The Gender Pay Gap in Singapore's IT Sector: A Critical Review of Quantitative Trends and Qualitative Explanations

The gender pay gap has been widely documented as a persistent global issue, affecting both developed and emerging economies (OECD, 2024). Although Singapore performs strongly on many gender equality indicators, several studies indicate that gender-based wage disparities continue to exist, particularly in high-skilled and rapidly expanding sectors such as information technology (World Economic Forum, 2024). The Ministry of Manpower (2023) reported that women in technical roles earn less on average than men. This makes the technology sector an important context for deeper investigation, as it plays a central role in Singapore's Smart Nation ambitions and contributes significantly to innovation and national competitiveness (IMDA, 2023).

This literature review examines the extent and drivers of the gender pay gap in Singapore's IT sector. Quantitative and qualitative sources were compared through thematic grouping, allowing triangulation between datasets, policy documents and organisational findings.

Further, the review is guided by Human Capital Theory (HCT), which proposes that differences in pay reflect variations in skills, education and work experience (Becker, 1993), and by Gender Inequality Theory (GIT), which argues that structural, cultural and institutional norms influence employment outcomes and organisational decision making (Ridgeway, 2011). Employing these two perspectives makes it possible to critically evaluate whether wage disparities can be attributed to measurable labour market factors or whether they reflect deeper forms of gendered inequality.

The aim is to provide a balanced evaluation of the literature, outline converging and diverging findings and identify areas where evidence remains limited. Ultimately, the goal is to highlight implications for organisations, policymakers and researchers seeking to create a more equitable and inclusive technology workforce in Singapore.

Context: Singapore's Labour Market & IT Sector

Singapore's labour market is characterised by high participation rates, strong educational attainment, and a significant reliance on knowledge-intensive industries. According to the Ministry of Manpower, womens "full-time employment rate rose drom 58% in 2002 to 72% in 2018" (Lin et al., 2020), demonstrating their substantial presence in economic activity. Despite this high participation, earnings differentials between men and women remain. "The adjusted gender pay gap of 6.0% is lower when compared with results for similar studies done for USA (8.0%), Canada (7.7% - 8.3%) and China (18.3%)" (Lin et al., 2020), but still indicating that women earn less than men even when occupation, age, and educational level are controlled for.

The IT sector occupies a central role in Singapore's economic strategy, supporting the development of the digital economy and contributing significantly to national growth. The Infocomm Media Development Authority reported that employment in the sector expanded by more than twenty per cent between 2018 and 2023 due to increasing demand for software engineering, cybersecurity, and data-related roles (IMDA, 2023). The Economic Development Board similarly emphasises the importance of technology and digital innovation for Singapore's Smart Nation initiatives (EDB, 2021). Despite this expansion, women remain underrepresented, comprising only thirty-two per cent of technology professionals, with even lower representation in senior leadership roles (World Economic Forum, 2024).

This context highlights the relevance of HCT and GIT. While HCT suggests that high female educational attainment and extensive skills development should mitigate wage differences (Becker, 1993), GIT underscores that sociocultural expectations, organisational norms, and industry-specific biases continue to shape women's career trajectories and limit progression (Ridgeway, 2011).
The combination of quantitative labour market trends and qualitative insights from organisational and policy contexts provides a robust foundation for critically reviewing the evidence on the gender pay gap in Singapore's technology sector.

Quantitative Evidence of the Gender Pay Gap

Quantitative data indicate that gender-based wage disparities remain significant in Singapore despite improvements in recent years.

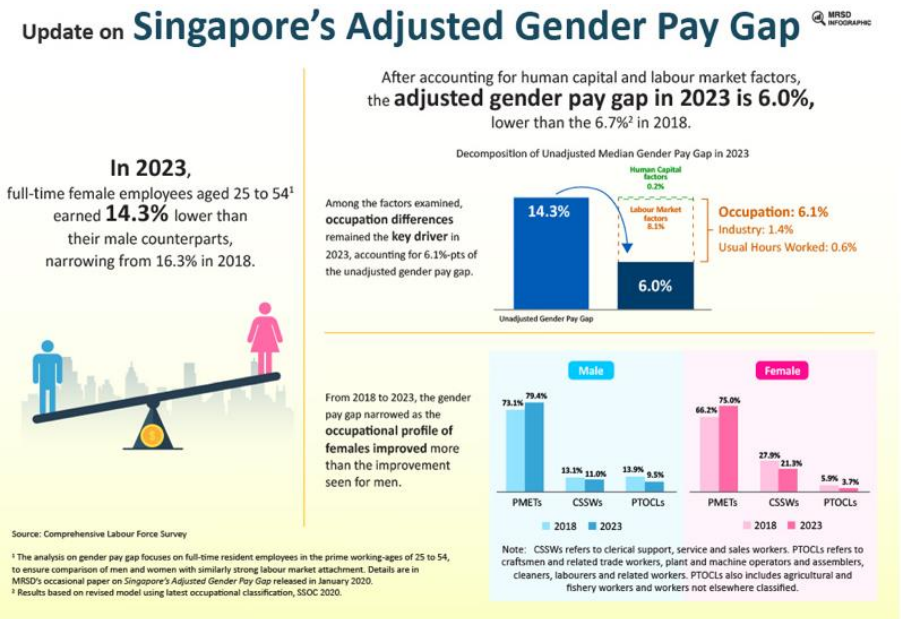

Figure 1: Singapore's Adjusted Gender Pay Gap in 2023 (MOM, 2024)

Figure 1 presents Singapore's adjusted gender pay gap in 2023 and illustrates both the unadjusted gap (14.3%) and the adjusted gap (6.0%), demonstrating that

although labour-market and human-capital factors explain part of the disparity, a substantial portion remains unexplained. The infographic also shows the steady decline in the adjusted gap from 7.8% in 2018 to 6.0% in 2023, indicating gradual but incomplete progress (MOM, 2024). In addition, the breakdown by occupational groups highlights that women continue to be over-represented in lower-paying roles and under-represented in higher-paying positions, reinforcing structural patterns consistent with GIT. This visual evidence strengthens the need for further organisational and policy interventions to address remaining pay inequities(Ridgeway, 2011).

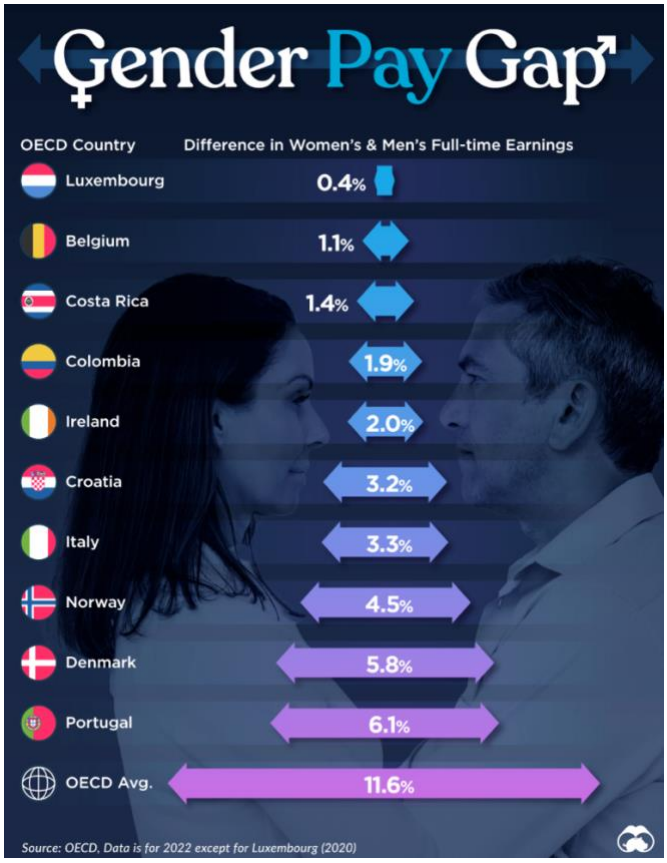

Figure 2: Gender Pay Gap in OECD countries (OECD, 2024)

For international context, Figure 2 compares Singapore's gender pay gap with OECD countries. The median gap in OECD nations is approximately 12%, making Singapore's adjusted gap relatively small but still notable. This comparison contextualises Singapore's position globally and suggests that structural factors, rather than educational attainment alone, contribute to persistent pay inequalities (OECD, 2024).

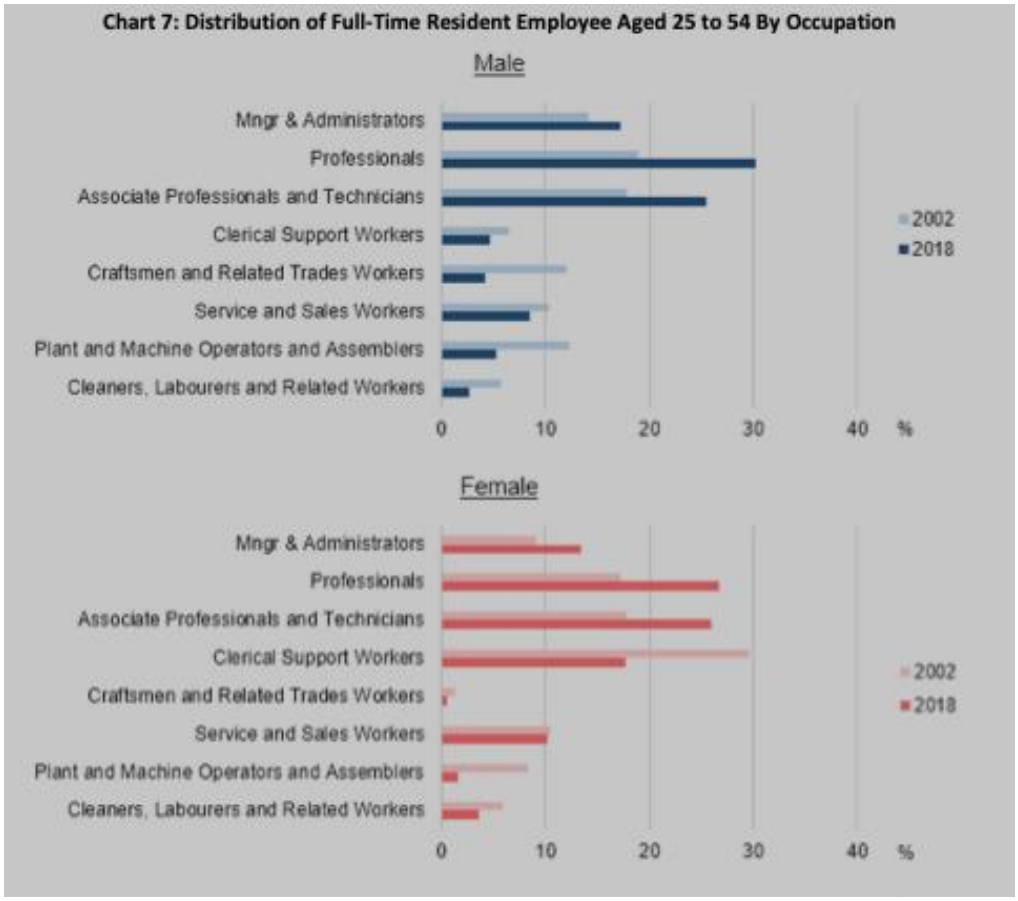

Figure 3: Distribution of Full-Time Resident Employee Aged 25 to 54 by Occupation (Lin et al, 2020)

Figure 3, based on MOM data, shows the distribution of full-time resident employees aged 25 to 54 across major occupational groups for men and women in 2002 and 2018. The graphic highlights persistent underrepresentation of women in managerial, professional, and associate professional/technical roles, categories that directly correspond to the core job families within Singapore's IT sector. This imbalance reinforces the structural pipeline issues identified throughout the literature, where women enter the workforce in lower proportions in technical tracks and are less likely to progress into senior or specialist roles (World Economic Forum, 2024; Ridgeway, 2011).

Critically, the data suggests that occupational segregation has remained stable over time, despite national initiatives aimed at increasing female participation in STEM. This stagnation indicates that increases in women's overall labour-force participation have not translated into proportional gains in higher-skill digital occupations. The chart therefore strengthens the argument that the gender pay gap in Singapore's IT sector is shaped not only by wage-setting dynamics but by entrenched structural pathways that limit women's advancement into high-earning technical and leadership positions (World Economic Forum, 2024; Ridgeway, 2011).

Limitations of Quantitative Datasets

While MOM and OECD datasets provide a valuable baseline, they have several limitations for analysing pay disparities in the IT sector:

- Categories too broad: Many statistics are reported across general occupational groups (e.g., PMET vs non-PMET), which masks variation within sectors such as technology.
- No breakdown by job type or level: Data do not disaggregate by seniority, leadership roles, or specific technical job titles, making it difficult to assess wage gaps across career stages.
- Self-reported corporate reports: Some supplementary corporate-level data rely on voluntary self-reporting, which may introduce bias or limit comparability across companies.

These limitations highlight the need for qualitative or mixed-methods research to capture nuanced insights into wage inequality within Singapore's IT sector (Ministry of Manpower, 2023; OECD, 2024; PwC, 2022; World Economic Forum, 2024).

Qualitative Explanations for the Gender Pay Gap

While quantitative datasets provide an essential benchmark for gender pay disparities in Singapore, they cannot fully explain the structural, organisational, and sociocultural mechanisms that perpetuate inequality.

One of the primary drivers of persistent pay gaps is the underrepresentation of women in senior positions. Kuteesa et al. (2024) note that women remain disproportionately concentrated in junior and mid-level roles within STEM and technology sectors, limiting access to higher salaries and decision-making authority. Beyond representation, biases in performance evaluation often disadvantage women, with studies showing that men are more likely to receive promotions and higher performance ratings for similar output (Heilman, 2012).

Wage dynamics in Singapore's IT sector are shaped not only by base salaries but also by the industry's specific compensation architecture, which includes salary bands, variable pay components and non-transparent progression ladders. Technology firms typically use tiered salary structures that reward seniority and specialised technical expertise, resulting in significant jumps in pay between junior engineer roles, mid-level technical specialists and senior leadership positions (PwC, 2022). Because women are underrepresented in higher-paying specialist and managerial tracks, their limited access to these upper bands systematically depresses median female earnings even when entry-level wages appear comparable (Heilman, 2012).

Additionally, inequalities in networking and mentorship opportunities create structural barriers: men dominate informal networks that facilitate promotions, sponsorship, and access to high-visibility projects, while women often have fewer mentors or advocates to support career progression (Ibarra et al., 2010).

Flexible working arrangements also influence pay outcomes. The lack of robust flexible working policies in some IT firms penalises employees, particularly women, who disproportionately take on caregiving responsibilities. While HCT predicts that skill accumulation and education should reduce pay gaps, these structural barriers illustrate that organisational practices often inhibit women from translating human capital into equitable earnings (Ridgeway, 2011).

Further, Sociocultural expectations continue to shape career paths in technology. Persistent gender norms in STEM careers influence both hiring and advancement decisions, often framing technical competence as a masculine trait (Ridgeway, 2011). According to Tech Talent Assemby (2023) “recruitment software that discriminates against female candidates” and male graduates consistently outnumbering female graduates in the IT sector underline Ridgeway’s (2011) argumentation.

To adress gender inequality in the workplace, Singapore has implemented several initiatives: The Tripartite Alliance for Fair and Progressive Employment Practices (TAFEP) provides guidelines to prevent discriminatory hiring, promotion, and remuneration practices. Workforce development programmes such as SkillsFuture promote upskilling for women in technology, aiming to enhance employability and career progression (MOM, 2023). Despite these strengths, gaps remain: policy interventions largely encourage participation and skill acquisition but do not fully address structural barriers (MOM, 2023; WEF, 2024).

Integration Through Theoretical Frameworks

HCT (Becker, 1993) partially explains Singapore’s gender pay gap, as women’s high educational attainment and workforce participation contribute to a smaller adjusted gap (6.0%) compared with the unadjusted 14.3% (MOM, 2023). Skills, experience, and working hours account for some wage differences, suggesting that human capital accumulation does influence earnings.

However, HCT is insufficient to explain persistent disparities, particularly in the IT sector. Women remain underrepresented in senior and technical roles, and occupational segregation contributes substantially to the unadjusted gap (Kuteesa et al., 2024).

GIT provides a more comprehensive lens by highlighting systemic, organisational, and sociocultural barriers (Ridgeway, 2011). Workplace cultures dominated by masculine norms, “tech-bro” environments, and subtle biases in promotion processes sustain inequality, even among highly qualified women. These factors

explain why women with equivalent education and experience to men often earn less or face slower career advancement (Charlesworth & Banaji, 2019).

Triangulation through a mixed-methods approach strengthens these insights. This perspective reveals that addressing gender pay gaps requires interventions beyond education and training, such as transparent pay frameworks, equitable promotion processes, mentorship programmes, and inclusive workplace cultures (PWC, 2022).

Gaps, Contradictions, and Limitations in the Literature

The combined quantitative and qualitative data analysis underscores that Singapore's gender pay gap is a multifaceted issue.

Qualitative insights reveal mechanisms underpinning these disparities. Policy initiatives, such as TAFEP guidelines and SkillsFuture programmes, promote participation and skill development but do not fully dismantle structural or cultural barriers (Kuteesa et al., 2024; Ridgeway, 2011).

Triangulating quantitative and qualitative evidence strengthens the validity of these conclusions, illustrating that effective interventions require both measurable and structural considerations (PWC, 2022).

Implications for practice include:

- implementing transparent pay structures
- formalising equitable promotion criteria
- expanding mentorship and sponsorship for women
- cultivating inclusive workplace cultures
- monitoring organisational pay practices
- incentivising leadership diversity
- integrating gender equity metrics

Despite robust quantitative datasets, conflicting findings emerge between adjusted and unadjusted wage measures, complicating interpretation of the gender pay gap. Further, MOM calculates the adjusted gap differently from the OECD, limiting comparability (MOM, 2024; OECD, 2024).

Singapore-specific qualitative research remains limited, and most studies rely on Western contexts, which may not reflect local organisational or cultural norms. Private-sector salary data are often inaccessible or self-reported, particularly in the technology sector, preventing detailed analysis of pay bands, bonuses, and leadership-level inequalities. These gaps underscore the need for mixed-methods approaches and more granular, sector-specific research (Creswell and Plano Clark, 2018).

Conclusion

This literature review demonstrates that Singapore's gender pay gap, particularly in the IT sector, is shaped by the interaction of education, organisational structures,

sociocultural norms, and policy frameworks. Quantitative evidence indicates that the adjusted gap has narrowed to 6.0% (MOM, 2023), yet women remain underrepresented in senior and technical roles. Qualitative insights reveal systemic barriers, which persist despite equivalent human capital.

The findings have clear implications for policy, organisations, and research. Policymakers should implement standardised pay audits, enforce transparency, and incentivise leadership diversity to address structural inequalities. Organisations should establish equitable evaluation systems, mentorship programmes, and clear career pathways to support women's progression. For researchers, there is a pressing need for Singapore-specific qualitative studies to understand local workplace dynamics and barriers that are not captured in Western-focused literature.

In conclusion, addressing Singapore's IT gender pay gap demands evidence-informed, multi-level interventions that target structural, cultural, and policy-related factors. While education and skills reduce some disparities, the persistence of inequality underscores the need for systemic reforms to achieve meaningful pay equity.

Wordcount: 2128

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