unchanged since 2019:

- Lack of Clear AI Adoption Strategies
  Many companies understand the concept of AI but struggle to translate it into business solutions. Building effective AI applications requires integration with operational workflows, data readiness, and a clear understanding of business needs. For many Taiwanese companies rooted in a "hardware-first" mindset, this shift poses a significant challenge.

- Resource and Budget Constraints
  Even SMEs that are interested in AI hesitate to invest due to limited budgets and technological hurdles, despite participating in seminars and consulting external experts.

- Talent Shortages
  Taiwan's labor force is already shrinking due to demographic trends. On the industry side, a significant portion of talent has shifted toward the semiconductor sector in recent years, creating an imbalance. At the core of the problem is a disconnect between industry expertise and AI technical knowledge. Effective AI deployment requires integrating both. Yet many AI developers lack a deep understanding of industry domains, while enterprises are often deterred by the technical complexity of AI. As a result, meaningful dialogue between the two sides remains limited.

How to cross the gap? Finding the Tipping Point for AI Adoption

Lu Cheng-hua points out that due to these challenges, AI adoption in many Taiwanese industries remains in its early stages—far from reaching a true tipping point, where AI becomes widely implemented and begins generating significant impact. Many sectors are still on the other side of that tipping point and require stronger momentum to break through.

The tipping point refers to the deep integration of AI into an enterprise's core business. To reach that level, the process must begin from within the industry itself—by identifying applicable AI scenarios and clearly defining the problems to be solved.

In the era of AI 1.0, businesses had to invest heavily in cleaning data and training models. But with the arrival of AI 2.0, powered by generative AI and a growing pool of open-source models, the gap between AI and SMEs has significantly narrowed. However, according to Lu Cheng-hua, despite the leap of technologies, business leaders still have many priorities to consider in their decision-making. AI is not necessarily the top concern—and in many cases, it is not even viewed as a real pain point.

For example, facing the challenges of Trump's tariffs, "many business owners start their mornings anxiously checking the news, wondering what's coming next," Lu explains. This kind of immediate, existential pressure is real. In contrast, "digital transformation or AI adoption won't hurt if we don't do them right now" are often pushed down the priority list.

Beyond the mindset of "we have more urgent matters to deal with," there are also prevailing misconceptions such as "AI is still immature, implementing it now is a waste of money," or "we'll deal with it when there's real pressure." At the core of these views is the belief that AI's benefits aren't visible in the short term. Under such uncertainty, many business leaders underestimate the disruptive changes technology can bring to their industry.

Turning Awareness into Execution: A Practical Guidance

Lu emphasizes that traditional industries can still successfully leverage AI. He cites Founder Aluminum Co., IKEA's largest overseas supplier of aluminum components, as an example. Two years ago, Founder began integrating AI and IoT technologies to build a smart supply chain aimed at improving production yield and efficiency.

However, the implementation process was far more complex than anticipated. Take aluminum photo frames, for instance—though they may seem to differ only by dimensions like 3x5 or 4x6, in reality, the patterns and textures of artistic frames vary widely. Perfect welding requires the expertise of seasoned craftsmen.

In manufacturing, AI adoption often begins by deconstructing the actions of these experienced workers, then handing the process over to IT vendors or internal teams to design an automated system. Yet, Lu notes that such approaches to "smart manufacturing" often fall short of expectations.

Founder Aluminum took a more refined approach. Like others, they recorded the workflows of experienced craftsmen and analyzed the footage in slow motion—but with one key difference: the IT team was involved from the outset of the motion capture and analysis process. Instead of simply documenting tasks, they worked alongside domain experts to break down the craftsmen's movements frame by frame, extracting process-critical elements such as hand positioning, sequencing, and timing from a data analytics perspective.

"The key is to start from industry domain knowledge," explains Lu Cheng-hua. To identify the most effective AI applications, IT teams must enter the production environment and collaborate closely with field experts. "It should be domain plus AI—not AI plus domain."

This level of detail is frequently the missing link in AI adoption. Lu notes that many companies underestimate how crucial this step is. Since becoming Secretary General of the Chinese National Federation of Industries, he has received inquiries from a wide range of sectors seeking guidance on AI implementation. Although many businesses now understand the potential of AI and are actively searching for use cases, what's lacking is a clear, step-by-step roadmap grounded in operational details.

That's why Taiwan urgently needs industry-specific AI implementation playbooks—resources that help companies move from awareness to execution. With concrete, actionable guides in place, Lu stresses that reaching the AI tipping point will depend on deep collaboration among AI developers, ICT providers, and domain experts, to co-develop AI solutions and domain-specific AI agents tailored to real-world needs.

To address the widespread talent shortage, Lu believes Taiwan must foster cross-disciplinary professionals who understand both AI technologies and practical industrial contexts. These key individuals don't necessarily need to be hired externally. A faster and more effective path is to empower existing employees, turning them into the core enablers of AI adoption within enterprises.

Government Should Offer Incentives to Support AI Adoption in Industry

Regarding the government's role, Lu Cheng-hua emphasizes the importance of guidance and support, especially in exploring how to provide incentives that encourage businesses to further engage with and adopt AI. At the same time, the government must develop a deeper understanding of industry-specific pain points and real-world needs, and work to build a comprehensive industrial AI roadmap with the necessary supporting measures to help enterprises cross the critical AI tipping point.

The path to industrial AI adoption is long-term and complex, involving multiple stakeholders. Unlike previous waves of software adoption, it requires close collaboration between the government and industry. On top of Taiwan's existing strengths, the focus must shift to identifying the right problems and data sources. Only by doing so can we collectively build a healthy AI ecosystem that truly enables industrial transformation and strengthens resilience and competitiveness for the next generation.

Good Data Enables Real AI Deployment: The “1-2-3-4 Principle of Data Governance” Unlocks Transformation Value

Dr. Camille (Hsiao-Wei) Hu, Associate Professor at the Master Program in Intelligent Computing and Big Data at Chung Yuan Christian University

Data, Models, and Computing Power have long been considered the core pillars of successful AI implementation. Among them, data is widely seen as the critical starting point for making AI truly operational. However, while most enterprises recognize the potential power of data, they still face a common dilemma: they know it's important—but struggle to make use of it effectively. Though data is being collected and stored, it often fails to be transformed into decision-making momentum, let alone drive AI projects toward implementation and scaling.

In the AI Era, Data Must Also Keep Pace

As AI technologies and applications continue to mature, enterprises are shifting their expectations: from early-stage’s POC showcases”and buzzworthy pilots, to value-driven and problem-solving vertical solutions. For instance, in medical AI domain, the use cases are evolving from broad “cancer detection” models to more specialized applications like breast or lung cancer diagnostics. These require not only greater model precision but also more representative, complete, and decision-ready datasets.

So, how should companies respond to this shift and truly unlock the value of their data?

According to Dr. Camille (Hsiao-Wei) Hu, Associate Professor at the Master Program in Intelligent Computing and Big Data at Chung Yuan Christian University, when enterprises ask, “What kind of data standards are sufficient to support AI implementation?”, they must go beyond traditional frameworks that focused solely on compliance or structural consistency. Instead, they should start from a strategic level, viewing data as a core asset for driving innovation, generating value, and enhancing competitiveness.

In other words, AI adoption is not just a technical upgrade. It requires a redefinition of how the organization views and builds its data capabilities. Dr. Hu emphasizes that the “data capability” enterprises need today is no longer a single-dimensional IT function, but a multi-dimensional integration of efforts, including standard-setting, decision support, cross-departmental collaboration, and continuous optimization.

As enterprises progress along the AI adoption journey, their focus is also shifting. It shifts from merely asking “Do we have data?” to more critically assessing “Can our data create decision-making value?”

“Data must be treated as a dynamic and evolving enterprise asset in order to truly support long-term learning and real-time feedback within AI systems—

and ultimately generate value," emphasizes Dr. Hu. She points out that even fully compliant datasets are essentially "dead data" if they cannot be flexibly accessed by business units or evolve with operational needs.

For example, while users once relied on Google for information searches, behavior has since shifted toward short-form video and social media platforms. This change underscores the need for companies to capture real-time, meaningful data. Only data that reflects current needs, is continuously updated, and can be effectively converted into business insights can truly be considered "live data."

From Digitalization to Data Value Creation: Data Must Be Directly Linked to Use Cases

Dr. Hu further points out that the core of digitalization lies in making data usable, which requires deliberate discussion and establishment of data standards, such as master data, metadata, and codebooks. However, even with such standards in place, there remains a significant gap between data availability and true value creation. Bridging this gap demands a more advanced data governance mindset, where data standards evolve and optimize continuously to reflect changing real-world scenarios.

She emphasizes that when addressing issues of data standards and governance, enterprises should shift focus away from the sheer volume of data and toward its "value density." Value density refers to whether a piece of data can be tied to a specific application scenario and effectively drive decisions and business actions. "If data cannot be connected to actual use cases," she notes, "its value will be difficult to realize."

A common barrier in Taiwanese enterprises is the prevalence of data silos, where data optimization happens only within individual departments, lacking horizontal integration or cross-functional collaboration. This fragmentation hinders data flow and undermines the comprehensive data pipelines and application chains required to support AI systems.

Looking across the past few years, many companies have struggled to see meaningful results from AI adoption. While the blame often falls on a lack of talent or insufficient data, the deeper issue is frequently a disconnect between data governance and application processes. AI projects are still largely led by IT departments, with business units playing a passive role. This creates a breakdown between governance and real-world use, where departments operate in silos and fail to integrate. Even if data centers or AI teams are established within IT departments, without a clear understanding of how use cases, workflows, and data interconnect, these efforts will remain limited in impact.

Dr. Hu emphasizes that data governance is not something that can be achieved simply by assembling a few people into a "data team." Nor should it be left solely to the technical department. The reason is simple: only those who truly understand business operations and value creation are qualified to define what constitutes valuable data.

For example, whether a manager is responsible for product, customer, HR, logistics, or other functions, they should be the ones to clearly define the value and application boundaries of the data they need. Each leader holds specific responsibilities and goals, and therefore has the clearest understanding of how data contributes to operations and strategy.

In most companies, while responsibilities have traditionally been divided by department, many now operate under matrix structures, where functional boundaries are increasingly blurred. As such, the most intuitive and practical

approach to determining data value is to have business leaders take the lead in this process.

Furthermore, when organizations begin planning for data governance, they must recognize that governance inherently involves assigning authority, establishing accountability, and building institutional norms—a process not unlike urban governance. It requires the involvement of key roles who are responsible for setting rules, defining standards, and ensuring consistent execution.

A Comprehensive Framework Is Needed to Drive Data Governance

To help companies navigate common challenges such as data fragmentation and governance bottlenecks, Dr. Hu proposes a practical and technically grounded data governance framework. This framework spans from strategic principles, to operational guidelines, and capability indicators, offering a structured roadmap that businesses can use to drive value from data.

Principle 1: Revenue — Data as a Value Driver

Dr. Hu emphasizes that if enterprises truly wish to treat data as an asset, they must also establish mechanisms to measure its value—namely, a data asset valuation model. Unlike traditional assets, data cannot be directly listed on financial statements, and because business models and application scenarios vary widely, no single valuation metric fits all. Instead, companies should design a customized evaluation matrix that analyzes how data directly or indirectly contributes to revenue.

Principle 2: 2C — Strengthening Data Compliance Capabilities

- C1: Compliance | Regulatory Adherence
  Traditional methods like data masking are no longer sufficient in the face of powerful reverse-engineering capabilities of modern AI models. Dr. Hu recommends adopting Differential Privacy, which injects statistical noise to protect individual identities while maintaining the accuracy of model training and analysis.

- C2: Confidentiality | Sensitive Data Protection
  This approach is especially critical in sectors like retail and finance, where user behavior data is central. By combining technical tools with governance frameworks such as Privacy Impact Assessments (PIA), companies can systematically evaluate and mitigate privacy risks, ensuring layered protection.

Principle 3: 3V — Building Foundational Data Governance Strength

- Validity | Relevance and Impact
  Enterprises must classify data based on its influence on decision-making, rather than treating all data equally. For example, in customer service, analyzing correlations between inquiry types, response times, and satisfaction scores allows companies to optimize operations and improve retention. Creating a Data–Decision Impact Matrix helps quantify the strategic weight of each dataset.

- Velocity | Timeliness
  Real-time data is crucial, especially in finance—but not all data needs to be real-time. Dr. Hu suggests implementing data tiering mechanisms to allocate processing resources based on data type, risk, and urgency. Governance considerations like review cycles and update frequencies must also be factored in.

- Variety | Diversity and Standardization
  As enterprises become adept at processing unstructured data, the next step is to achieve data standardization and align with international norms. In medical AI, for example, compliance with Taiwan's TFDA alone is not enough; to access global markets, data must also meet FDA (U.S.) standards.

This highlights the need for globally compatible governance frameworks, covering data exchange, security, and semantic alignment.

4D Capabilities for Enabling End-to-End AI Data Application

To support AI throughout the data lifecycle, companies should build capabilities across four key dimensions—the "4D Model":

- Discoverability | Traceable Data Lineage
  Data must have clear origins, processing history, and responsibility points—what's known in industry as data lineage. Dr. Hu cites the example of Ford standardizing supply chain systems to enable real-time tracing of part origin and quality responsibility. Today, many data-intensive industries (e.g., financial holding companies, manufacturers) are adopting enterprise-grade data catalogs to map and register data assets—enhancing transparency and trust in AI decision-making.

- Data Accessibility | Secure Access and Authorization
  Refers to the security design and access control mechanisms ensuring that data is both usable and protected. This is especially important in AI model training, where datasets must be well-structured, annotated, and analytically valuable to ensure training accuracy and model trustworthiness.

- Debuggability | Error Detection and Correction
  AI model performance heavily depends on data quality. Enterprises must be able to identify and correct issues such as null values, inconsistent formats, and insufficient field coverage. Dr. Hu defines Debuggability as the enterprise's ability to diagnose and fix data anomalies to maintain reliability over time.

- Deployability | Seamless Integration into Operations
  If companies cannot deploy data and models into real workflows, their AI projects won't create value—even if pipelines and models are built. Organizations must have the capability to launch AI solutions into Beta or Proof-of-Product (PoP) environments, and eventually automate execution to reduce manual processes.

Not AI for AI's Sake: Building Business Resilience is Key

Sandy Chou, Acer e-Enabling Service Business Inc.

Amid growing media hype, many enterprises have rushed into AI adoption—purchasing equipment and building computing infrastructure—only to later realize they lacked a clear plan aligned with actual use cases and business needs. This phenomenon of "AI for AI's sake" and the herd mentality of "buy first, figure it out later" stems from a lack of strategy and defined objectives.

In reality, AI implementation is not just a technical exercise; it is fundamentally about enhancing organizational decision-making and methodology. Helping companies clarify their needs and identify the right entry points is critical to making AI truly operational.

According to the Artificial Intelligence Foundation's 2025 Taiwan Industry AI Adoption Survey, 70% of businesses have yet to truly embark on their AI journey. Among them, 30% have a basic understanding of AI but struggle to identify a clear starting point. Others, eager to adopt "useful AI tools," overlook their own limitations—such as data readiness, compliance, and cybersecurity requirements.

Hsing-Jung Chou, General Manager of Acer e-Enabling Service Business Inc., notes that this is one of the most common missteps enterprises make when approaching AI. Some clients insist on adopting cutting-edge technologies, even when those advanced models are unnecessary for their use case. "Rather than aiming for flashy tech," she says, "what matters more is a solution that is fit-for-purpose, easy to use, and deployable." For instance, a client may prefer a certain type of model but find it unusable due to regulatory or data security constraints. "Deployability is more critical than technical sophistication."

This insight is rooted in Acer e-Enabling's extensive practical experience helping enterprises adopt technology effectively. As a key player in Acer Group's IT services strategy, the company integrates capabilities from affiliate firms such as Acer Synergy Tech, Acer ITS, Acer e-Technology, Acer Cloud Technology, and Weblink. With a long-standing focus on B2B IT services, the team began developing integrated on-premise and cloud solutions even before cloud computing became mainstream. Their core offerings span consulting, value-added applications, system development, and operations support—helping both private enterprises and government agencies drive digital transformation and build long-term partnerships.

Through years of experience, the team has developed an end-to-end AI deployment capability, supporting the full customer journey—from on-prem to

cloud to AI. In doing so, they have observed a recurring pattern: companies that adopt new technologies without clearly defining their purpose often misallocate resources and struggle to achieve meaningful results.

Enhancing Data Resilience in Response to Geopolitical Risk

While many companies hope to leverage AI as a catalyst for digital transformation, the true priority lies in strengthening business resilience. Beyond simply introducing new technologies, it is an enterprise's capacity to adapt to external disruptions that determines its long-term competitiveness.

This has become especially apparent amid the renewed impact of Trump-era tariffs, which have once again triggered volatility across global supply chains. These developments underscore the importance of using AI and other advanced digital technologies to build flexible, scalable IT infrastructures—allowing enterprises to adapt quickly and maintain operational continuity.

Hsing-Jung Chou shared a case in which her team helped a client migrate their core ERP system to the cloud. From the outset, the project was strategically designed to distribute core systems across a hybrid cloud architecture, with corresponding regional backup and redundancy mechanisms to mitigate uncertainty and risk.

With the onset of a new wave of global supply chain disruptions caused by "Trump 2.0" tariff policies, this cloud-based infrastructure has quickly proven its value. It became a critical component of the client's contingency strategy—enabling them to instantly activate systems and scale operations in any new location, ensuring uninterrupted business continuity. In doing so, the company established a strong foundation of operational resilience.

Meanwhile, the arrival of major public cloud providers' data centers in Taiwan has expanded the feasibility and flexibility of cloud adoption—especially for industries previously constrained by regulatory or security concerns. For example, under Taiwan's Financial Cybersecurity Action Plan, banks and insurers were traditionally limited to private clouds or in-house data centers. However, with recent regulatory easing by the Financial Supervisory Commission (FSC), financial institutions are now allowed to adopt hybrid cloud models under the conditions of control, auditability, and verifiability.

This shift not only accelerates the development of digital financial services but also enhances system scalability and operational efficiency.

As a result, system flexibility and regulatory-compliant infrastructure are becoming central to enterprise IT strategies—whether for startups, large corporations, or state-owned enterprises. When planning future upgrades, organizations are increasingly focused on cloud-ready architectures that balance flexible resource allocation with robust security and compliance.

AI Transformation Begins with Defining Value

While many companies hope to leverage AI as a catalyst for digital transformation, the true priority lies in strengthening business resilience. Beyond simply introducing new technologies, it is an enterprise's capacity to adapt to external disruptions that determines its long-term competitiveness.

While the gradual maturity of cloud infrastructure and policy frameworks has created a favorable environment for digital transformation, the real determinant of success lies in whether enterprises have both the data readiness and a transformation direction aligned with business goals. According to Chou, data remains the primary barrier to AI adoption in most companies.

Although businesses generally recognize the importance of data, practical implementation often reveals two major challenges:

Overwhelming data volumes that are difficult to integrate, and A lack of clear application logic, which delays project progress.

In reality, only 5% to 10% of companies have data that is truly ready for AI use. This aligns with findings from the 2025 Taiwan Industry AI Adoption Survey, which shows that most companies are still in the early stages of data preparation and logical structuring. Even when data is available, poor quality remains a widespread issue, rendering it unfit for model training—and turning it into "useless data." No matter how capable the technical team, valuable AI cannot be built from low-quality data.

The Starting Point of Transformation: Begin with Defining Value

hile many companies hope to leverage AI as a catalyst for digital transformation, the true priority lies in strengthening business resilience. Beyond simply introducing new technologies, it is an enterprise's capacity to adapt to external disruptions that determines its long-term competitiveness.

For any enterprise seeking to successfully implement AI, the first and most critical step is to clarify why transformation is necessary—to clearly define the goals, purpose, and value of the initiative. This foundational understanding should then guide the selection of appropriate technologies and implementation strategies.

Chou emphasizes that AI adoption does not need to begin with an organization-wide rollout. Instead, companies should adopt a "small wins lead to big wins" approach—starting from the most pressing needs, concentrating resources to validate the solution, and then gradually expanding to other departments. This is the pragmatic and effective path forward.

Experience shows that asking each department to propose an AI initiative at the outset often leads to vague or superficial ideas that fail to address real pain points. Rather than forcing broad participation prematurely, it is better to identify one scenario with a clear need for improvement, validate its feasibility, and then scale.

"The essence of AI implementation is a process of trial, error, and continuous optimization," says Chou.

Based on Acer e-Enabling's field experience, she suggests that companies start by focusing on two practical tracks:

- General-purpose tools: These require no custom development and typically involve low-code or ready-made platforms. They are designed to tackle time-consuming tasks at the individual work level.
- Domain-specific applications: These involve deep integration with business systems and data sources—such as MES or SAP—to addr`ess complex processes related to orders, production capacity, and inventory management.

For such use cases, companies must define their internal data flows and process contexts clearly in order to design effective, scenario-based AI solutions.

However, the biggest challenge in domain-specific adoption often comes from within the organization. If no one can clearly articulate the processes or pinpoint operational pain points, designing a relevant solution becomes nearly impossible. And if senior management lacks confidence or is unwilling to take ownership of the risk, implementation efforts will inevitably stall.

"Because implementing AI isn't just about building a system—what really matters," Chou concludes, "is whether the end users are truly satisfied."

And "satisfaction" is an inherently subjective measure. Without complete data, clearly defined workflows, and a reasonable return on investment (ROI), even a system that launches on time may still struggle to gain buy-in from users and management alike.

In the end, someone has to take responsibility—to stand behind the investment and confidently affirm that it will help the organization achieve its intended goals. Otherwise, AI adoption risks becoming nothing more than an expensive experiment with limited long-term value.

Build User Experience by Solving the First Real Pain Point

hile many companies hope to leverage AI as a catalyst for digital transformation, the true priority lies in strengthening business resilience. Beyond simply introducing new technologies, it is an enterprise's capacity to adapt to external disruptions that determines its long-term competitiveness.

Yuanyu Chiu, Director of the Advanced Technology Division, adds that in the early stages of AI adoption, the most critical success factor is having a dedicated person to guide users—teaching them how to use the tools and integrating those tools into real business workflows. Once users experience a concrete solution to their first pain point, they will naturally begin to propose additional improvement ideas. This creates a positive feedback loop that drives wider adoption.

However, this learning journey is rarely easy. Without a clear training plan—and with staff often too busy to fully explore new tools—AI adoption can easily become superficial and symbolic. This is one of the most common challenges in rolling out AI projects.

Still, even solving just two or three problems using general-purpose tools can create meaningful impact. For instance, if an employee originally had a tightly packed schedule but now finds themselves with an extra 30 minutes thanks to AI-driven process optimization, the tangible benefit is immediately felt. This kind of "felt impact" is the key to user engagement—and the ideal starting point for internal expansion.

Chiu notes that while the tool itself may be general-purpose, the use case varies by function: finance teams may use it for report automation, HR for résumé screening, and marketing for data analytics. The true value of a tool emerges when it can support different roles and tasks with a unified platform. The key lies in whether users can clearly define their problems and are willing to invest time in learning and hands-on implementation.

Even when companies provide AI training internally, understanding of pain points is often fragmented or superficial. In such cases, bringing in consultants with industry-specific experience can be invaluable. These experts help identify core problems and clarify needs—greatly improving the precision and scalability of AI deployments. Unfortunately, Chiu notes, the value of consultants is often underestimated or overlooked, making this a common blind spot in corporate AI adoption.

To prevent enterprises from losing direction during implementation, Acer e-Enabling has developed a comprehensive AI Customer Journey. This includes initial consultations to assess business objectives, current workflows, and data readiness. Based on defined pain points and training needs, the team plans pilot test scenarios and guides the organization all the way through deployment and acceptance testing—providing end-to-end support to reduce risk and increase success rates.

Additionally, through its proprietary AI Accelerator Platform, Acer has consolidated modules and tools from past projects to help clients ramp up faster—whether using general-purpose or domain-specific AI. Depending on each function's needs (e.g., finance, HR, marketing), the platform provides support for data cleaning, process modularization, Q&A training, and vector processing—helping teams move from experimentation to execution more efficiently.

Building Local Linkages to Expand the Software Ecosystem

Acer e-Enabling Service Business Inc. actively collaborates with global tech giants such as Microsoft, Google, and AWS to stay on the cutting edge of technological advancements and resource availability. Through proof of concept (POC) validation and technology selection, the company helps enterprises identify the most suitable solutions—while also maintaining close partnerships with Taiwan's thriving AI startup ecosystem.

General Manager Hsing-Jung Chou explains that although Acer excels in integrating on-premise and cloud environments, many microservices and specialized innovations are often better addressed by startups. These teams bring agility and domain-specific focus that complement Acer's strengths.

To help these startup solutions succeed, Acer's team first validates integration feasibility, and then packages successful cases into total solutions that can be introduced to its extensive network of enterprise clients—built over two to three decades. Chou believes that only through collaboration—where 1+1 is greater than 2—can the market truly scale. Strategic partnerships and technical integration are the keys to unlocking real growth.

In recent years, Acer has already seen promising results. The next step, she notes, is to bring more partners into the fold, jointly expanding market influence and venturing onto the global stage.

However, achieving this vision requires a foundation of trust across teams and organizations. Many initiatives falter simply because of a lack of shared goals and collaborative alignment. Only by building mutual trust and committing to co-creation can Taiwan's AI software ecosystem grow stronger and realize its full synergistic potential.

From Compute Power to AI Capability Enhancement: It's Not Just About Computing Power, it's About Creating Value

Peter Wu, CEO of Taiwan Web Service Corporation (TWSC)

As generative AI continue to advance, a new wave of open-source models, like DeepSeek, has rapidly emerged, prompting industries around the world to re-evaluate their compute power strategies and infrastructure plans. In the past, industry discussions around compute capacity have largely focused on hardware elements such as chip performance and server scale. However, the rise of open-source models like DeepSeek reveals that the true driver of industrial AI adoption lies not only in hardware, but more critically in the strengthening of technical capabilities and the innovation of business models..

Compute Power Is Merely a Carrier—Capabilities Create Value

"AI is ultimately about capabilities—compute power is merely a means to acquire those capabilities, or the vehicle through which they are deployed," said Peter Wu, CEO of Taiwan Web Service Corporation (TWSC). He noted that the emergence of DeepSeek has made industries realize that open-source models are rapidly approaching the performance levels of frontier models, while offering significantly lower training costs. This not only lowers the barriers to entry but also drives a structural shift in how the industry defines and values "AI capabilities."

Wu further explained that AI capability development can be understood across three dimensions: first, the breakthrough in model capabilities, including performance, scalability, and the evolution fostered by open-source communities; second, the diversification of compute carriers, extending beyond data centers to edge devices and personal computers, allowing for more flexible deployment; and third, the democratization of training technologies. The rise of open-source models has made not only the models themselves but also numerous training and inference optimization tools accessible, enabling more enterprises to build their own capabilities.

As these conditions materialize, enterprises must start thinking about which vertical domains they can effectively apply AI capabilities. With the opening of more vertical applications, AI is no longer about whether it can be trained, but whether it can be deployed in real-time. This shift will rapidly increase the demand for inference-stage compute power, driving compute infrastructure from construction-based to operation-based, and from centralized to decentralized, thus giving rise to new business models.

"The real value lies in capable models," Wu stressed, noting that these models must satisfy three key criteria: low cost, security, and deployability. As the scope of capability applications expands, it will inevitably surface previously overlooked issues, such as the need for standardized evaluation benchmarks, compliance frameworks, and risk governance—all critical challenges for the real-world deployment of AI capabilities.

The Core of Sovereign AI: Building Locally Controlled Capabilities

The enhancement of AI capabilities has also reignited discussions around "sovereign AI." Many countries are shifting from questioning "whether we are qualified to do this" to asserting "we must do this." Wu pointed out that although the concept of sovereign AI remains somewhat vague, its true objective is not for governments to directly lead model development, but to establish a system of locally controlled, self-optimizing capabilities.

The rise of open-source models marks a turning point, enabling every enterprise to participate in training, self-deployment, and the construction of proprietary AI capabilities. It also offers Taiwan a greater opportunity to leverage its existing strengths and secure an indispensable role in the evolving AI ecosystem.

Wu outlined four key layers of sovereign AI. The first is "autonomous compute power," the foundational requirement. Without sufficient compute resources, it is impossible to support efficient model training and inference. The second is "autonomous models," where the emphasis is not on government-led development, but on encouraging private sector participation—similar to the approach taken by the U.S. and China.

The third, and most critical, is "establishing innovation mechanisms." Since AI is inherently an innovation-driven field, supportive ecosystems are crucial. Whether a society fosters innovation directly affects investment and industry momentum. Taiwan has already built a foundation with various initiatives, such as the Ministry of Digital Affairs' accredited programs and accelerator projects driven by foundations—constituting Taiwan's innovation capital for AI.

The fourth layer involves "implementing AI policies," including formulating fundamental AI laws, risk classification standards, and compute resource allocation strategies. Wu noted that Taiwan can learn from international examples, like Japan and Singapore, which subsidize enterprise compute adoption rather than relying on market forces alone. A comprehensive integration of these four layers would form a robust, executable strategy for Taiwan’s sovereign AI development.

Autonomous Compute Power Is Just the Starting Point—The Real Challenge Is Utilization

Currently, Taiwan’s advantage still lies in providing cost-effective GPU server capabilities, coupled with integrated services. "We offer not just a tool, but a total solution—from system planning to full deployment assistance," Wu said. Enterprises seeking to adop at new AI mechanisms can rely on Taiwania Cloud’s support, whether for comprehensive implementation or flexible engagement for pilot projects within specific departments.

However, Wu emphasized that while autonomous compute power is the starting point, it is the innovation mechanisms that enable real deployment. "Building hardware is simply a matter of investment. The true challenge is: who will use this compute power?"

Many enterprises still struggle with the chain of challenges from technical in-

tegration to commercial application (POC, POS, POD). AI investment requires significantly higher capital outlays compared to IoT or cloud services, and failure to show rapid results brings intense pressure. Thus, achieving sovereign AI requires more than possession—it demands deployment, effective usage, and value creation.

The True Challenge of AI Adoption: A Shortage of Services, Not Just Talent

As AI capabilities improve, enterprises face not only technological transformations but also organizational and talent gaps. "What clients lack today is not compute power, but services," Wu stated. Enterprises are often unable to cultivate internal AI talent with the necessary know-how in a short time, resulting in stagnation during AI adoption. This situation presents a commercial opportunity: consulting firms that can design effective service models can serve more clients with fewer personnel, creating high value-added offerings.

Nevertheless, Wu observed that many Taiwanese IT service providers remain stuck at a superficial level—merely connecting APIs or using external models. Over the past two years, those who relied solely on OpenAI must now grapple with accumulated "technical debt," while teams that invested early in self-built model capabilities are emerging as the biggest beneficiaries of this capability shift.

A New Consulting Era: Enterprises Need Guided Deployment

Wu observed that what enterprises need today is a "guided journey" model of service. Most companies lack both the technical know-how and the manpower to form R&D teams. Even if they can afford the tools, they often do not know how to use them properly or evaluate their effectiveness. Thus, what is needed is professional consulting that can translate needs into actionable strategies.

Based on Taiwania Cloud's years of experience assisting enterprises in building compute and model infrastructures, Wu stressed that concrete deployment strategies—not off-the-shelf products—are what enterprises truly need. Fixed-specification tools often fail to match real-world enterprise scenarios, becoming obstacles to AI adoption. Therefore, Taiwania Cloud established an internal consulting team two years ago and partnered with external consulting firms to enhance each other's capabilities.

Wu concluded that enterprises are still developing awareness around seeking consultants. In the meantime, it is critical to position as a trusted partner rather than a mere vendor selling tools.

From Model Breakthroughs to Capability Deployment: A New Industrial Challenge

With model capabilities rapidly improving and compute carriers diversifying, even a single AI PC can now perform tasks previously unattainable. This signifies that AI is truly moving toward real-world deployment. Open-source models have achieved near parity with frontier models, even crossing the "golden intersection," removing lingering doubts about their efficacy.

Beyond technical breakthroughs, the industrial logic itself is shifting from a supply chain mindset to an ecosystem mindset. No single company can handle everything alone; only through complementary, multi-role ecosystems can AI applications truly scale and take root.

However, Wu pointed out that compute-related ecosystems—covering energy saving, new energy sources, and water-cooling infrastructure—are areas where Taiwan can profit immediately. Yet, from a capability development perspective, Taiwan must answer a strategic question:

"Are we aiming to be a nation that exports capabilities, or are we willing to concede technological inferiority and become a colony of capabilities?"

This is not merely a matter of resource allocation—it is a strategic decision for the future of the industry. If enterprises choose to focus solely on application integration without developing their own models, they risk building architectures that are highly vulnerable to external disruptions, undermining overall stability.

AI Adoption: Not Just a Technology Choice, But a Test of Governance and Innovation Capability

Frank Yeh, Vice Chairman of WPG Holdings

As generative AI technologies rapidly emerge, many corporate executives hold high hopes for their application potential—aiming to address challenges around operational efficiency, decision-making optimization, and accelerated innovation through the introduction of large language models (LLMs).

However, this idealized expectation often overlooks the real-world constraints enterprises face, particularly in data governance, application scenario definition, and organizational collaboration mechanisms.

AI Adoption Is Not Just a Technical Decision, But a Systematic Governance Project

In reality, AI adoption is not a straightforward technology upgrade—it is a systematic project involving corporate governance, data assets, and decision-making culture.

According to the 2025 Survey of AI Adoption in Taiwan's Industries, compared to last year, the overall AI Deployment Index for enterprises has declined, with the ICT industry seeing the most significant drop. This does not mean enterprises are retreating from AI; rather, as they engage deeper in data inventory and system organization, they realize that their readiness in data usability, structural integration, and process alignment is still far from maturity.

Take WPG Holdings as an example: Although the group began its digital transformation as early as 2015, it wasn't until 2021 that they formally collaborated with external consultants to build a data middle platform and launched comprehensive data standardization and structuring efforts.

"Without a solid data foundation, how can you even talk about AI?" — Frank Yeh, Vice Chairman of WPG Holdings

This statement highlights the core of transformation: the critical importance of data usability and structural readiness.

Practical Challenges: Data, Insight, and Organizational Collaboration Remain Key to Deployment

At that time, awareness of data infrastructure's importance was still low externally. Many even questioned whether it was necessary to invest so much time

and resources in building foundational data systems. In reality, although enterprises had plenty of data, without standards, consistent formats, and centralized management across systems, such data could not be effectively applied to train or deploy AI models.

Starting with data collection, management, and storage standards, WPG systematically built its foundational structures over a three-year period before achieving a workable foundation.

Along the way, WPG integrated three technical teams, underwent cloud platform migration, and adjusted data architectures to enhance flexibility and performance. Yet even after completing basic infrastructure, another major hurdle emerged during the planning of AI application scenarios: insufficient data insight.

In other words, though initial data integration was complete, there remained a significant gap before it could translate into actionable business insights and decision-making foundations. "The real focus lies in clarifying insights and understanding user contexts," Yeh emphasized. Only by deeply understanding user behavior patterns and decision backgrounds can enterprises truly drive AI initiatives. Only afterward should they move to model building.

In practice, WPG has been collaborating with the Artificial Intelligence Foundation, with external support assisting in model building while gradually empowering internal teams to participate and accumulate experience across different projects. Yeh believes that compared to previous digital transformation efforts, which merely integrated and analyzed data, this new wave of AI technologies transforms personalization from a concept into an operational and executable business capability.

Thus, when building AI models, companies should start from "single brand, single product, single customer" bases, developing exclusive models and incorporating personalized contexts, such as individual procurement behaviors, family status, emotional states, and other human factors, into analysis logic. These behavioral insights have long existed within organizational interactions but had never been systematized for analysis.

Implementation Approach: Scenario-Based, Small-Scale MVP Pilot Testing

“AI should not be led by IT,” emphasized Yeh. Traditionally, IT teams are responsible for integrating systems like ERP and CRM, which have clearly defined procedures and SOPs. Implementation in such cases follows a structured logic—plan, optimize, deploy. But AI is fundamentally different: there is no pre-existing playbook. Instead, the process must be redesigned around specific needs and real-world scenarios, and that requires domain experts—those who understand the business and the context—to take the lead. “It’s domain experts guiding AI forward, not the other way around.”

As such, WPG’s approach to AI adoption begins with minimal viable use cases. The team selects a single scenario and starts by organizing a small, focused data set. “If we had started with nine customers and dozens of products, failure would have been inevitable,” said Yeh.

Only by incorporating all contextual variables can an AI model become both practical and scalable. Once deployed successfully, each production line or model can be equipped with a corresponding AI solution. During this process, the team gradually builds its data insight logic, process modules, and scenario templates—eventually applying them in real-life use cases like warehouse management, material forecasting, and CPQ (Configure, Price, Quote).

Ultimately, this foundation enables the creation of Agent AI, which modularizes repetitive tasks. Within WPG's AI implementation methodology, AI is not just a tool—it is the engine for organizational process redesign, enabling the deconstruction, reassembly, and optimization of enterprise workflows.

People and Trust: Employee Belief and On-the-Ground Engagement Are the True Keys to Success

Having led digital transformation efforts for over a decade, Yeh—who candidly admits to having witnessed many failed attempts—places particular emphasis on the human factor. For example: do the frontline employees have a passion for embracing change? How strong is the relationship between sales representatives and their client contacts? These considerations are all factored into WPG's AI model design.

Yeh points out that in an AI-driven computational era, from autonomous vehicles to smart devices, everything is heading toward personalized design. For WPG, the goal of adopting AI is the same: personalization. The aim is to enable sales teams to return to the essence of their work—focusing their time and energy on building client relationships—with AI assisting in administrative and data-heavy tasks.

In the past, Yeh observed, salespeople typically spent 80% of their time on tasks like data consolidation and paperwork, with only 20% actually spent engaging with customers. With AI systems in place, these repetitive chores can now be automated, allowing staff to focus on "what people should be doing." Given the increasing complexity and volatility of today's business landscape, traditional decision-making processes have become unsustainable for human capacity alone. This is where AI can step in—as a data analyst, assistant, and decision-support tool—to empower teams for higher-value interactions.

The Role of Leadership: Transformation Is a Long-Term Governance Responsibility

Yeh cautions that in many AI initiatives, senior executives often fail to first clarify the overarching goals and direction. As a result, their teams are left to fumble in the dark—asking around, experimenting independently—without a unified strategy or clearly defined responsibilities. That's why before embarking on AI implementation, it's critical for leadership to "set the tone from the top"—not just by discussing technical details, but by revisiting and realigning the company's overall operational strategy.

A common mental barrier Yeh observes among executives is: "What does this transformation have to do with me? I'm retiring soon anyway." When top decision-makers treat AI as a short-term performance project rather than a long-term governance obligation, it becomes nearly impossible for the organization to push past the deeper thresholds of digital transformation.

"Driving AI adoption isn't just about today's operations," Yeh emphasizes. "It's about laying the groundwork for your next-generation leadership and governance structure." When future successors look back on the company's transformation journey, they should be able to thank today's leaders for making the right call—building the foundations for sustainable competitiveness. Otherwise, the organization risks repeating the fate of companies like Nokia, whose final leadership teams were left to bear the consequences of past structural missteps with no way to reverse the damage.

Leverage edge AI software and hardware integration to seize opportunities for intelligent transformation

ST Liew, Vice President and President of Qualcomm Taiwan & SEA, Australia, New Zealand

The wave of generative AI has swept across the globe for more than two years. During the competition between various technological applications, many have realized that, to achieve more fundamental and structural changes, generative AI is only a part of the picture. From the perspective of global development trends and Taiwan's existing industrial advantages, AI applications that can run on end devices are equally important and should not be overlooked. Especially at this moment, when we are facing an unpredictable macro environment and paradigm shifts, the development of "Edge AI" becomes even more crucial: not only for reshaping human-machine interaction, but also for redefining industrial ecosystems and government policy agendas.

ST Liew, Vice President and President of Qualcomm Taiwan & SEA, Australia, New Zealand, shared his outlook on the next phase of AI revolution from three perspectives: technological readiness, industry context, and application adoption. He envisions AI evolving into the new user interface (UI) seamlessly embedded at the terminal layer of a wide range of devices, including computers, appliances, machinery, mobile devices, software, and applications.

"AI is a technology field with an extremely broad scope. Today, our focus is no longer on whether a 'killer app' will emerge," said Liew. He pointed out that AI applications have already begun to be implemented in end devices, and as AI continues to evolve on these devices, its applications will become increasingly widespread and diverse.

From smartphones to in-vehicle systems, laptops to wearable devices, and even robots and drones, each device holds the potential to become an AI agent—not just a tool, but an intelligent partner capable of actively understanding, predicting, and collaborating. The human-machine interaction model is also evolving from command input and touch operations to a new stage with voice, gesture, and even emotion recognition.

Cloud is not a panacea: computation congestion and the gap in real-time capabilities

In the past, AI computations largely relied on the cloud, but with over 7 billion people worldwide and billions of devices sending requests to the cloud daily, this operational model is difficult to sustain in the long term due to resource consumption and lag control issues. Research indicates that executing a single query with an AI model consumes approximately 8 to 10 times the resources of traditional search engines. If all AI tasks rely on cloud processing, it will put enormous pressure on network bandwidth, energy, and computational resources.

However, this is precisely the strength of on-device AI. By deploying models on local devices and performing computations directly at the edge, it will not only improve the response speed significantly but also reduce reliance on networks and energy.

Another advantage of on-device AI is privacy protection. If the AI model is deployed on the device, users don't need to upload data to the cloud or rely on external servers to complete tasks, and personal or corporate privacy is safeguarded as a result. Additionally, the autonomy of on-device AI contributes to an enhanced user experience: as AI operates continuously on your device, it can learn your behavioral habits and preferences over time, providing services that are more closely tailored to individual needs.

The recent emergence of model distillation technology has made AI models smaller while showcasing better performance and deployment flexibility. Since last year, more compact yet powerful models have appeared on the market, and many companies and developers have begun investing in related development. The growing presence of such compact yet powerful models is an indication that AI models are moving toward simplification, enhancement, and increased reliability. This makes them easier to deploy on endpoint devices and more practical for real-world applications.

Today, we are able to deploy more powerful AI models and computational capabilities on edge devices without relying solely on remote cloud computing to handle complex tasks. AI applications can now be performed "locally," which is not only more efficient but also provides better privacy protection. Furthermore, these applications can be operated in a touch-free manner, enhancing user convenience.

The development of on-device AI does not mean the disappearance of cloud AI's role. Liew emphasized that when we deploy AI to edge devices, the cloud can still be used to continue leveraging its advantages in model training and large-scale computation, such as training and refining large language models (LLM). For applications such as smart cities that require large models, the collaborative architecture between edge devices and the cloud will be a fundamental requirement for future AI deployment.

A New Stage in Human-Machine Interaction: From UI to AI Agents

With the widespread adoption of on-device AI, human-machine interaction will enter a new phase. Liew said that the evolution from the earliest command inputs and the use of mouse and keyboard to the current touch, voice, and even gesture controls is an evolution of interface. AI agents will become the next milestone in this evolution.

Liew believes that AI agents are different from traditional passive command executors, as they can learn and predict the next action based on the user's habits and behavior patterns, and complete tasks accordingly. For example, when a user wants to make a restaurant reservation, the AI agent can automatically integrate tasks across platforms, such as contacting friends, checking schedules, and completing the reservation, truly freeing up the user's time and mental effort.

This ability for cross-module collaboration marks the shift of AI from being merely a supplementary tool to becoming an active agent that performs tasks, makes intelligent judgments, and predicts intentions. The human-machine relationship will evolve from "command execution" to "goal collaboration."

The combination of devices, AI models, and edge computing not only drives technological development but also creates enormous business opportunities. Liew said that there are more than 10,000 types of edge devices in the world—ranging from smartphones, watches, computers, in-vehicle systems to head-mounted displays (HMDs). Each device serves a different user with different needs, and this diversity is the fertile ground for innovation.

The manufacturing industry holds key scenarios for the implementation of AI.

So, does Taiwan have the opportunity to stand out in the AI wave? Liew believes that Taiwan has a unique advantage in the manufacturing and integration of various types of edge devices. In addition to electronic products, Taiwan also has a strong foundation in the manufacturing of components and consumer products such as screws, automotive tires, and bicycles. These globally distributed edge devices are Taiwan's manufacturing strength and represent some of its most competitive sectors. More importantly, these products are key scenarios where AI technology can be effectively applied.

Taiwan's existing factories and manufacturing supply chains are not only traditional producers but can also become consumers of AI technology. When factories act as consumers of AI, they do not need to develop all the technologies themselves. Instead, they can actively establish more strategic partnerships, integrating hardware, software, and program management talents to achieve more efficient resource allocation and technology development.

From a project management perspective, the key is to first clearly define the core problem (problem statement), such as "What is the problem?" or "What tools should be used to solve the problem?" Once the problem is clearly defined, appropriate solutions can be developed to address it.

Edge AI will be a key opportunity for Taiwan

For Taiwan, Liew believes that the opportunity in the wave of AI transformation lies in focusing on excelling in the "edge" application domain. "Excelling in edge" doesn't just mean manufacturing hardware but rather focusing on "edge integration." This means building a complete infrastructure across hardware, software, developer tools, and even platforms that support developers. The goal is to enhance the AI value of Taiwan's edge products, while also attracting developers to invest in and make the best use of our devices and platforms to create new applications.

In the past, Taiwan's industries mostly played the role of OEMs (original equipment manufacturers) in the global supply chain, focusing on efficiency and cost. Once something could not be converted into short-term production benefits or immediate returns, many companies would choose to withdraw from it. However, with the arrival of the AI era, such a business culture can no longer support the long-term investments and systematic planning needed for edge integration. Many companies also admit that they have limited capabilities because the lack of software teams and platform development abilities make it difficult to proactively undertake AI projects or implement related applications. This reflects not only a talent gap but also a cultural divide within industry.

Rather than expecting every traditional company to immediately undergo a transformation, Liew believes it would be more effective to assist these companies in continuing to leverage their expertise in hardware manufacturing while building cross-disciplinary teams with integration capabilities to undertake AI project experimentation and application development. For Taiwan's numerous small and medium-sized enterprises (SMEs) and innovative units that have the technical know-how but are relatively resource-constrained, collabo-

rating with international partners that have platform and tool resources to form cross-disciplinary teams allows them to focus more clearly on core problems and proceed with concrete, actionable development plans.

The competition among countries in the AI era has already reached a fever pitch. In addition to launching long-term plans for training AI talent as soon as possible, we should also think about what we can do right now. Taiwan has a leading global semiconductor industry and a strong ICT ecosystem, allowing us to leverage our advantages in edge device manufacturing and system integration. With the guidance and support of a practical national AI development strategy, Taiwan is poised to become a leader in the global AI race.

CHAPTER 03

Action Plan

Policy Recommendations for Advancing Industrial AI Implementation

Overview

According to the findings of the 2025 Survey on AI Adoption in Taiwan's Industries, while enterprises' awareness of AI has significantly improved, practical adoption still faces multiple challenges, including:

- Unclear application scenarios
- Misaligned adoption cognition
- Singular compute resource deployment
- Lack of Edge AI strategies and practical talent

To help industries effectively deploy AI and strengthen Taiwan's competitive edge, the government should promote systematic policy actions across the following five strategic pillars:

Pillar 1:

Enhancing Industries' Understanding of AI and Application Directions

Challenges

Most enterprises still associate AI primarily with cloud-based and generative AI models, making it difficult to connect AI deployment with real business pain points.

This often leads to misjudgments in cost-benefit evaluation and loss of adoption momentum.

Recommendations

- Develop a Common Industry Language:
  Formulate and release AI Adoption and Application Guidelines, designing industry-specific domain models and deployment frameworks for manufacturing, healthcare, and service sectors.
- Promote Scenario-Based Education:
  Conduct *AI Awareness Workshops and Pain-Point-to-Application Industry Forums*, supported by curated success cases.
- Create AI Application Demonstration Zones:
  Partner with local governments and industrial clusters to establish *AI Demonstration Areas*, facilitating cross-ministerial collaboration and practical proof-of-concept deployments.
- Implement AI Readiness Diagnostic Services:
  Support enterprises in assessing their data, workflows, and technical assets through professional AI consulting services.

Pillor 2:
Promoting Edge AI and Hybrid AI Architectures to Strengthen Industrial Autonomy

Challenges

Over-reliance on cloud computing leads to:

- Increased energy consumption
- Heightened cybersecurity risks
- Limited responsiveness and scenario diversity

Recommendations

- Support Development of Small Language Models (SLMs) and On-Device AI Models:
  Promote Edge AI adoption in sectors demanding high privacy or low latency, such as manufacturing, healthcare, and transportation.
- Establish a Multi-Tiered Compute Resource Deployment Framework:
  Subsidize SMEs to implement Edge AI solutions and lower technological barriers.
- Design Incentives and Financial Support Mechanisms:
  - Provide investment tax credits and R&D subsidies for Edge AI development.
  - Prioritize procurement of on-device AI equipment in government purchasing programs to boost local AI ecosystem adoption.
- Attract International Collaboration:
  Implement foreign investment-friendly policies to foster co-development and talent exchange between international AI companies and Taiwanese enterprises.

Pillar 3:
Redefining AI Talent Development Strategies:
Focusing on Application-Driven and Cross-Domain Integration Skills

Challenges

Current AI talent cultivation overly emphasizes algorithm and model development, neglecting practical deployment, Edge AI skills, and cross-domain integration capabilities.

Recommendations

- Integrate Edge AI, Hybrid AI, and SLM Applications into Vocational and Professional Training Programs:
  Foster talents with both technical expertise and contextual understanding.
- Encourage Enterprise-Led Internal Talent Development:
  Offer subsidies and mentorship programs to support the establishment of internal AI bootcamps.
- Promote a Practical AI Talent Certification System:
  Align academic and industrial standards to bridge competency gaps through certification initiatives.
- Expand AI Education Scope:
  Ensure training includes *data*, *models*, and *computational resources*, tightly integrated with domain-specific knowledge.
  Emphasize *data analytics* as an accessible entry point to nurture digital-era mindsets.

Pillar 4:
Accelerating the Transformation of the Information Services Sector: Becoming Key Enablers for AI Implmentation

Taiwan has approximately 16,000 information services companies.
However:

- Only 46 companies are publicly listed (~2.5% of total listed companies).
- Information services account for just 0.42% of total market capitalization.

This small scale and limited financial clout create critical challenges:

Challenges

- Niche Focus of ISVs:
  Nearly a thousand Independent Software Vendors (ISVs) operate within narrow market segments due to domestic market limitations.

- Global Competitiveness Constraints:
  Taiwanese ISVs face resource and scale disadvantages against global competitors, limiting their ability to grow into large commercial software firms.

- Talent Drain to Hardware Sector:
  Taiwan's dominance in ICT hardware manufacturing historically diverted resources away from software engineering, hindering software sector influence.

- Legacy Software Risks:
  Outdated systems deeply embedded across industries hinder modernization, create maintenance challenges, and introduce cybersecurity vulnerabilities.

Recommendations

- Establish an AI Adoption Partner Certification System:
  Define capability levels for SIs and consultants across industry-specific application scenarios to foster a trusted AI deployment ecosystem.

- Launch Software Modernization Initiatives:
  Subsidize the retirement of outdated commercial software, support legacy code reconstruction, and integrate AI functionality upgrades with modern software lifecycle management.

- Expand Software Engineering Talent Development for AI Alignment:
  Partner with vocational institutions and information service providers to establish dual-track apprenticeships for:
  — *AI Implementation Engineers*
  — *System Modernization Engineers*

Pillar 5:

Establishing a Secure, Controllable, and Open Sovereign AI Framework

Facing global technological and governance restructuring, Taiwan must develop a comprehensive Sovereign AI Strategy, focusing not on government-led R&D, but on fostering a locally controllable, commercially viable AI models and a secure, open, and scalable AI ecosystems.

Recommendations

- Deploy and Subsidize Autonomous Compute Resources to strengthen regional AI computing infrastructure through targeted investments.
- Encourage Private Sector and Research Institution Involvement to promote the development of SLMs and domain-specific models via open-source collaboration.
- Develop Innovation-Friendly Policy Mechanisms to establish *data sandboxes* and Implement *public model licensing frameworks* to accelerate application development.
- Incorporate International Best Practices: Gradually build an AI governance framework through: AI Act, Model Risk Rating Systems, *and* Compute Resource Allocation Principles

Strategic Outlook

By executing these comprehensive policy actions, Taiwan can strengthen its industrial resilience, accelerate digital transformation, foster global competitiveness, and achieve strategic autonomy in the AI era.

AI Implementation Guide for Enterprises: A Strategic Blueprint from Pilot to Transformation

AI Implementation as an Organizational Transformation

AI implementation is not a one-time task, but a systematic operational transformation. Successful AI integration starts with small-scale pilots and gradually builds foundations in data governance, technical capabilities, process integration, and organizational cultural alignment. Common bottlenecks such as lack of technology, talent, and data must be addressed through consulting support and strategic activation mechanisms.

1. Four Stages of AI Implentation and Action Plan Recommendations

Stage 1: AI Preparation and Assessment

Core Objective

Build consensus and conduct baseline assessments

Key Actions

- Establish data catalogs and field mappings
- Assess deployment goals and technology fit
- Examine data risks and AI biases
- Secure executive sponsorship and resource support

Additional Suggestions

Simultaneously establish risk identification mechanisms and assess model ethics and privacy risks (e.g., PIA)

Stage 2: Pilot and Validation

Core Objective

Achieve early wins and reduce risks

Key Actions

- Focus on a single process, client, or pain point for PoC
- Conduct business-side interviews to define problems and data needs
- Establish data labeling and MLOps base processes
- Design evaluation metrics and perform continuous iteration

Additional Suggestions

Incorporate user feedback mechanisms to enhance departmental participation and build trust

Stage 3: Scale and Optimization

Core Objective

System replication and platform integration

Key Actions

- Replicate successful pilots across departments
- Build internal AI tools (e.g., recommendation engines, anomaly detection)
- Deploy GPU/cloud computing and middle-platform architecture
- Strengthen cross-departmental data sharing

Additional Suggestions

Combine internal training programs and technical workshops to accelerate the learning curve

Stage 4: AI Infrastructure Completion

Core Objective

Full application and cultural transformation

Key Actions

- Establish an AI Center of Excellence (CoE)
- Implement project management and governance systems (e.g., model review, data security)
- Integrate AI outcomes into ESG and sustainability performance metrics

Additional Suggestions

Align AI strategies with organizational sustainability goals to deepen cultural identity and strategic penetration

2.The 321 Principles of Data Governance

3V of Core Elements of Data

Element

Validity, Velocity, Variety

Implementation Notes

- Build causal relationships between data and decisions
- Design real-time data flows and risk-tiered processing
- Integrate structured and unstructured data (e.g., HL7, DICOM standards)

2C of Risk Thresholds of Data

Element

Compliance, Confidentiality

Implementation Notes

- Implement PIA and regulatory compliance (e.g., GDPR)
- Apply differential privacy techniques and access controls

1R of Decision Relevance of Data

Element

Relevance

Implementation Notes

- Ensure all data strategies ultimately align with decision-making impact and business KPIs

3.Key Principle for Deployment: Start byIdentifying the Right Problem

FFor companies looking to implement AI, identifying the right problem has always been a major challenge. Different departments often interpret the same issue in vastly different ways. Frontline staff in sales, for instance, may describe their needs, expectations for the solution, and considerations for operational deployment differently from technical teams, who must focus on data quality, real-time processing, and anomaly handling—all of which are equally critical.

To help enterprises focus on the core problem before diving into AI implementation, the AIF introduced a strategic thinking tool called AI Canvas. This framework presents three dimensions of key questions to guide organizations in clarifying needs and crafting effective AI application strategies.

First Dimension: Understanding the Problem

·What challenge are you facing? Why does this issue need to be resolved or improved? Or is it about seizing a specific opportunity?

·Who are the stakeholders? How are they affected by the problem? What value will be created if the problem is solved?

·What is the problem you intend to solve? Is it truly the core issue from the stakeholders' perspective?

Second Dimension: Aligning with the Problem Structure

- What is the usage scenario that creates the connection?
- What kind of user experience do you want to offer? Once the solution is designed and implemented, how will users interact with it?
- Given this context, what do you want AI to do? What capability do you aim to train the AI to perform?

Third Dimension: Building AI that Matches the Problem Structure

- What is the most suitable model? What variables should the model consume? What are the key features? What kind of output should the model generate?
- What data is needed? How will it be obtained? Will it cause any secondary issues?
- After deployment, how will real-world results be used to optimize the overall solution?

4.The Consultant's Role: From Technical Input to Strategic Partnership

Three Key Values of Consultant

- Strategic Initiator
  Assist enterprises in clarifying AI goals, defining problems, and setting deployment rhythms
- On-Site Coach
  Facilitate real-world workshops to guide iterative practice and solution refinement
- Capability Transfer Enabler
  Help enterprises internalize AI experience into repeatable knowledge and operational assets

Dual-Track Approach: Training + Mentoring

- Training: Structured courses to establish foundational AI concepts, data literacy, and governance awareness.
- Mentoring: Practical case coaching and problem-guided strategy workshops to reinforce application landing.

5.Final Recommendations

- Start with small-scale pilots to explore practical use cases at low risk
- Connect data governance to business goals to build a trustworthy data foundation
- Design AI adoption roadmaps integrating user feedback and cross-departmental collaboration
- Leverage external consultants and grow internal talent simultaneously to accelerate internalization
- Move toward a long-term vision of human-AI collaboration and AI-driven sustainable organizational culture

Risk Management and Impact Assessment for AI Governance

With the rapid advancement of generative AI and multimodal models, AI applications are now spreading across critical sectors such as manufacturing, healthcare, finance, transportation, and justice. For both businesses and governments, AI is no longer just a tool for technical enhancement—it is evolving into a new decision-making logic and governance framework. However, compared to traditional IT systems, AI carries risks that are more unpredictable and lack clear boundaries. Without institutionalized oversight mechanisms, AI could have far-reaching societal consequences.

For enterprises, the core challenge in AI governance has shifted from "data debt"—issues stemming from poor data quality and lack of integration—towards "institutional debt", where organizations lack standardized rules for AI usage, risk management frameworks, and accountability mechanisms. Therefore, as AI is adopted, establishing a robust risk management and impact assessment system has become a foundational element of both digital transformation and sustainable governance.

Core Challenges: AI Risks Differ from Traditional Technologies

- Irreversible and Wide-Spreading Risks:
  AI decisions can immediately affect user rights (e.g., credit scoring, medical diagnoses). Once a mistake is made, it may not be easily reversible.
- Bias in Data and Algorithms:
  Training data may be biased, and algorithmic processes are often opaque, leading to unfair or “black-box” decisions.
- High Autonomy and Blurred Accountability:
  As AI systems gain a degree of autonomy, there is an urgent need to clearly define the boundaries of responsibility between developers and organizations.
- Institutional and Regulatory Lag:
  Most companies have yet to establish standardized AI usage guidelines or risk classification systems, resulting in a lack of operational procedures and mechanisms for traceability.

Four Pillars for AI Risk Management and Impact Assessment

1. Establish Robust Data Governance Frameworks

Managing data quality and risk with a lifecycle mindset

- Data governance forms the first line of defense in AI risk management, covering the full lifecycle of data—from collection, classification, storage, and usage to deletion.
- Clear data management policies should be developed, including rules for access control, quality auditing, standardized formats, and trusted source verification.
- Strengthen personal data and privacy protection and integrate them into risk identification and compliance assessment protocols.

Relevant Standards:

ISO/IEC 42001, NIST RMF Govern Function, GDPR, Taiwan Personal Data Protection Act

2. Adopt Risk-Based Classification and Management:

Tailoring oversight levels based on application scenarios

- Classify AI systems by impact level into "Unacceptable Risk," "High Risk," "Limited Risk," and "Minimal Risk," with differentiated regulatory requirements.
- For example, generative AI may be deemed "Limited Risk" and should require clear labeling of AI-generated content. In contrast, judicial decision prediction systems fall under "High Risk" and should undergo pre-market review.
- Reference Frameworks: EU AI Act, NCC Taiwan's AI Risk Classification Draft

Relevant frameworks:

EU AI Act, AI Risk Classification Draft by Taiwan's NCC (National Communications Commission).

3. Implement Standardized Governance Mechanisms:

From quality control to full-lifecycle risk management

- AI system quality must not rely solely on final inspection. Instead, governance should be embedded throughout the design, training, supplier selection, deployment, and maintenance phases.
- Encourage cross-departmental participation in quality assurance using frameworks such as QCDTS (Quality, Cost, Delivery, Technology, Service) or RAMS (Reliability, Availability, Maintainability, Safety), integrating AI risk into the PDCA (Plan-Do-Check-Act) cycle.

Relevant Standards:

- ISO/IEC 42001:2023 – International standard for AI management systems, emphasizing trustworthy AI principles (transparency, fairness, explainability, traceability).
- NIST AI RMF – Focused on four core processes: Map, Measure, Manage, Monitor.

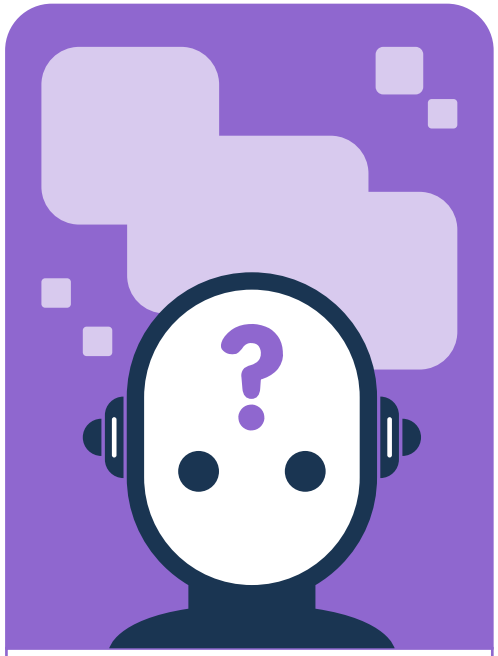
4. Cultivate a Governance Culture and Encourage Multi-Stakeholder Engagement:

Conclusion: From Risk Management to Trustworthy AI

The adoption of AI is no longer just about choosing the right technologies—it reflects an organization's overall governance capability. A robust system of risk management and impact assessment is essential to achieving trustworthy AI, sustainable innovation, and global competitiveness. If Taiwan can address its "institutional debt" by building a localized yet internationally aligned AI governance framework, it will be well-positioned to lead the next wave of trust-based AI deployment.

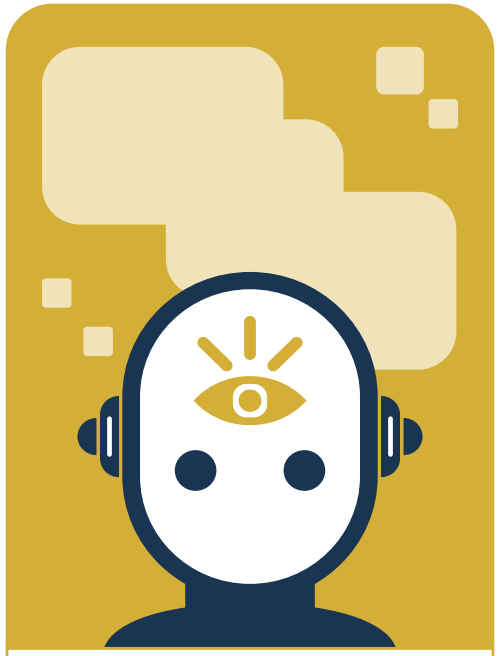
APPENDIX

Four Levels of AI Maturity



Unknowing AI

Enterprises remain at an early stage of AI awareness. Most employees have heard of AI but lack related knowledge and understanding of practical applications.

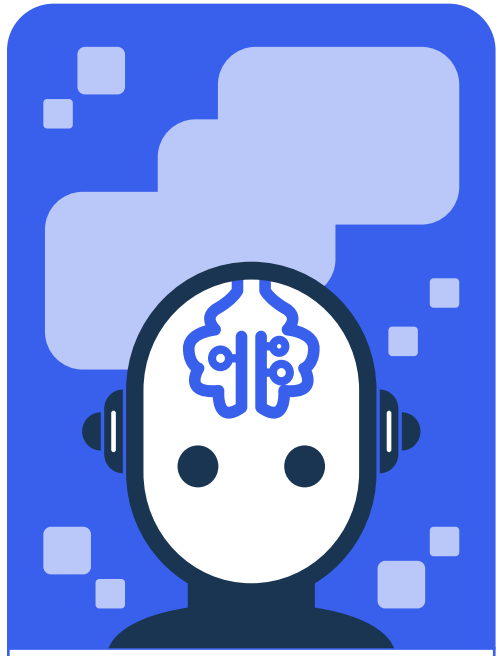


Conscious AI

Enterprises possess basic knowledge of AI and have a preliminary understanding of its capabilities and limitations. However, they are still in the observation and evaluation phase, with no substantial application yet.

Ready AI

Enterprises have a clearer understanding of AI applications, have set initial AI development goals, and may be piloting or implementing AI projects.



Scaling AI

Enterprises not only possess AI technology and knowledge but can maturely deploy AI across multiple projects, achieving scalable AI applications to drive business innovation and optimization.

UNKNOWING AI

Challenges

- Limited understanding of AI's practical value and necessity; weak motivation for adoption.
- Lack of basic awareness regarding data management, quality control, and compliance risks.
- Absence of a strategic direction or execution framework for AI promotion.

Recommended Actions

- Identify business problems requiring solutions.
- Conduct training sessions and workshops to build internal awareness of AI potential.
- Ensure decision-makers develop fundamental AI understanding through training or mentorship programs, recognizing both commercial value and potential risks.
- Engage external consultants to interview stakeholders, review data assets, and align AI strategies with corporate vision.

CONSCIOUS AI

Challenges

- Lack of clear industry-specific AI application scenarios.
- Misalignment of AI terminology and understanding between internal and external stakeholders.
- Absence of detailed implementation plans and execution rhythms.
- Insufficient technical foundation and talent resources limiting actionable capacity.

Recommended Actions

- Identify and prioritize business pain points.
- Work with external consultants or industry experts to assess current processes and map them against AI capabilities to find feasible pilot use cases.
- Select appropriate tools for initial experimentation.
- Develop an AI Roadmap outlining short-term pilots and medium- to long-term expansion phases, specifying scenarios, required personnel, data needs, and KPIs at each stage.

READY AI

Challenges

- Teams lack hands-on experience and the capability to scale AI initiatives.
- Deficiency in visionary planning and architectural design for AI integration.
- SMEs constrained by limited resources, making it difficult to build comprehensive AI platforms.
- Rapid technological shifts create uncertainty and cautious behavior in investment decisions.
- High perceived investment risks and unstable vendor relationships.

Recommended Actions

- Conduct internal resource audits with external expert support to set phased AI development goals aligned with the company's vision.
- Establish regular external evaluation mechanisms (e.g., AI maturity models, benefit retrospectives) to identify gaps.
- Foster a culture of innovation through internal competitions or special projects to motivate teams.
- Prioritize partnerships with stable vendors capable of system integration and ecosystem alignment.

SCALING AI

Challenges

- AI initiatives remain siloed across departments, lacking integrated governance structures.
- Organizations struggle with deployment, automated monitoring, and model versioning.
- No mechanisms for internal diffusion or democratization of AI capabilities.
- Lack of comprehensive frameworks for data ethics and risk control.

Recommended Actions

- **Platformization and Standardization of AI Applications:**
  Transition from a project-driven to a platform-driven approach, ensuring resource reusability and scalable implementation.
  Establish standardized workflows from data modeling, deployment, to performance tracking.
- **Internal Capability Development and Talent Advancement:**
  Create cross-departmental AI co-creation mechanisms and internal training programs.
  Enhance non-technical staff's AI literacy and tool usage capabilities.
- **Strengthen Governance and Risk Management Frameworks:**
  Develop and institutionalize AI governance structures, including usage policies, risk management guidelines, and ethical review processes.
  Build systems that ensure compliance with data protection, model transparency, and explainability standards.

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