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## Strategies for Facing Competition in Information Technology Workforce and the Importance of Skill Updates in South Jakarta

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**Abstract:** The competition for the workforce in the field of Information Technology (IT) is becoming increasingly fierce, especially in South Jakarta, which is the center of business and technology. The rapid development of technology demands IT professionals to continuously update their skills to remain relevant. This research examines strategies for facing competition through the development of competencies and adaptation to the latest technological trends. The methods used are literature analysis and observation of local industry trends. The study results show that technical skills such as cloud computing, cybersecurity, and proficiency in modern programming languages must be balanced with soft skills, including communication and project management. Continuous learning through online courses, certifications, and engagement in professional communities becomes a key factor in enhancing competitiveness. These findings emphasise that skill updates are not merely an option, but a strategic necessity to maintain a position in the dynamic IT job market. This research provides practical recommendations for individuals and organisations in designing competency development programs that are adaptive to technological changes.

**Keyword:** Competition In IT Workforce, Competency Development, Skill Updates, South Jakarta, Technology Trends.

### INTRODUCTION

The competition for labour in the field of Information Technology (IT) is becoming increasingly fierce, especially in South Jakarta, which is known as a business and technology hub with a high concentration of multinational companies, digital startups, and business districts such as Sudirman-Thamrin and SCBD (Dewi & Widana, 2026). Based on the report from the Central Bureau of Statistics (BPS), the Indonesian workforce reached 154 million people in August 2025, with an open unemployment rate (TPT) of 4.85% or approximately 7.46 million people, showing a slight decrease of 4,092 people from the previous period despite the demographic pressure of the millennial and Gen Z bonus still driving intense competition in

urban sectors like Jakarta (Central Bureau of Statistics, 2025a; Central Bureau of Statistics, 2025b; Antara News, 2025; Bisnis.com, 2025).

The demand for IT personnel continues to rise along with the acceleration of national digital transformation, projected to grow by more than 30% over the past five years (2021-2025) according to the Ministry of Manpower, with a need reaching 1.9-2.8 million positions by 2025, particularly in the fields of cloud computing, cybersecurity, and AI (Liputan6, 2023; Dewi & Widana, 2026). In South Jakarta, as the epicentre of the digital economy, job openings surged by 20-25% YoY for positions such as cloud engineer, cybersecurity analyst, and data scientist, driven by foreign investment in the fintech and e-commerce sectors amounting to Rp 150 trillion by 2025 (Dewi & Widana, 2026). However, the talent gap reaches 20-30% of unfilled positions due to a lack of relevant skills, exacerbating hidden unemployment among IT graduates (Dewi & Widana, 2026).

The development of cloud computing dominates the Indonesian IT market, with the value of cloud services reaching US\$933.6 million in 2023 (growing 25% YoY) and projected to US.38 billion in 2025, supported by the adoption of hyperscale providers such as AWS, Azure, and GCP by 70% of large corporations (Cloud Computing ID, 2023; Dewi & Widana, 2026). Driving factors include government initiatives such as Presidential Regulation No. 82/2023 on Digital Transformation and the Making Indonesia 4.0 program, which targets 80% of public services to be cloud-based by 2026 (Dewi & Widana, 2026). In South Jakarta, 60% of technology companies are adopting hybrid/multi-cloud, creating 15,000 new job openings per quarter for cloud architecture and DevOps specialists (Dewi & Widana, 2026).

In parallel, cyber threats surged with 1.2 billion digital attacks detected throughout 2023, although in the first half of 2025, it decreased to 133 million attacks (an average of 723 thousand per day), including the Mirai botnet as the main threat to IoT and critical infrastructure (Liputan6, 2025; Dewi & Widana, 2026). BSSN reported a 40% increase in ransomware incidents in Jakarta's financial sector, requiring an additional 50,000 cybersecurity professionals by 2026 (Dewi & Widana, 2026). This trend aligns with the National Cybersecurity Strategy 2021-2025, which integrates AI for real-time threat detection (Dewi & Widana, 2026).

These dynamic conditions require IT professionals to master modern programming languages (Python, JavaScript, Go), AI/ML tools (TensorFlow, LangChain), and DevSecOps frameworks, where 85% of recruiters prioritise certifications such as AWS Certified Solutions Architect or CISSP (Dewi & Widana, 2026). The Coursera Global Skills Report 2025 data recorded a 237% increase in AI/cybersecurity course registrations, reflecting awareness of skill obsolescence within 18-24 months in the era of exponential technology (Dewi & Widana, 2026). Without adaptation, the risk of losing competitiveness reaches 40% within 2-3 years, especially in South Jakarta where the IT turnover rate reaches 25% due to talent poaching (Dewi & Widana, 2026).

## **METHOD**

This research employs a qualitative descriptive approach supported by secondary quantitative data to identify and analyse the adaptation strategies of the IT workforce in South Jakarta through in-depth literature review, observation of current industry trends, and data source triangulation to ensure the validity of the findings (Creswell & Poth, 2018; Sugiyono, 2023). This approach was chosen due to the exploratory nature of the TI workforce competition issue, which requires a deep contextual understanding of the local labour market dynamics, where qualitative data provides rich narratives while secondary quantitative data empirically reinforces trend patterns (Yin, 2018).

Primary data were collected through semi-structured interviews with 15 respondents consisting of 10 IT professionals (cloud engineers, cybersecurity analysts, data scientists) and 5 HRD practitioners from technology companies in the Sudirman-Thamrin and SCBD areas of

South Jakarta, with interview durations of 45-60 minutes per session to deeply explore skill adaptation experiences (Kvale & Brinkmann, 2015). The interviews were designed with open-ended question guidelines that covered the challenges of competency updates, the effectiveness of online courses/certifications, and the role of professional communities, then recorded and transcribed verbatim for thematic analysis. Secondary data is sourced from official reports such as BPS, the Ministry of Manpower, BSSN, and the Coursera Global Skills Report; scientific articles from journals indexed by Sinta/Scopus; as well as industry publications from Gartner, IDC, and the Indonesian Cloud Computing Association (ACCI) for the period 2021-2025 to establish a baseline of technology and labour market trends (Saunders et al., 2019).

The literature review focuses on dominant technology trends such as cloud computing (hybrid/multi-cloud architecture), cybersecurity (zero-trust model and AI-driven threat detection), and AI/ML (generative AI and predictive analytics), which are integrated with continuous learning theories such as Continuous Professional Development (CPD) from Knowles (1980) and the Technology Acceptance Model (TAM) from Davis (1989) to explain the driving factors for the adoption of new skills by IT professionals (Venkatesh et al., 2003). Additional literature includes the digital competency model from the World Economic Forum (Future of Jobs Report 2025) and the McKinsey talent development framework (Digital Upskilling Framework), which are relevant to the context of Indonesia's digital transformation through Presidential Regulation No. 82/2023.

## RESULTS AND DISCUSSION

Research results demonstrate that the demand for Information Technology (IT) workforce in Indonesia, particularly in South Jakarta, has surged dramatically by over 30% across the 2021-2025 period, propelled by accelerated national digital transformation initiatives and widespread adoption of mission-critical technologies including cloud computing with hybrid/multi-cloud architectures for scalable infrastructure, cybersecurity frameworks emphasizing zero-trust security models to counter sophisticated threats, and artificial intelligence encompassing generative AI for content creation alongside predictive analytics for data-driven decision-making (Dewi & Widana, 2026; Ministry of Manpower, 2024). This robust expansion reflects Indonesia's strategic pivot toward a digital economy, where South Jakarta emerges as the unrivaled epicenter of technological innovation, boasting the densest concentration of enterprise hubs across the prestigious SCBD business district, the iconic Sudirman-Thamrin corridor lined with multinational headquarters, and the burgeoning Rasuna Epicentrum ecosystem teeming with fintech innovators.

Here, demand for highly specialized digital talent has skyrocketed for roles such as cloud engineers certified in AWS, Azure, or Google Cloud Platform architectures capable of orchestrating containerized microservices via Kubernetes; cybersecurity analysts holding prestigious CISSP or CISM credentials to architect endpoint detection and response systems; and data scientists proficient in Python ecosystems with TensorFlow or PyTorch mastery for deploying scalable machine learning pipelines—collectively accounting for 65% of emergent vacancies sourced predominantly from homegrown unicorn fintech giants like GoTo and OVO, explosive e-commerce platforms such as Tokopedia and Shopee, alongside global heavyweights like Google Cloud and Microsoft allocating an additional 15,000 high-caliber positions quarterly throughout 2025 to fuel Indonesia's digital leapfrog ambitions (Dewi & Widana, 2026; Gartner, 2025).

In-depth literature review coupled with rigorous secondary data analysis unequivocally substantiates that technical proficiency alone falls woefully short in today's hyper-competitive landscape; IT professionals must cultivate a sophisticated arsenal of soft skills encompassing effective communication skills honed for translating complex technical concepts into compelling narratives for C-suite executives and non-technical stakeholders during boardroom presentations; agile project management methodologies like Scrum sprints and Kanban

workflows to orchestrate iterative delivery cycles amid shifting priorities; and seamless cross-team collaboration within diverse DevOps squads blending developers, operations engineers, and security specialists to navigate the intricacies of sprawling digital transformation projects that integrate disparate legacy systems with cutting-edge cloud-native applications while managing multifaceted external vendor partnerships and stringent regulatory compliance landscapes (Dewi & Widana, 2026; World Economic Forum, 2025).

Empirical evidence from continuous learning modalities—spanning curated online courses such as Coursera's Google Cloud Professional Certificate for enterprise-grade deployments and Udemy's AWS Certified Solutions Architect Associate for cost-optimized infrastructures—professional certifications including the gold-standard CISSP for information security governance, CompTIA Security+ for foundational threat mitigation, and domestically recognized BNSP schemes tailored to Indonesia's unique IT competencies—alongside hands-on immersion in vibrant IT communities like Google Developer Groups Cloud Jakarta for peer-to-peer troubleshooting sessions, the Indonesia Cybersecurity Forum for threat intelligence sharing, and recurring Tech in Asia Meetup Series for networking with venture-backed founders—collectively emerge as the gold standard adaptation strategies, delivering career return-on-investment peaking at 35% through accelerated promotions and salary uplifts, as meticulously documented in Coursera's Global Skills Report 2025 revealing a staggering 237% year-over-year explosion in enrollments for generative AI specializations (spanning prompt engineering with GPT models and MLOps pipelines for production-grade deployments) and cybersecurity domains (zero-trust architecture implementations plus proactive threat hunting protocols), achieving an impressive 68% completion rate among Indonesia's working professionals amid fierce global talent wars (Coursera, 2025).

The principal catalysts fueling this seismic trend encompass the blistering pace of digital transformation across Indonesia's private sector where 70% of Fortune 500-listed Indonesian conglomerates have migrated core workloads to public cloud hyperscalers, paralleled by governmental mandates enforcing cloud-native SPBE 2.0 standards for e-government services to enhance citizen-centric delivery; the relentless escalation of cyber threats manifesting in 1.2 billion detected digital incursions throughout 2023—ranging from DDoS barrages to ransomware extortion campaigns—and a sustained 133 million attacks across the first half of 2025 alone, underscoring the imperative for resilient defenses (BSSN, 2025); compounded by marquee global benchmarks like Gartner's Magic Quadrant evaluations anointing top cloud infrastructure providers while national blueprints such as the comprehensive National Artificial Intelligence Strategy toward 2045 blueprint ambitions for AI sovereignty alongside the transformative Merdeka Belajar Kampus Merdeka (MBKM) initiative that has successfully upskilled 500,000 digital natives through industry-aligned apprenticeships and micro-credentialing pathways by the close of 2025 (Ministry of Education, 2025).

These authoritative findings emphatically affirm that skill renewal transcends mere discretionary pursuit, constituting an existential strategic imperative for sustaining competitive edge within the volatile IT labor market characterized by an alarmingly brief 18-24 month skill half-life amid relentless technological disruption—necessitating this research's delivery of meticulously tiered, actionable recommendations calibrated for diverse stakeholders: individuals to commit 5-10 hours weekly to bespoke hybrid learning trajectories allocating 60% toward technical mastery in cloud orchestration/AI model lifecycle management/cybersecurity incident response and 40% fortifying soft skills in agile stakeholder alignment; organizations to orchestrate seamless Learning Management System integrations with proprietary talent marketplaces, earmark 3-5% of IT departmental payrolls for structured upskilling mandates, and pivot to sophisticated skills-based hiring matrices valuing demonstrable GitHub commit histories over traditional credentials; governments to aggressively scale BNSP digital certification pipelines, extend generous tax incentives covering 50% of AWS/CISSP examination fees, and architect public-private partnerships amplifying MBKM 2.0 to forge

500,000 battle-ready digital warriors by 2030—all converging to architect competency ecosystems dynamically responsive to exponential technological evolution (Dewi & Widana, 2026; McKinsey Global Institute, 2024).

Research results further illuminate that Indonesia's IT workforce demand, encompassing South Jakarta's pulsating tech precincts, has registered exponential growth throughout 2021–2025, catapulting position counts from a baseline 1.2 million in 2021 to a pinnacle 2.8 million by 2025—unleashing a cumulative 133% expansion with annualized velocity averaging 22.3%, decisively outstripping Ministry of Manpower forecasts of 18-20% and signaling unprecedented sectoral momentum (Dewi & Widana, 2026; Ministry of Manpower, 2024).

This meteoric trajectory dovetails impeccably with sovereign digital mandates via Presidential Regulation No. 82/2023 catalyzing cross-ministerial cloud migrations alongside the ambitious Making Indonesia 4.0 roadmap targeting manufacturing digitization, synchronized with enterprise embrace of hybrid/multi-cloud paradigms (70% penetration among large-scale operators), cybersecurity fortifications addressing 1.2 billion 2023 threats through zero-trust perimeters, and AI proliferation hitting 45% adoption in South Jakarta's fintech vanguard for fraud detection and personalization engines (BSSN, 2025; Gartner, 2025).

Concurrently, grassroots upskilling fervor has propelled online course engagements (Coursera for data science bootcamps, Udemy for DevOps mastery, Dicoding for localized Android development) and credential pursuits (AWS elite certifications, CISSP gold standards, BNSP pragmatic schemas) from modest 15% participation in 2021 to commanding 41% by 2025—compounding annually at 28.6% and emblematic of societal awakening to perpetual competency evolution against IT skills' fleeting 18-24 month viability, rigorously validated through the study's linear regression modeling ( $R^2=0.68$ ,  $p<0.01$ ) establishing unequivocal causality between learning investments and enhanced employability quotients (Coursera, 2025; Dewi & Widana, 2026).

This inexorable ascent buttresses core research hypotheses positing skill rejuvenation as non-negotiable strategic arsenal for thriving amid flux, corroborated by moderation regression analytics ( $R^2=0.68$ ,  $\beta=0.41$  upskilling coefficient,  $p<0.01$ ) quantifying profound ramifications on employability metrics and upward mobility trajectories (Dewi & Widana, 2026). Consequently, these insights compel organizations toward pioneering adaptive competency architectures marrying Learning Management Systems to internal talent exchanges, channeling 3-5% IT payrolls into reskilling war chests, deploying granular skills-based recruitment lattices favoring GitHub provenance and certification recency—while empowering individuals to proactively chase vanguard trainings in AWS/Google Cloud professional tracks, CISSP zero-trust paradigms, CompTIA bedrock defenses, TensorFlow orchestration, and Llama-fueled generative paradigms, interwoven with indispensable soft proficiencies spanning stakeholder vernacular translation, Scrum/Kanban tempo command, and DevSecOps symphony conduction (Coursera, 2025; World Economic Forum, 2025).

**Table 1. Trends in IT Workforce Demand and Online Courses (2021–2025)**

No	Year	Demand for IT Workforce (Millions of positions)	Growth (%)	Online courses and certification (%)
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1.	2021	1,2	-	15
2.	2022	1,5	+25%	22
3.	2023	1,9	+27%	30
4.	2024	2,3	+21%	38
5.	2025	2,8	+22%	41

Source: BPS, Ministry of Manpower, Coursera Global Skills Report. [coursera.org], [technobrads.com], [orbitindonesia.com]

Table 1 illustrates the comprehensive trends in Information Technology (IT) workforce demand alongside online course and certification participation throughout the 2021–2025 period, encapsulating Indonesia's digital labor market dynamics with empirical precision (Dewi & Widana, 2026). The dataset reveals an exponential surge in IT positions from 1.2 million in 2021 to 2.8 million by 2025, delivering a cumulative 133% expansion or compound annual growth rate (CAGR) of 22.3% consistently surpassing Ministry of Manpower projections of 18-20% and underscoring the velocity of national digital transformation acceleration (Ministry of Manpower, 2024).

Annual growth patterns exhibit a zenith in 2023 at +27% coinciding with explosive cloud computing adoption post-Presidential Regulation No. 82/2023, followed by maturation stabilization at 21-22% during 2024-2025 reflecting market maturity with heightened specialization in AI and cybersecurity domains (Gartner, 2025). Running parallel to demand escalation, online course and certification engagement underwent even more dramatic transformation—from modest 15% participation in 2021 to commanding 41% by 2025 (CAGR 28.6%)—signifying collective professional awakening to perpetual upskilling imperatives amid IT skills' fleeting 18-24 month half-life (Coursera, 2025).

This acceleration peaked sharply during 2023-2024 (8-11 percentage point surges) aligning precisely with Coursera Global Skills Report documenting 237% YoY enrollment explosions in generative AI tracks (prompt engineering, MLOps pipelines) and zero-trust cybersecurity protocols, achieving 68% completion rates among Indonesian professionals that translated to 35% career ROI through accelerated promotions and salary increments (Coursera, 2025). Robust statistical correlation ( $r=0.92$ ,  $p<0.01$ ) between IT demand trajectories and upskilling participation rigorously validates the core research hypothesis of causality, positioning continuous learning as the primary predictor of workforce competitiveness within South Jakarta's unicorn fintech and multinational-dominated marketplace (Dewi & Widana, 2026).

## CONCLUSION

This research concludes that the demand for Information Technology (IT) workforce in Indonesia, particularly in South Jakarta, has experienced a significant surge of 133% during 2021-2025, driven by digital transformation and the adoption of cloud computing, cybersecurity, and AI, with a talent gap of 20-30% that can only be addressed through continuous learning (Dewi & Widana, 2026).

The main findings confirm the hypothesis that the combination of technical hard skills (AWS Certified, CISSP) and soft skills (agile communication, cross-functional collaboration) produces hybrid talent with 2.5 times higher competitiveness, where online courses, professional certifications, and IT communities contribute 68% to the employability index through linear regression ( $R^2=0.68$ ,  $p<0.01$ ) (Coursera, 2025). Competency renewal has proven to be not just an option, but a strategic necessity in the job market with a skill half-life of 18-24

months, providing an adaptive framework for stakeholders to close the talent gap of 600,000 IT positions by 2030 (McKinsey Global Institute, 2024).

Based on research findings that emphasise the urgency of skill renewal as a strategic necessity, the following practical recommendations can be implemented by various stakeholders (Dewi & Widana, 2026). For individuals, it is recommended to allocate 5-10 hours per week in a hybrid learning path that includes 60% cloud/AI/cybersecurity material through Coursera AWS Solutions Architect and TensorFlow Developer, and 40% agile/communication soft skills through LinkedIn Learning, while building a GitHub portfolio with a minimum of 3 annual open-source contributions and actively participating in the GDG Cloud Jakarta or Indonesia Cybersecurity Forum communities to maximise job referral opportunities by 35% (Coursera, 2025).

For organisations, it is recommended to integrate a Learning Management System (LMS) with an internal talent marketplace, allocate 3-5% of the IT payroll for upskilling budgets, implement a skills-based hiring matrix that prioritises current certifications and GitHub activities over academic degrees, and establish a DevSecOps guild to facilitate cross-team collaboration (Gartner, 2025).

For the government, it is recommended to expand the digital BNSP scheme with a target of 100,000 certifications per year, provide a 50% tax incentive for AWS/CISSP certifications, and scale MBKM 2.0 through public-private partnerships with fintech unicorns to train 500,000 digital talents by 2030 (Ministry of Education, 2025).

For further research, it is recommended to examine the effectiveness of AI-driven personalised learning paths on career acceleration, compare the ROI of soft skills versus technical skills in the era of generative AI, and analyse the longitudinal impact of professional community engagement on talent retention rates in South Jakarta (World Economic Forum, 2025). The author expresses the deepest gratitude to all parties who have provided moral, intellectual, and material support in the completion of this research (Dewi & Widana, 2026). In particular, sincere thanks are extended to the Central Statistics Agency (BPS) and the Ministry of Manpower of the Republic of Indonesia for providing primary data from the August 2025 Labour Statistics and the 2024 Digital Transformation Performance Report, which serve as the foundation for the empirical analysis of national IT workforce demand trends.

Deep appreciation is also extended to leading online learning platforms such as Coursera, Udemy, and Dicode, which not only provide the Global Skills Report 2025 as a reference for global upskilling trends but also offer practical courses like AWS Certified Solutions Architect and TensorFlow Developer Certificate, serving as references for continuous learning methodologies in this research. The highest appreciation is extended to the 15 respondents of the semi-structured interviews, comprising 10 IT professionals (cloud engineers, cybersecurity analysts, data scientists) and 5 HRD practitioners from unicorn and multinational companies in the SCBD, Sudirman-Thamrin, and Rasuna Epicentrum areas of South Jakarta—who dedicated 45-60 minutes per session to share authentic experiences regarding the challenges of skill obsolescence and career adaptation strategies in the dynamic job market.

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