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GENERATIVE AI IN THE TAIWANESE JOB MARKET: A CROSS-OCCUPATIONAL ANALYSIS OF EMERGING SKILL DEMANDS

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Abstract

Adoption of ChatGPT and other large language models (LLMs) has stimulated interest in assessing how foundation-model competencies appear in current job advertisements across various fields and industries. This study investigates how Taiwanese job postings are integrating generative AI across distinct occupational families, focusing on the depth and nature of AI-related skill requirements. Drawing on a dataset of 628 postings, two complementary strategies are employed in order to assess both the prevalence and the specific skill sets associated with these technologies. The combination comprises frequency-based metric of AI references within each post and a targeted topic model isolating text specifically referencing generative AI. Results indicate that technologically oriented and creatively driven families, such as Computer and Mathematical and Arts, Design, Entertainment, demonstrate substantially higher mentions of foundation-model capabilities. In contrast, managerial and sales-centric roles tend to reference AI more sparingly. These findings suggest a widening skill gap in Taiwan's labor market, where requirements for AI proficiencies are particularly concentrated in fields already leveraging technical or creative expertise. The outcomes can guide university curricula, corporate training, and policy decisions aimed at cultivating relevant AI proficiencies across diverse occupational domains.

Keywords: generative ai, Chat GPT, Large language models

Introductıon

Generative AI technologies, especially LLMs like ChatGPT, have reshaped how organizations design, automate, and augment workforce tasks (Ahmadi et al., 2023; Brynjolfsson et al., 2023; Eloundou et al., 2023). Recent studies show that advanced LLM capabilities, including prompt engineering and fine-tuning, are increasingly relevant for many digital economy roles (Noy & Zhang, 2023; Felten et al., 2023), yet it remains unclear how pervasively these skill mentions have penetrated everyday job postings, and how this differs across various geographical locations and industries. While AI-centric positions in software development or data science often highlight specialized language-model tasks, non-technical occupations may reference model-based marketing, documentation, or research support (Chui et al., 2023). In Taiwan, known for its technology and manufacturing sectors, emerging evidence suggests growing employer demand for generative AI familiarity across diverse occupational categories, but precise skill emphasis has not been comprehensively examined. This research addresses that gap by analyzing a dataset from a major Taiwanese job board, focusing on both overall AI "centrality" and the specific advanced-skill sets invoked by each job family of roles.

Methodology

A dataset of 628 LLM-related job postings was mined from Taiwan's 104 job bank in February of 2025. Each job posting data contains a job title, description, and a specified job family classification derived from O*NET's standardized framework. Two complementary approaches were then used to assess the prominence, centrality, and nature of references to Generative AI.

First, a frequency-based measure of AI references was computed by identifying occurrences of keywords, and dividing by the total word count of each posting. This ratio provided a straightforward indicator of how explicitly each job entry discussed LLM-based tools. Second, a domain-specific topic model isolated sentences containing advanced AI terms and grouped them per job. This corpus was then subjected to Latent Dirichlet Allocation (LDA), yielding distinct skill sets, such as "management communication" or "advanced tech integration." Probabilities of each skill set were subsequently converted into fractions of the

job's overall text, enabling direct comparisons of how extensively each respective posting integrated these LLM-oriented functions.

To evaluate differences across occupational families, Kruskal-Wallis rank-sum tests were employed, with significant further examined through Dunn's post-hoc analyses. Job families containing a lower posting sample were noted but excluded from detailed interpretation. This design ensured that the analysis captured both the overall density of AI mentions and the specific skill sets emphasized in various Taiwanese occupations.

Fındıngs

The frequency-based measure indicated that Computer and Mathematical and Arts, Design, Entertainment, Sports, and Media families showed the highest concentrations of LLM references, whereas Management, Sales, and Office and Administrative Support roles rarely integrated foundation-model content. Kruskal-Wallis tests confirmed statistically significant differences among job families ($p < 0.0001$). Education and experience levels did not appear to influence AI usage, suggesting that these capabilities span various seniority tiers (Figure 1).

The topic-model approach revealed five skill topics interpreted as distinct AI-related competencies. Computer and Mathematical postings showed the highest average fraction of advanced AI tasks, reflecting coding with model-based solutions. Arts and Design roles focused more on content creation, marketing, and media. Educational Instruction indicated considerable attention to basic software and AI fundamentals, potentially to equip learners with emerging technology competencies (Figure 2).

Although families with very few postings (e.g., Legal or Healthcare) registered high average references, their small sample size limits generalization. Across both methods, more specialized AI capabilities clustered in technical and creative roles, while more traditional positions displayed only sporadic or minimal Generative AI usage.

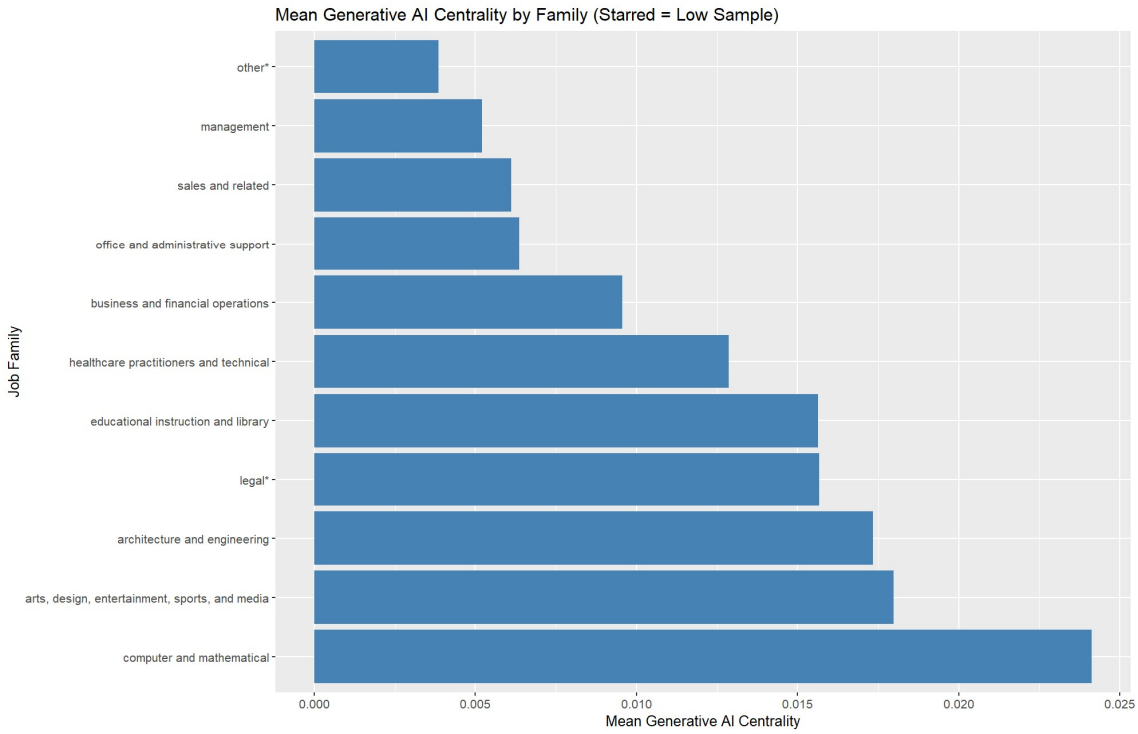

Figure 1. The mean of Generative AI Centrality across different job families of O*NET

Conclusıons

This study demonstrates that references to advanced AI requirements are most prominent in technical and creative occupational families, with Computer and Mathematical and Arts and Design roles exhibiting a stronger emphasis on model-based capabilities. Meanwhile, managerial, office, and sales jobs show weaker or largely absent LLM-related content. Although smaller job families occasionally yield intriguing results, caution is advised due to limited data. The lack of a clear link between AI usage and higher education or experience levels suggests that generative AI skills may be adopted by professionals across multiple seniority tiers.

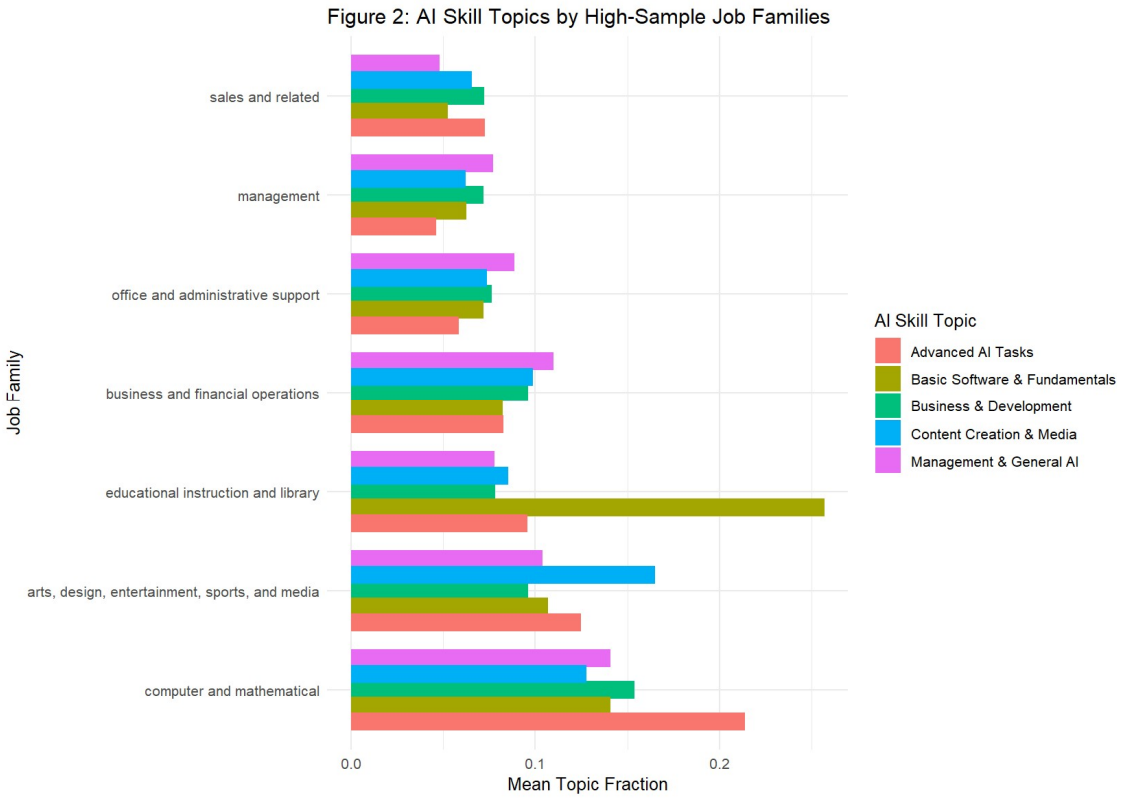

Figure 2. AI Skill Topics by High-Sample Job Families

These outcomes hold implications for education, reskilling programs, and the broader job market in Taiwan. Universities and training institutions can focus on AI-oriented curricula or certifications to prepare future workers for advanced technology tasks, while corporate stakeholders could adopt specialized reskilling initiatives to expand LLM proficiencies among traditionally non-technical roles. Media coverage also underscores these trends; for instance, The Atlantic (2025) highlights concerns over potential job displacement and rethinking the economic models underpinning AI adoption, while The Wall Street Journal (2025) describes a growing "AI talent race" reshaping the tech sector's job market. Future investigations could examine wage impacts of AI-intensive tasks, track the evolution of foundation-model requirements over time, and refine skill dictionaries to capture more nuanced occupational demands.

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