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NAVIGATING AI-DRIVEN SKILL CHANGE:

A COMPARATIVE ANALYSIS OF SEVEN JOB ROLES IN SINGAPORE AND UNITED STATES LABOUR MARKETS

Analysis of approximately 15.3 million job postings (2020–2025) identifies four key shifts in AI-driven skill demand, with implications for how organisations approach workforce development and adaptation.

July 2026

CENTRE FOR SKILLS-FIRST PRACTICES

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EXECUTIVE SUMMARY

This report, *Navigating AI-Driven Skill Change: A Comparative Analysis of Seven Job Roles in Singapore and United States Labour Markets*, examines how artificial intelligence (AI), particularly generative AI (GAI), is reshaping skill demand, job design, and workforce dynamics across two advanced economies —the US and Singapore.

Drawing on approximately 15.3 million job postings from 2020 to 2025, the analysis provides empirical insights into how employers are responding to AI-driven transformation at the task and skill level. The analysis compares pre-GAI (2020–2022) and post-GAI (2023–2025) periods to surface early evidence of AI-driven reconfiguration in job design.

The findings indicate that AI is not simply a source of disruption, but a catalyst for fundamental change in how work is structured and how talent is developed. For employers, the challenge is no longer whether to adopt AI, but how to redesign roles, build capabilities, and compete effectively in increasingly dynamic and globalised labour markets.

Four key shifts are particularly relevant for employers:

1. **Explicit AI skills signaling remain concentrated within a limited set of occupations, but such signaling declined in the post-GAI period.**
   This finding suggests that AI is increasingly integrated into tools and workflows rather than treated as a standalone skill.
2. **Skill requirements are changing faster in Singapore than in the US.**
   This shortens the window for firms and workers to adapt, and increasing the urgency for continuous skills development and agile job design.
3. **The share of entry-level roles in job postings has declined modestly in applied fields.**
   This reflects evolving hiring practices valuing practical experience including demonstrated skills, and workplace readiness, reinforcing the importance of equipping young entrants with industry-relevant skills and meaningful applied exposure before and during labour market entry.
4. **Skill requirements across the US and Singapore labour markets are becoming more similar.**
   As employers in both markets prioritise similar capabilities, competition for talent is intensifying and differentiation will increasingly rest on how organisations nurture, apply, and reward skills.

In response to these shifts, the report highlights 6 strategic priorities for employers:

Adopt a skills-first workforce strategy
to improve agility and alignment with evolving business needs

Embed continuous, work-integrated learning
to keep pace with rapid skill change

Redesign work using a human-centric approach
to optimise the value of AI-human collaboration

Strengthen entry-level pathways
to build talent pipeline and support long-term capability building

Proactively identify and address skill gaps
through data-driven workforce planning

Place emphasis on how skills are developed, deployed, and rewarded,
rather than technology adoption alone

The report highlights a fundamental shift towards skills-based competition in AI-driven labour markets. Static job roles and traditional hiring models are losing relevance as work becomes more dynamic. For employers, competitiveness in the AI era will hinge not only by technology adoption, but on cultivating a workforce that is resilient, adaptive, and prepared for the future.

CHAPTER 1

INTRODUCTION

Artificial intelligence (AI) is reshaping labour markets at a global scale. The International Monetary Fund estimates that around 40% of global employment will be impacted by AI, with the effects expected to be significantly more pronounced in advanced economies (IMF, 2024). In these economies, up to 60% of jobs are exposed to AI, reflecting their heavy reliance on cognitive- and knowledge-intensive work. With its widespread impact, AI also carries substantial productivity and growth potential. Goldman Sachs (2023) estimates that widespread adoption of such tools could raise global GDP by around 7%, or nearly US$7 trillion, and increase annual productivity growth by roughly 1.5 percentage points over a ten-year period. Recent developments also suggest that AI adoption is already influencing employment outcomes, with more than 50,000 job cuts globally linked to AI adoption (Dhar, 2025).

These projections suggest that AI represents not only a source of disruption, but also a powerful driver of economic transformation. Beyond questions of job loss or creation, AI is increasingly understood to be reshaping how work is organised and how skills are acquired. Recent research report "The Expertise Upheaval" by the Burning Glass Institute (BGI) argues that the most consequential labour market effects of generative AI (GAI) arise from its impact on learning curves: the pathways through which workers progress from entry-level proficiency to expert performance over time. In roles where expertise is accumulated gradually through experience ("Growth Roles"), GAI tends to automate foundational tasks, narrowing entry-level opportunities and weakening traditional career ladders. In contrast, in roles where productivity depends on front-loaded, codified knowledge ("Mastery Roles"), GAI can compress learning curves and lower barriers to entry, widening access to technical work (Sigelman et al., 2025).

While these dynamics are well documented using United States (US) labour market data, their relevance for other economies cannot be assumed. Differences in labour market structure, occupational mix, and skills governance may shape how AI-driven changes manifest in practice. A comparison between Singapore and the US is particularly useful because the two economies share key similarities while differing in important structural respects. Both are advanced, highly digitalised economies with strong exposure to AI and significant activity in sectors such as finance and manufacturing. At the same time, they differ in scale, labour market organisation, and approaches to skills development. These similarities make the comparison meaningful, while the differences provide analytical leverage to examine how AI-related changes in skills and hiring may manifest under different economic and institutional conditions.

This study builds on the conceptual framework established in “The Expertise Upheaval” (Sigelman et al., 2025) and extends it through a comparative analysis of job-posting data from Singapore and US. Using a task- and skill-level lens on employer job posting, the analysis examines how AI adoption is reflected in employer skill signalling, how quickly skill requirements are changing, and how these patterns differ across occupations and experience levels. The study focuses on seven roles across the manufacturing and finance sectors, two major pillars of economic activity in both countries. Among these roles, Software Developer spans both sectors, enabling comparison of AI-related skill dynamics across different occupational contexts. The analysis compares pre-GAI (2020–2022) and post-GAI (2023–2025) periods to surface early evidence of AI-driven reconfiguration in job design.

Specifically, the analysis highlights four emerging patterns:

1. Explicit AI skills signaling remain concentrated within a limited set of occupations, but such signaling declined in the post-GAI period.
2. Skill requirements are changing faster in Singapore than in the US, suggesting a shorter window for firms and workers to adapt, and placing greater pressure on training systems and job redesign to keep pace.
3. While the share of entry-level roles in job postings has moderated in some applied fields, hiring practices are evolving to value practical experience including demonstrated skills, and workplace readiness. This reinforces the importance of equipping young entrants with industry-relevant skills and meaningful applied exposure before and during labour market entry.
4. Skill requirements across the US and Singapore labour markets are becoming more similar, suggesting intensifying global competition for talent.

Drawing on large-scale labour market evidence, this report offers employers practical insights and recommendations on how workforce strategies can adapt to emerging shifts in job design, skills demand, and talent pipelines.

CHAPTER 2

METHODOLOGY

Data Source and Scope

This study draws on job-posting data from Lightcast (formerly Emsi Burning Glass), one of the largest providers of labour market analytics globally. Lightcast aggregates and structures millions of online job postings from employer career pages, job boards, and staffing agencies, extracting standardised fields including occupation, industry, required skills, and minimum years of experience. The dataset covers approximately 15.3 million job postings across Singapore and the US, spanning the period from January 2020 to December 2025.

To examine the impact of generative AI on skill demand, the data is divided into two periods: a pre-GAI period (2020–2022) and a post-GAI period (2023–2025). This division reflects the public release of ChatGPT in late November 2022 and the surge of interest in generative AI, marking a meaningful inflection point in employer awareness of AI capabilities and their potential implications for job design. Job postings are included in the analysis if they list a minimum experience requirement and contain at least three identified skills, ensuring sufficient information to support skill-level comparison.

Sector and Role Selection

The analysis focuses on two sectors—manufacturing and finance—which are major pillars of economic activity in both Singapore and the US. These sectors were selected because they represent substantial shares of GDP in both countries, employ large and diverse workforces, and encompass roles with varying degrees of exposure to AI-driven change. Industry classification follows the Singapore Standard Industrial Classification (SSIC) for Singapore and the North American Industry Classification System (NAICS) for the US. Occupations are classified using Lightcast's proprietary occupational taxonomy (LOT v7 Specialised Occupation).

Table 1: *Sample Overview: Posting Counts by Role and Period*

Role	SG Post-GAI	SG Pre-GAI	US Post-GAI	US Pre-GAI
Compliance Officer / Analyst	1810	3146	22429	29688
Data Analyst	1121	2577	18713	27110
Manufacturing Engineer	1101	1127	22997	22725
Process Engineer	1132	1266	10406	11295
Product Quality Engineer	1403	1309	18184	21236
Risk Manager	3317	6011	17479	26160
Software Developer	4793	6961	101790	153967

Seven occupations were selected across the two sectors, with Software Developer spanning both. In the finance sector, the roles examined are Software Developer, Data Analyst, Compliance Officer, and Risk Manager. In the manufacturing sector, the roles are Software Developer, Process Engineer, Product Quality Engineer, and Manufacturing Engineer. These roles were chosen to maximise variation in exposure to AI developments while maintaining sufficient sample sizes for robust comparison. To verify that these seven roles are representative of the broader skill landscape in each sector, the frequency with which individual skills appear in the selected roles was compared against their frequency across all roles in manufacturing and finance. The correlation between these two distributions was strong in both countries, confirming that the skill patterns observed in the selected roles closely mirror sector-wide skill demand.

Job postings are further segmented by experience level into three buckets based on the minimum years of experience stated by the employer: less than 3 years (entry-level), 3 to 5 years (early career), and 6 or more years (experienced). This segmentation enables the analysis to examine whether AI-driven skill changes differ across career stages.

Analytical Approach

The analysis examines how the skills demanded by employers have shifted between the pre-GAI and post-GAI periods. It draws on four principal measures, described below. Formal definitions are provided in the Technical Appendix in page 25.

Skill rate measures how frequently a given skill appears in job postings for a particular segment, defined by country, role, industry, experience level, and period. It is calculated as the share of postings in that segment that mention the skill, expressed as a percentage. The change in skill rate between the pre-GAI and post-GAI periods indicates whether demand for each skill has grown or declined.

Skills requirement change index captures the overall pace of skill change within a segment. This study employs three complementary measures. The first is an unweighted churn index, computed as the average absolute change in skill rates across all skills in a segment. The second is a prevalence-weighted churn index, which gives greater weight to skills that were more commonly requested before the emergence of generative AI, ensuring that shifts in widely demanded skills carry more weight than changes in niche ones. The third is a Term Frequency-Inverse Document Frequency (TF-IDF) top-25 turnover rate, which identifies the 25 most distinctive skills for each role-segment using a standard information-retrieval technique and then measures what share of those top-25 skills changed between periods. Together, these three measures offer a comprehensive view of skill dynamics: broad-based churn, shifts among economically significant skills, and stability among the skills most central to each role's identity.

Convergence and divergence analysis examines whether skill demand in Singapore and the US is becoming more or less similar over time. For each skill within a given role, the analysis compares the relative emphasis each country places on that skill in both the pre-GAI and post-GAI periods. Skills that do not appear in both countries for a given role are excluded. If the gap between the two countries narrows meaningfully, the skill is classified as converging; if the gap widens, it is classified as diverging; otherwise it is classified as stable.

Measuring AI Adoption

AI adoption in job postings is measured by tracking the combined mention rate of “Artificial Intelligence” and “Machine Learning” as explicitly listed skill requirements. This provides a conservative, direct indicator of employer demand for AI-related capabilities. By focusing on these two core terms, the measure captures intentional employer signalling of AI as a required competency, rather than incidental references to adjacent technologies or tools. While this approach may understate the full extent of AI-related skill demand—particularly in roles where AI is embedded through domain-specific platforms rather than listed as a standalone requirement—it offers a consistent and interpretable basis for cross-country and cross-role comparison.

Limitations

Several limitations should be considered when interpreting the findings.

1. First, job postings reflect employer signalling of desired skills rather than confirmed hiring outcomes or actual on-the-job skill use; they are an important but imperfect proxy for labour market demand.
2. Second, skills are extracted from unstructured posting text using Lightcast’s natural language processing (NLP) algorithms, which may not capture all relevant competencies or may occasionally misclassify skill mentions.
3. Third, the experience-level segmentation relies on the minimum years of experience stated in postings, which is itself an NLP-imputed field and may not precisely reflect the seniority of the eventual hire.
4. Finally, the pre-GAI and post-GAI period boundary coincides with the tail end of the COVID-19 pandemic recovery, meaning that some of the observed shifts in posting patterns may partly reflect post-pandemic labour market normalisation rather than AI-driven change alone.

Despite these caveats, the consistency of patterns across roles, sectors, and countries lends confidence that the trends identified in this study reflect meaningful structural shifts in how employers are responding to the emergence of generative AI.

CHAPTER 3

EMERGING TRENDS IN AI-DRIVEN SKILL DEMAND ACROSS SINGAPORE AND US

This chapter presents key insights on how AI is reshaping skill demand across Singapore and US, drawing on job-posting evidence from seven occupations in manufacturing and finance sectors between 2020 and 2025. While macroeconomic conditions, regulatory changes, and hiring practices shape job postings, our analysis indicates differences in both the nature and pace of change between the two economies, with potential implications for workforce development strategies.

These four interrelated trends are observed:

1. Higher employer demand for AI in selected roles, alongside variation in signalling across roles, creates both opportunities and workforce planning challenges.

2. The faster pace of skill change in Singapore relative to the US (2.4 times higher) points to the need for more rapid adjustment of job roles and skill requirements.

3. While the share of entry-level roles in job postings has moderated in some applied fields, hiring practices are evolving to value practical experience including demonstrated skills, and workplace readiness, reinforcing the importance of equipping young entrants with industry-relevant skills and meaningful applied exposure before and during labour market entry.

4. AI is accelerating similarity in skills requirements across Singapore and US, indicating intensifying global competition for talent.

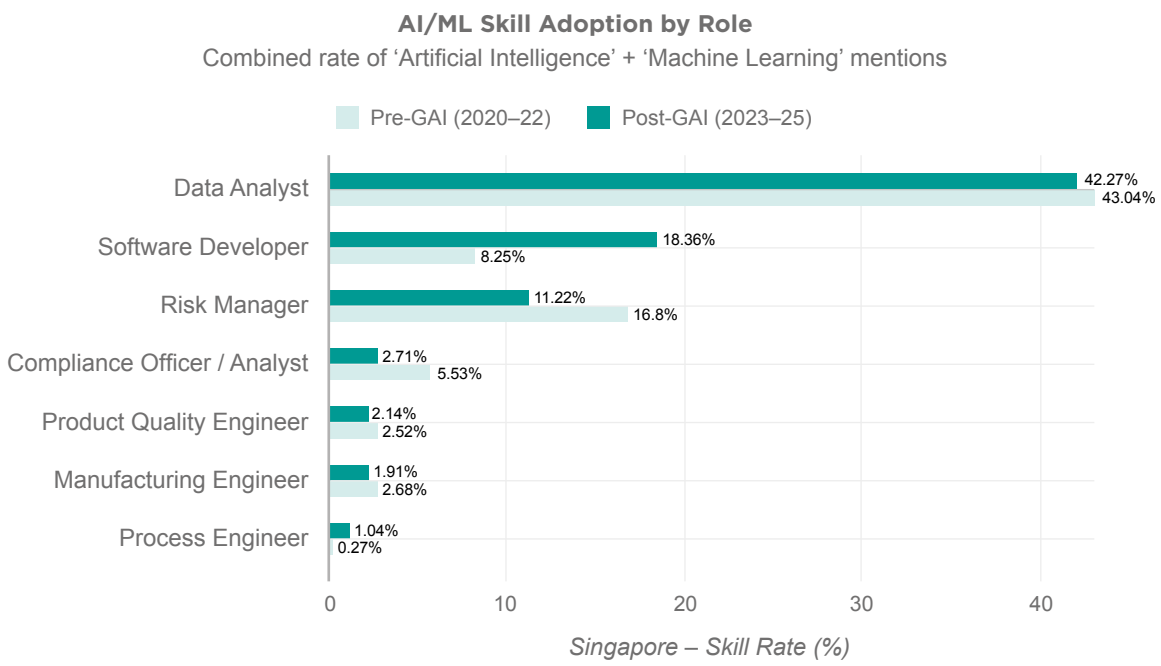
1 Higher employer demand for AI in selected roles, alongside variation in signalling across roles, creates both opportunities and workforce planning challenges.

Our analysis found that certain roles, such as Data Analyst, Software Developer and Risk Manager, have a higher employer demand for AI compared to the rest of the roles in Singapore (Chart 1). This pattern is observed in both pre-GAI and post-GAI periods, indicating that the explicit employer demand for AI-related capabilities remains concentrated within a limited set of occupations rather than diffusing broadly across occupational categories.

At the same time, AI/ML mention rates for several roles, including Risk Manager, decline in the post-GAI period. This suggests that the explicit signalling of AI skills in job postings has weakened over time. This trend may reflect a shift towards AI capabilities being embedded within domain-specific tools and workflows, reducing the need for such skills to be directly stated in job postings.

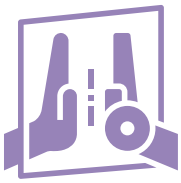
These observations likely reflect differences in how AI is used across roles. For roles such as Data Analyst and Software Developer, they are directly engaged in the development and application of AI systems, where AI-related skills are explicitly required and signalled. In contrast, in many other occupations (including Risk Manager), AI is more often applied through domain-specific tools and systems that support decision-making. As a result, AI may shape task execution without being explicitly signalled in job postings. This is consistent with OECD (Milanez, 2023) findings that AI adoption often manifests through task-level changes rather than explicit shifts in formally signalled skills, understating the extent to which AI is transforming a broader range of occupations. As AI technologies become increasingly embedded into these roles, these roles are evolving beyond traditional task execution towards AI-augmented performance models.

Chart 1: *Software Developers and Data Analysts Show Higher AI/ML Mention Rates of 18-42%, While Most Manufacturing and Engineering Roles Remain Below 6%*

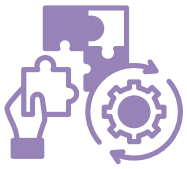


This increased exposure to AI presents significant opportunities and challenges for workforce planning. AI can automate and augment tasks which enables organisations to redesign work processes, raise productivity, and shift employees towards higher-value activities such as problem framing, validation of AI outputs, stakeholder engagement, and strategic interpretation.

At the same time, these developments carry several implications for workforce strategy:



Changing Competency Baselines
AI-related knowledge and application skills are increasingly expected as part of baseline job performance in digitally intensive roles. Employers may need to update competency frameworks to reflect evolving AI-enabled work practices.



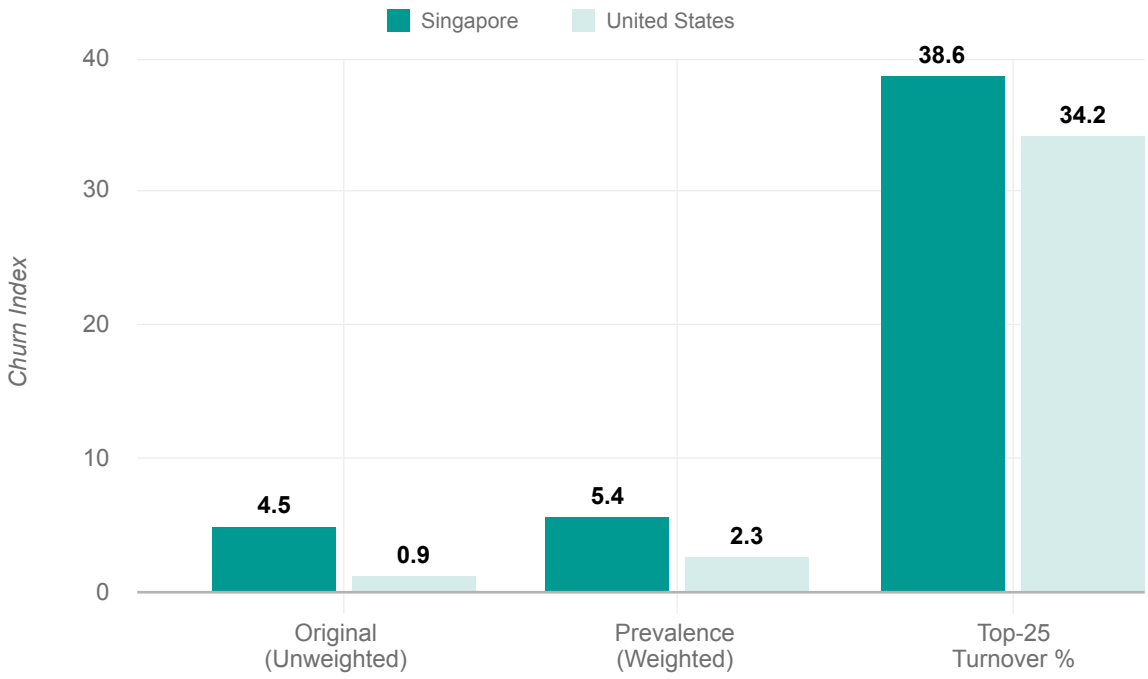
Reconfiguration of Task Composition
AI adoption alters how work is performed within roles. Routine tasks may decline in importance, while higher-order capabilities—such as critical thinking, validation of AI outputs, and cross-functional problem-solving—become more central.

Potential Skill Gaps and Talent Bottlenecks
Employers who continue to plan headcount and recruitment around traditional task-based definitions of roles may understate the speed at which AI-enabled competencies are becoming essential. This may result in hiring mismatches, delayed capability development, and reliance on external contractors to fill emerging gaps.

2 Faster pace of skill change in Singapore relative to the US (2.4 times higher) points to the need for more rapid adjustment of job roles and skill requirements.

Comparative analysis shows that Singapore's labour market is experiencing changing skill demands more rapidly than that of the US. The pace of change between the pre-GAI and post-GAI period is assessed using three approaches: (1) the unweighted rate of change in skill requirements, (2) a prevalence-weighted rate that accounts for how common each skill is, and (3) changes within the top 25 skills that most strongly define each role (role-defining skills). Across all three measures, Singapore consistently records higher rates of change than the US (Chart 2).

Chart 2: *SG Skills Requirements Are Changing Faster Than US Across All 3 Approaches*



At a headline level, the average change in skill requirements across roles is approximately five times faster in Singapore (4.5%) than in the US (0.9%) based on the unweighted measure. To ensure this result is not driven disproportionately by peripheral skills, we apply a prevalence-weighted measure that adjusts for how common each skill was initially. Even after this adjustment, Singapore's rate of change remains 2.4 times higher than the US (5.4% vs. 2.3%).

More importantly, when we further examine shifts within role-defining skills, we confirmed that the higher rate of skills change is not confined to peripheral skills. The role-defining skills are also changing between the pre-GAI and post-GAI periods (Chart 2 and 3). This is consistent with findings from a study by Workforce Singapore and SkillsFuture Singapore (2025) which indicate that all job roles across the Singapore economy are undergoing transformation, with 43% experiencing a high degree of change. These findings support that AI-era skill change is occurring on two fronts: through reshaping the overall mix of skills associated with an occupation and redefining the role-defining skills.

Chart 3: *Rate of Role-defining Skills Change by Role and Experience Level in Singapore and US (post-GAI vs pre-GAI)*

Turnover % 20 30 40 50 60

	Singapore			United States		
	<3 yrs	3–5 yrs	6+ yrs	<3 yrs	3–5 yrs	6+ yrs
Data Analyst	48%	60%	48%	44%	28%	52%
Manufacturing Engineer	36%	48%	56%	36%	32%	44%
Process Engineer	56%	44%	35%	32%	40%	44%
Risk Manager	40%	24%	32%	48%	36%	44%
Software Engineer	48%	32%	36%	30%	26%	30%
Compliance Officer / Analyst	36%	32%	28%	40%	16%	48%
Product Quality Engineer	28%	40%	14%	20%	16%	20%

Notably when drilled further into experience levels, roles of all levels show substantial shifts in their skill profiles with entry-level roles having the tendency to experience higher rates of skill change (Chart 3). This suggests that while entry-level roles may face more rapid skill turnover, skill requirements are evolving across all experience levels, indicating broad-based workforce transformation rather than isolated change at the entry level. Such changes have significant implications for employers. As skills evolve more rapidly, job roles and task compositions can no longer remain static. Roles that are reviewed only periodically risk becoming misaligned with actual work requirements, leading to skill gaps, productivity drag, and underutilisation of talent.

The accelerated pace of change increases the urgency for employers to move beyond one-off training initiatives towards continuous skills development. It also shifts the focus from static job descriptions to dynamic skill portfolios. In faster-moving environments, competitive advantage depends not just on acquiring new skills, but on rapidly redeploying and updating them.

RECOMMENDATION 1

ADOPT A PROACTIVE, SKILLS-FIRST APPROACH TO KEEP PACE WITH RAPID SKILL CHANGE

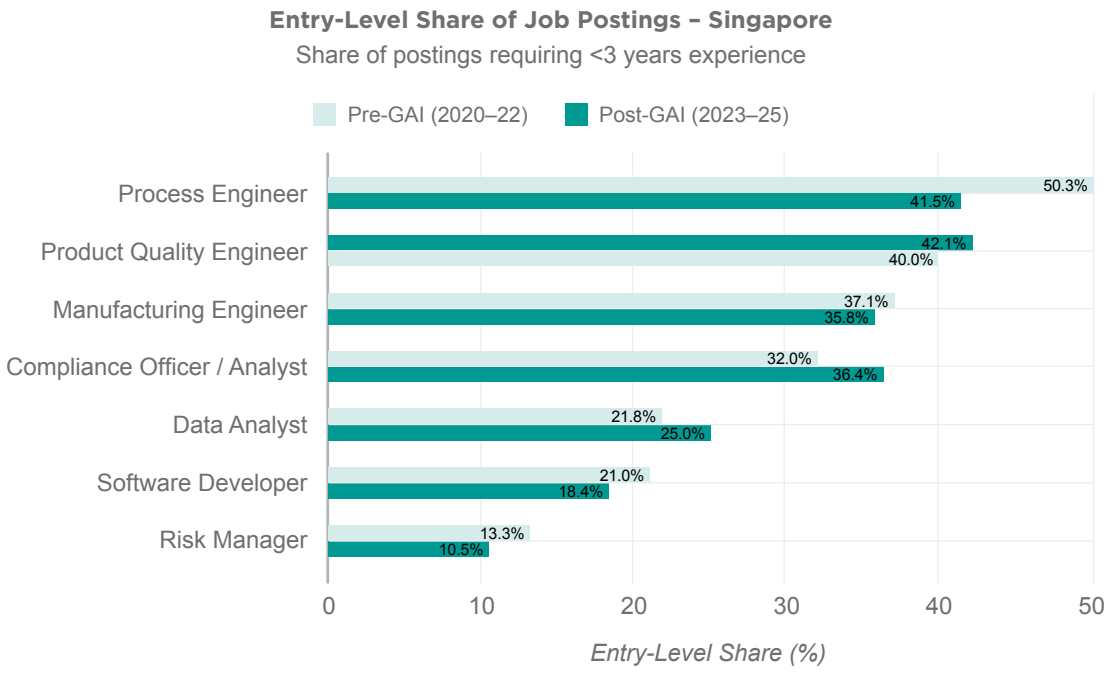
Employers should respond to the accelerated pace of skill change by treating work redesign, workforce upskilling, and skills-based hiring as continuous organisational practices rather than one-off initiatives. This calls for an ongoing review and refresh of roles, tasks, tools, and skills through the following actions:

- Review and update job roles and scopes more frequently to reflect evolving skill requirements.
- Prioritise upskilling, reskilling, and redeployment of capabilities that increasingly define job performance.
- Adopt a skills-first approach to workforce planning, ensuring hiring and deployment decisions are closely aligned with current and emerging skill needs.
- Enhance skills visibility through systematic internal skills mapping to identify emerging gaps early.
- Leverage AI technologies to capture productivity and innovation gains, while enabling employees to transition into higher value roles.

3 A decline in the share of entry-level roles in job postings reflects evolving hiring practices that place greater emphasis on experience, reinforcing the importance of equipping young entrants with practical, industry-relevant exposure before and during labour market entry.

The share of entry-level roles in job postings have declined modestly in both Singapore and the US in the post-GAI period. The reduction is slightly larger in Singapore (approximately −1.0 percentage point) than in the US (approximately −0.4 percentage point). Although these changes are small in magnitude when compared through percentage points, a clearer pattern emerges when examining changes in posting volumes by experience level. Across roles in more applied fields, postings volumes requiring less than 3 years of experience declined significantly (Chart 4), particularly in roles such as Process Engineer, Manufacturing Engineer, Software Developer, and Risk Manager. Taken together, their consistency across countries and significant volume suggests a structural shift rather than cyclical variation.

Chart 4: *Entry-level Share In Singapore Declined (Singapore: -1.0pp). Effect Is Consistent Across Both Countries*



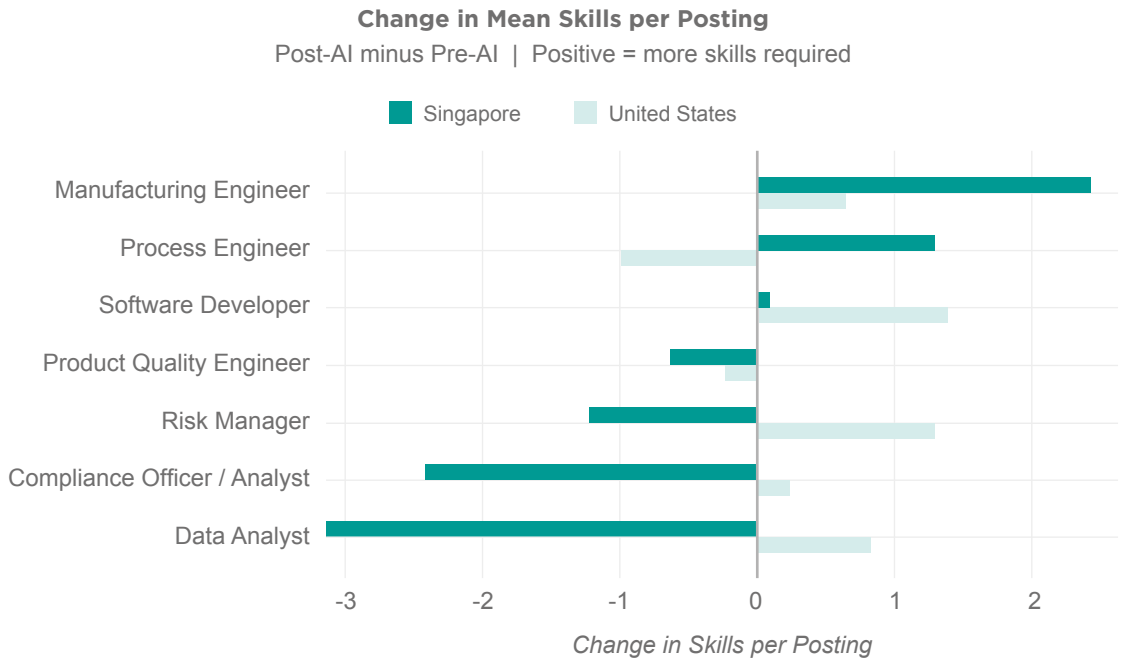
Rather than indicating widespread displacement of junior workers, these patterns suggest that employers are increasingly optimising their hiring decisions towards job seekers with practical experience that can deliver immediate value and effectively integrate AI into their work. This aligns with insights from the Burning Glass Institute's *The Expertise Upheaval* (2025), which highlights that AI can reduce demand for entry-level roles in occupations where skills are typically developed through on-the-job learning, by automating foundational tasks and compressing traditional career pathways.

While this approach may enhance short-term productivity and reduce onboarding costs, it also has longer-term implications for workforce sustainability. A sustained reduction in entry-level opportunities limits early-career development and narrows the future talent pipeline, particularly for roles that are becoming more AI-enabled. Over time, this may increase the risk of skills shortages as demand for advanced and AI-complementary skills continues to grow.

Additionally, job postings in Singapore for knowledge-worker roles (i.e. Data Analyst, Compliance Officer, Risk Manager and Product Quality Engineer) listed fewer required skills on average in the post-GAI period than in the pre-GAI period, while roles in US listed a similar or slightly higher number skills (Chart 5).

This decline in the number of skills demanded by Singapore employers may reflect AI-driven task consolidation, where routine analytical or compliance tasks are automated or bundled into higher-level roles. It may also reflect rising baseline expectations, whereby employers assume certain foundational skills and therefore signal fewer explicit requirements.

Chart 5: *Mean Number of Skills Per Posting, Pre-GAI vs Post-GAI. Singapore's Data Analyst (-3.1) And Compliance (-2.4) Show Notable Declines; US roles Are Stable Or Slightly Increasing*



Regardless of the factors driving these trends, the implications are similar: entry-level roles increasingly function as thinner gateways into occupations. Even modest, sustained reductions in junior hiring and skill articulation can weaken early-career skill accumulation over time, posing risks to talent pipeline development without necessarily leading to immediate job losses.

RECOMMENDATION 2

ADAPT TALENT PIPELINE STRATEGIES ALONGSIDE AI

To balance short-term capability needs with long-term workforce sustainability, employers would benefit from complementing hiring approaches that prioritise immediate role readiness with measures that support talent development over the longer term, including:

- Redesigning roles and work processes to create clearer entry and progression pathways
- Providing targeted training and structured learning for early-career workers

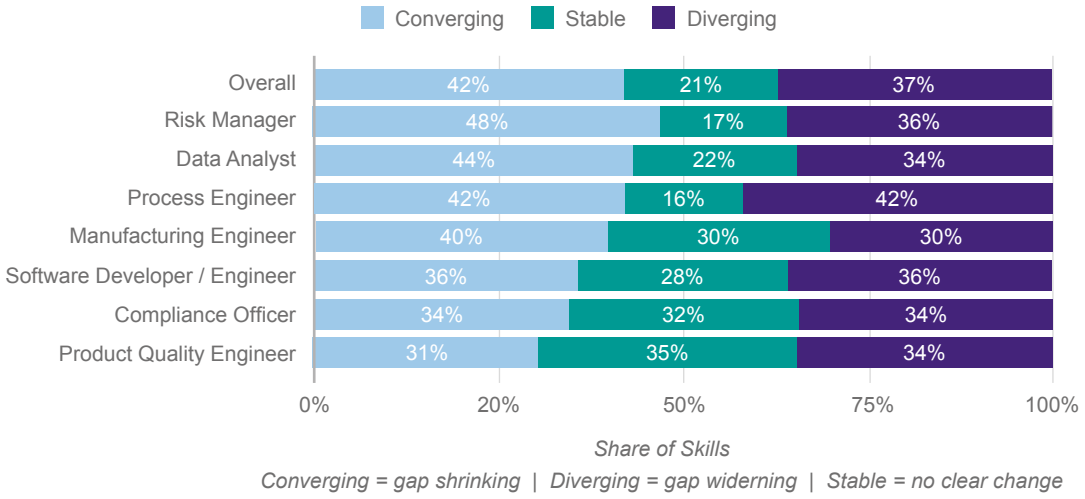
Together, these approaches can help employers maintain a steady flow of skilled talent, support workforce renewal, and reduce the risk of future skills constraints.

4 AI is accelerating similarity in skills requirements across SG and US, indicating intensifying global competition for talent

The analysis shows growing similarity in skills sought after by employers in both Singapore and the US (Chart 6). This is assessed by tracking how differences in skill demand between the two markets evolve from the pre-GAI to post-GAI period. A narrowing difference indicates that skill demand is converging and becoming more aligned, while a widening difference suggests increasing divergence. Where differences remain largely unchanged, skill demand is considered stable.

As AI scales across sectors, employers in both markets are prioritising comparable capabilities, such as data literacy, AI fluency, complex problem-solving, and cross-functional collaboration, resulting in a measurable alignment of skill profiles.

Chart 6: *Growing Convergence in Skills Requirements between Singapore And US*



As the underlying skills demanded by employers become more alike, these capabilities become more transferable across labour markets. This reduces the extent to which geographical boundaries differentiate labour demand and signals intensifying global competition for talent. Workers equipped with in-demand, AI-adjacent skills can more readily transition across markets, whether physically or virtually, contributing to greater cross-border mobility and competition.

In this context, employers are less able to differentiate themselves solely on the basis of the skills they require. When competing organisations seek largely similar skill sets, traditional job specifications offer limited strategic advantage. Instead, differentiation shifts from what skills are required to how those skills are developed, deployed, and rewarded within the organisation.

As skill requirements converge, leading employers are more likely to distinguish themselves by their ability to anticipate emerging skill shifts, redesign roles around evolving capabilities, and embed structured career pathways that reflect skills progression rather than static job titles. Firms that invest in continuous skills development, provide transparent, skills-based advancement opportunities, and align rewards with demonstrable capabilities are better positioned to attract and retain talent in an increasingly globalised labour market.

RECOMMENDATION 3

ADOPT SKILLS-FIRST PRACTICES TO STRENGTHEN DIFFERENTIATION

As skill requirements converge across markets, employers may find it harder to differentiate themselves solely through the skills they list in job postings. Competitive advantage is increasingly likely to come from how effectively organisations identify, develop, deploy, and reward skills within their workforce. Employers can strengthen their position by aligning hiring, workforce deployment, and development decisions around current and emerging skill needs. This includes:

- Using labour market intelligence, such as the SkillsFuture Singapore Jobs-Skills Portal, to track emerging roles and skill needs.
- Redesigning roles and career pathways around capabilities rather than job titles alone.
- Making skills development and progression visible through training, internal mobility, and advancement criteria.

CHAPTER 4

RECOMMENDATIONS FOR EMPLOYERS

As AI transforms job design and skill demands, employers play a pivotal role in shaping adaptive, inclusive, and resilient labour markets.

The recommendations below address four interconnected shifts identified in this report:

1. The change in explicit AI skills signaling
2. The reconfiguration of tasks within jobs
3. The acceleration of skill change
4. The convergence of skill requirements across labour markets.

Together, these changes demand a strategic reorientation of workforce practices, towards agility, inclusiveness, and shared value creation in AI-enabled work environments.

1 ‣ Adopt a skills-first approach to workforce strategy

The transition to AI-enabled work calls for a move beyond traditional job-based workforce planning towards a skills-first approach. As tasks evolve, competitive advantage depends increasingly on how effectively employers identify, develop, and deploy skills, rather than on fixed job titles or qualifications. A skills-first strategy enables faster adaptation to changing task compositions, reduces recruitment mismatches, and supports cross-functional collaboration.

Employers should:

- Use labour market intelligence and advanced analytics to anticipate emerging roles, transferable skills, and cross-sector demand trends.
- Redesign organisational structures, job profiles, and career pathways around dynamic skill sets rather than static job titles.
- Combine AI capabilities with human expertise by structuring roles that balance automated efficiency with human judgement, ethical oversight, and creativity.

2 ‣ Move towards continuous and work-integrated skills development

The half-life of skills continues to shorten, particularly in digital and analytical domains. Traditional models of periodic training are increasingly inadequate. Employers must foster a culture of continuous capability development, embedding learning within daily workflows so that employees strengthen their capabilities alongside technology.

Employers should:

- Introduce work-integrated learning systems such as on-the-job microlearning, mentoring, and digital learning platforms linked to specific workflows.
- Prioritise meta-skills such as critical thinking, problem framing, communication, and the validation of AI outputs—skills that underpin long-term adaptability.
- Institutionalise regular reviews of skill profiles and task structures to ensure alignment with evolving human-AI interaction patterns.

3 ‣ Adopt human-centric work redesign alongside AI adoption

AI adoption creates opportunities to enhance productivity but also risks displacing human-centred value creation if not thoughtfully integrated. Employers should pursue human-centric work redesign, ensuring that automation augments human capability to create value for both organisations and employees. Work redesign should focus on optimising the interplay between technology and the distinct strengths of human workers: empathy, contextual reasoning, and complex problem-solving.

Employers should:

- Map organisational tasks to identify which can be automated, augmented, or retained as human-led.
- Redesign workflows to integrate AI into operational processes, enabling employees to focus on higher-value work.
- Shift employee focus towards higher-value activities such as analysis, interpretation, ethical oversight, and stakeholder engagement.

4 ‣ Strengthen entry-level pathways to support long-term capability development

AI-driven restructuring can unintentionally narrow entry routes for new labour market entrants, particularly in knowledge-intensive sectors where automation removes routine tasks that formerly served as learning platforms. Sustaining innovation and inclusiveness requires preserving and redesigning entry-level pathways that build foundational skills and promote career mobility.

Employers should:

- Build structured entry and progression pathways that reflect evolving skill needs and technological contexts.
- Provide guided exposure to AI-enabled work through apprenticeships, rotational programmes, and project-based learning.
- Reframe entry-level roles as developmental stepping stones rather than purely operational positions.

5 ‣ Anticipate and address emerging skill gaps

Effective skill strategies depend on early detection and proactive management of skill mismatches. Employers with robust internal skills mapping and forecasting processes are better positioned to redeploy talent and maintain workforce resilience as AI evolves.

Employers should:

- Implement comprehensive skills inventories to map existing workforce capabilities and identify emerging gaps.
- Use scenario planning and data-driven analytics to project future skill requirements and inform strategic workforce planning.
- Adjust training and deployment decisions dynamically to ensure consistent alignment between human and technological capabilities.

6 ‣ Place emphasis on how skills are developed, deployed, and rewarded

As AI drives greater convergence in skill requirements across industries, differentiation will increasingly rest on how organisations nurture, apply, and reward skills. Future competitiveness will hinge not on exclusive technical expertise, but on creating environments where skills can thrive and continually evolve.

Employers should:

- Establish transparent skill-based career pathways, linking recognition and promotion to demonstrable competencies and impact.
- Cultivate organisational cultures and management practices that empower employees to apply emerging skills effectively within AI-enabled workflows.

TECHNICAL APPENDIX

This section provides the formal definitions of the measures described in the report.

Skill rate

$Skill\ Rate = (n / N) \times 100$, where n is the number of postings mentioning the skill and N is the total number of postings in the segment. The change in skill rate between periods is $\Delta r = rate_{post} - rate_{pre}$.

Prevalence-weighted churn

$Churn_{weighted} = \Sigma(|\Delta r| \times r_{pre}) / \Sigma r_{pre}$, where Δr is the change in skill rate and r_{pre} is the pre-GAI skill rate.

TF-IDF

$TF\text{-}IDF = Skill\ Rate \times log(N_{roles} / n_{roles\ with\ skill})$, where N_{roles} is the total number of roles and $n_{roles\ with\ skill}$ is the number of roles in which the skill appears. The top-25 turnover rate measures the share of these top-ranked skills that differ between periods.

Convergence ratio

For each skill within a role, skill rates are first aggregated to the role level using a posting-weighted mean across industry and experience segments. The $\log_2$ ratio of Singapore's skill rate to the US' skill rate is then computed for each period, with a smoothing constant ($\varepsilon = 0.1$) added to both rates to handle near-zero values. Skills are classified as converging, diverging, or stable based on whether the absolute gap narrows or widens by more than 0.1 between periods.

Aggregation

All measures are computed at the segment level, defined by the combination of country, role, industry, experience level, and period. Each country has 24 such segments (8 role-industry pairings across 3 experience levels). Country-level headline figures are the unweighted mean across all 24 segment-level values, ensuring that each role-industry-experience combination contributes equally.

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